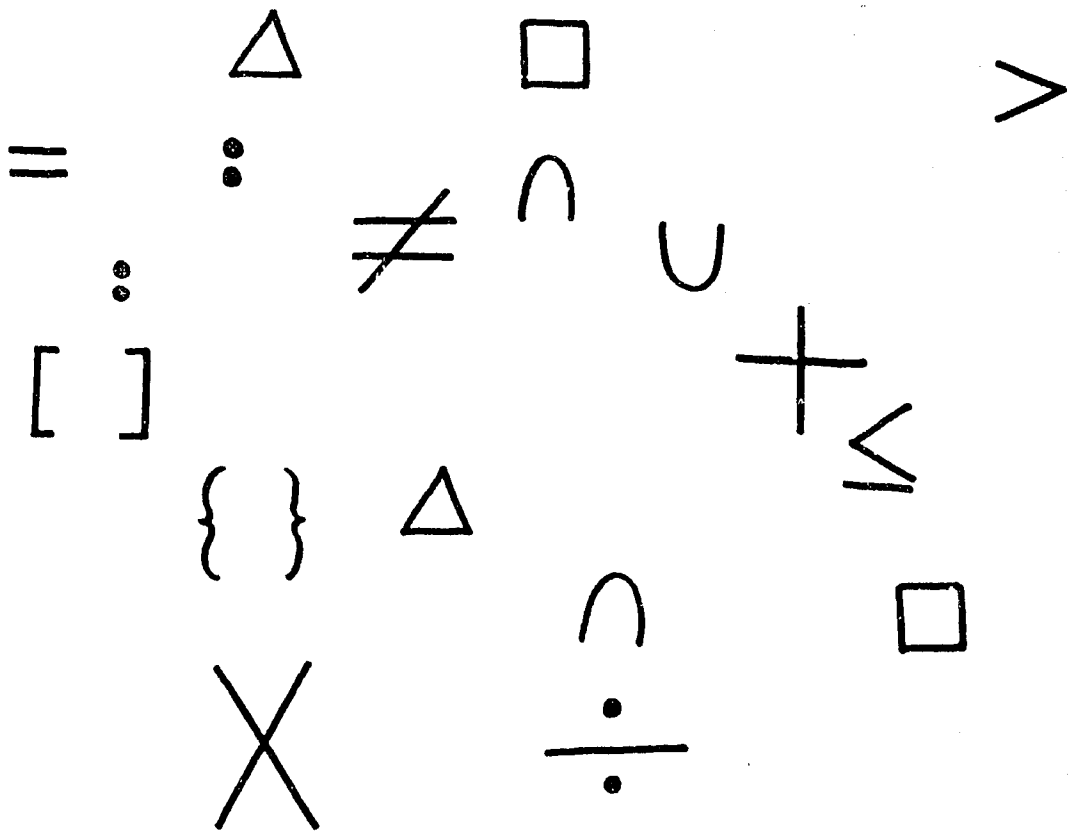

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ENTEBBE MATHEMATICS SERIES

Primary Four
Preliminary Edition

Prepared at the 1965
Mombasa Mathematics Workshop

Published for the
AFRICAN EDUCATION PROGRAM
of
EDUCATIONAL SERVICES INCORPORATED
Newton, Massachusetts
by
SCIENCE RESEARCH ASSOCIATES, INC.
a subsidiary of International Business Machines Corporation
Chicago, Illinois

Acknowledgements

The Teachers' Guide and the Pupil Book for Primary Four of the Entebbe Mathematics Series were prepared at the 1965 Mombasa Mathematics Workshop. The workshop was a part of a programme of curriculum development of the African Education Program of Educational Services Incorporated.

Funds for the Program have been provided by the United States Government through the International Cooperation Administration, the Agency for International Development, and the Department of State; by the Ford Foundation; and by the Louis and Pauline Cowan Foundation, Inc. The Primary Four books are being published pursuant to A.I.D.-financed contract No. AID/res-21 with Educational Services Incorporated.

The 1965 Mombasa Workshop was directed by Professor W. T. Martin of the Massachusetts Institute of Technology, Cambridge, Massachusetts, and Mr. John Oyelese of the University of Ibadan, Ibadan, Nigeria.

The books for Primary Four of the Entebbe Mathematics Series were written by the following:

Chairman: Professor Clarence Hardgrove
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UNIT 1

SETS AND NUMBERS

SETS OF NUMBERS

1. Which are names for whole numbers?

   $14, \quad 103, \quad 9 + 1, \quad 6 + \frac{1}{2}, \quad \frac{3}{4}, \quad 0, \quad 4 \times 2, \quad 6 \div 2, \quad 4444$

2. Which are names for counting numbers?

   $8, \quad 10, \quad 13, \quad 0, \quad 4 + 1, \quad 3 \times 2, \quad 2 + \frac{1}{2}, \quad 1131$

3. What is the set of whole numbers that are less than 6?

   $A = \{1, 2, 3, 4, 5\}$

   $B = \{0, 1, 2, 3, 4, 5, 6\}$

   $C = \{0, 1, 2, 3, 4, 5\}$

4. What is the set of whole numbers that are greater than 6 and less than 10?

   $A = \{6, 7, 8, 9\}$

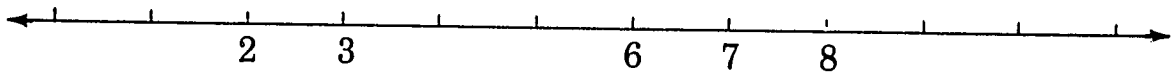
   $B = \{7, 8, 9\}$

   $C = \{7, 8, 9, 10\}$

POINTS ON THE NUMBER LINE

Name the other points shown on the number line.

1.



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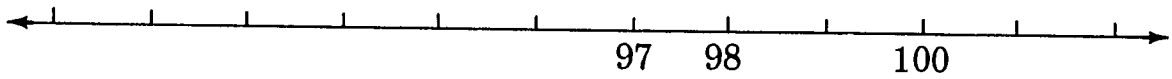
3.



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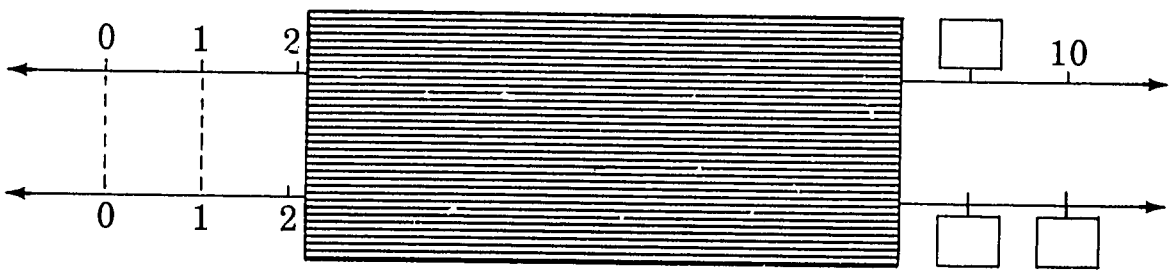

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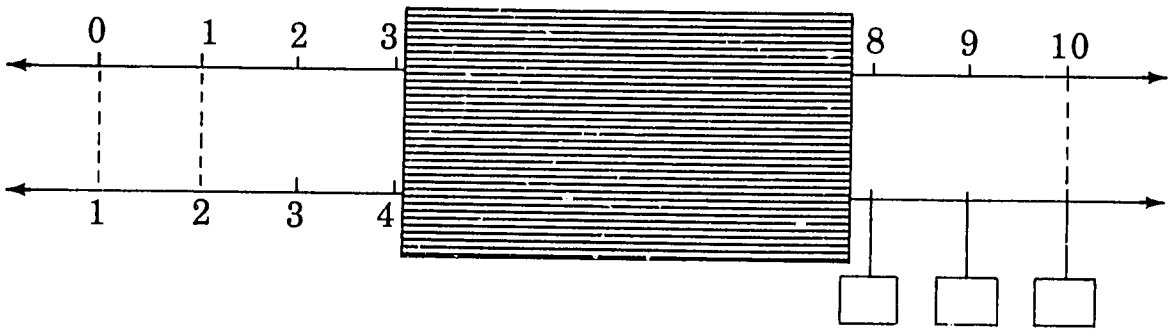


THOUSANDS, HUNDREDS, TENS, AND ONES

How many thousands, hundreds, tens, and ones are shown by each numeral?

1. Three thousand, four hundred, fifty six
2. Four thousand, two
3. Seven thousand, eight hundred
4. Six thousand, three hundred, eighteen

	Thousands	Hundreds	Tens	Ones
1.	3	4	5	6
2.	4	0	0	2
3.	7	8	0	0
4.	6	3	1	8

5. 1348 = _____ thousands, _____ hundreds, _____ tens, _____ ones
6. 7211 = _____ thousands, _____ hundreds, _____ tens, _____ ones
7. 3005 = _____ thousands, _____ hundreds, _____ tens, _____ ones
8. 3015 = _____ thousands, _____ hundreds, _____ tens, _____ ones

9. The 1 in 1846 is ONE THOUSAND.
10. The 9 in 8394 is _____
11. The 2 in 6255 is _____
12. The 0 in 1560 is _____

13. The 3 in 34,798 is _____
14. The 2 in 2,600 is _____
15. The 5 in 42,350 is _____
16. The 1 in 10,742 is _____

NUMERALS

Write the expanded forms of these numerals.

1.	28	2.	38
3.	98	4.	334
5.	562	6.	200
7.	1763	8.	3416
9.	5020	10.	8306
11.	10,101	12.	36,518

Write the simplest name for the following.

13. $300 + 40 + 6$

14. $118 + 20$

15. 43×5

16. $2000 + 700 + 80 + 1$

17. $3000 + 600 + 25$

18. $8046 - 46$

19. $500 + 60 + 7$

20. $20000 + 500 + 13$

21. $12{,}000 + 25$

22. $30{,}000 + 8000 + 700 + 20$

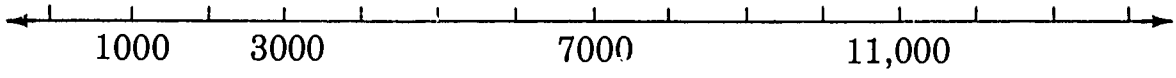
23. $80{,}000 + 2000 + 100 + 20 + 3$

NUMERALS AND POINTS

Write the missing numerals.

1.

2.



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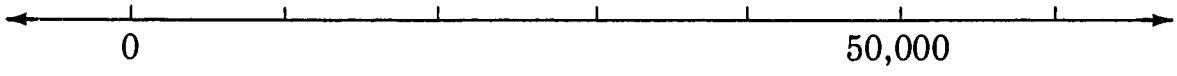

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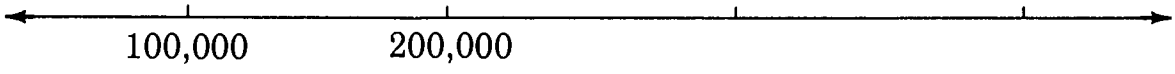

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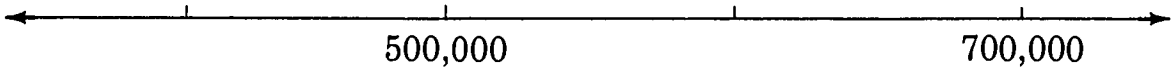
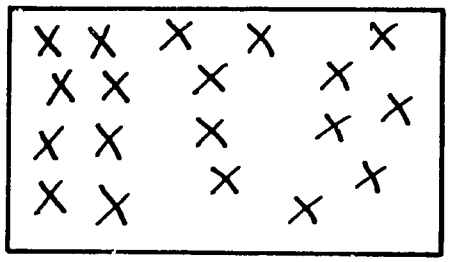


6.

SETS OF FIVE

Group into sets of five.

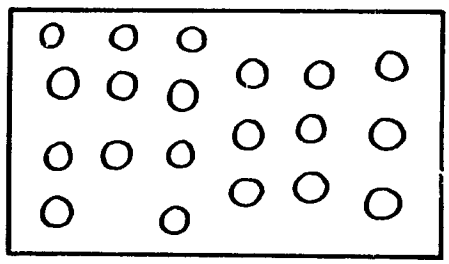
1.



How many sets of five are there?

How many ones are left?

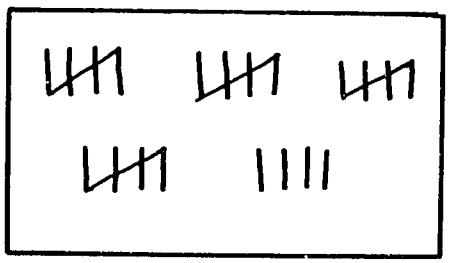
2.



How many sets of five are there?

How many ones are left?

3.

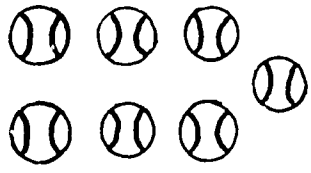
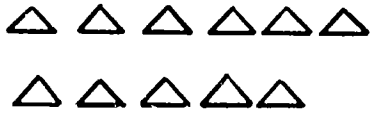
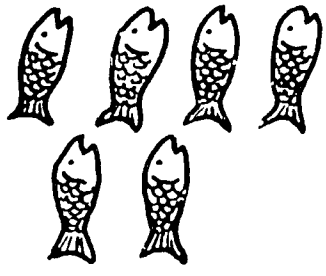
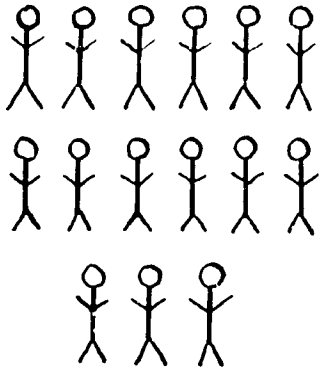
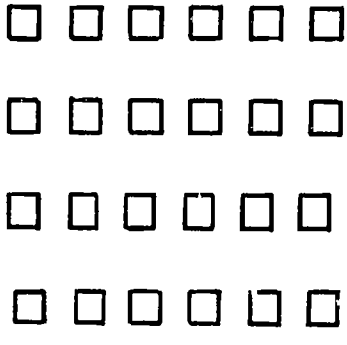


How many sets of five are there?

How many ones are left?

Number	How many fives?	How many ones?
4. Twenty		
5. Eleven		
6. Thirteen		
7. Eighteen		
8. Twenty-three		
9. Eight		
10. Twelve		
11. Five		

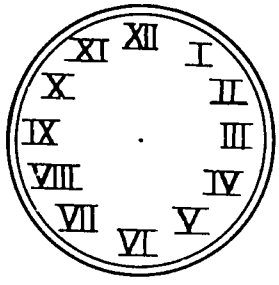
BASE-FIVE NUMERALS

		Fives	Ones	Base-Five Numerals
1.		1	2	12_{FIVE}
2.				
3.				
4.				
5.				

ROMAN NUMERALS

1.	2	2.	3	3.	4
	II		III		
4.		5.	9	6.	13
	VIII				
7.		8.		9.	
	XV		XX		XXIII
10.		11.	29	12.	30
	XXVIII				
13.		14.	35	15.	
	XXXI				XXXIX
16.		17.		18.	58
	L		LV		
19.	60	20.		21.	95
			XC		

STORY PROBLEMS

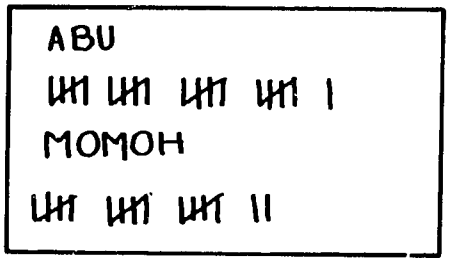


Draw a clock face to show each time.

(1) quarter past four

(2) half past seven

(3) three quarters past twelve

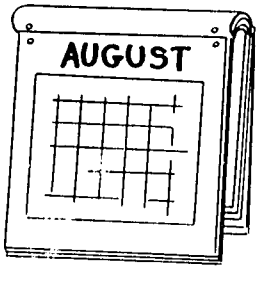


A class election was held. The vote was recorded on the blackboard.

(4) Write the result of the vote, using both the decimal system and the base-five system.

(5) By how many votes did Abu win the election?

The month of August was named after the Roman Emperor Augustus Caesar. Write in Roman numerals:



(6) the number of months in a year

(7) the number of the month of August in the year

(8) the number of days in the month of August

---

9. Which is the expanded form for 100101?

(a) 100000 + 1000 + 1

(b) 10000 + 100 + 1

(c) 100000 + 100 + 1

---

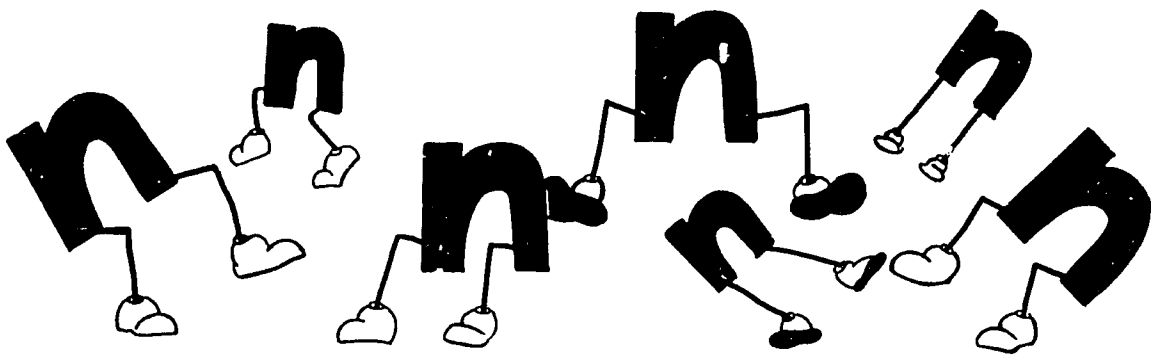
*10. (Challenge Problem) Kofi has 24 sticks. Write this number in the base-five system. His friend gives him another stick. He now has 25 sticks. How should he write this number in the base-five system?

MATHEMATICAL SENTENCES

What number makes the sentence true?

$10 + 15 = n$ if n is 25

1. $10 + 10 = n$
2. $p = 20 + 7$
3. $a = 9 + 8$
4. $5 + 15 = b$
5. $15 + p = 18$
6. $10 + q = 22$
7. $35 = 5 + t$
8. $n + 11 = 26$
9. $14 - 7 = d$
10. $f = 20 - 10$
11. $45 - 20 = q$
12. $98 - 18 = h$
13. $p = 62 - 62$
14. $q = 8 - 8$



15. $10 \times 6 = a$
16. $12 \times 3 = n$
17. $4 \times 12 = b$
18. $11 \times 9 = t$
19. $30 = 5 \times q$
20. $m \times 10 = 50$
21. $7 \times p = 63$
22. $16 \div 4 = a$
23. $t = 24 \div 4$
24. $b = 15 \div 3$
25. $20 \div 10 = m$
26. $d = 12 \div 2$
27. $15 \times 1 = n$
28. $26 + 13 = n$
29. $b = 43 - 33$
30. $20 \times 3 = d$
31. $q = 20 - 20$
32. $h = 12 \times 6$
33. $4 \times 5 = k$
34. $25 - 10 = n$
35. $21 + p = 53$
36. $t = 24 \div 3$

MATHEMATICAL SENTENCES

Make the sentences true.

1. $92 + 17 = n$
2. $a = 63 + 24$
3. $b = 111 + 200$
4. $26 + 73 = c$
5. $123 + 321 = d$
6. $f = 206 + 370$
7. $46 + 29 = h$
8. $g = 75 + 15$
9. $59 + 26 = t$
10. $28 + 33 = p$
11. $q = 48 + 15$
12. $m = 137 + 61$
13. $74 + 37 = d$
14. $h = 242 + 164$
15. $p = 114 + 347$
16. $93 + 8 = m$
17. $103 + 319 = t$
18. $126 + 255 = a$

---

19. $50 \times 6 = p$
20. $n = 20 \times 4$
21. $11 \times 7 = t$
22. $10 \times 8 = n$
23. $a = 123 \times 3$
24. $b = 114 \times 2$
25. $43 \times 6 = f$
26. $d = 31 \times 7$
27. $45 \times 4 = g$
28. $23 \times 3 = n$
29. $h = 24 \times 3$
30. $16 \times 3 = m$
31. $37 \times 5 = n$
32. $p = 30 \times 8$
33. $w = 103 \times 4$
34. $57 \times 6 = t$
35. $115 \times 3 = a$
36. $b = 27 \times 7$

MATHEMATICAL SENTENCES

Write one of these signs (<, =, >) to make the sentence true.

1. 5 _ _ _ 2
2. 0 _ _ _ 3
3. 2 _ _ _ 8
4. 113 _ _ _ 204
5. 215 _ _ _ 72
6. 29 _ _ _ 29

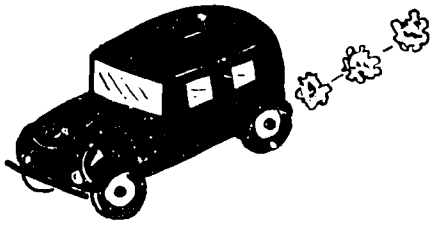
---

7. (3 + 4) _ _ _ (1 + 7)
8. (9 + 2) _ _ _ (5 + 0)
9. (11 + 3) _ _ _ (10 + 1)
10. (10 + 1) _ _ _ (8 − 4)
11. (15 − 6) _ _ _ (12 − 3)
12. (10 + 2) _ _ _ (14 − 1)
13. (3 × 2) _ _ _ (4 × 1)
14. (20 ÷ 2) _ _ _ (25 ÷ 5)
15. (4 × 5) _ _ _ (5 × 5)
16. (8 ÷ 4) _ _ _ (12 ÷ 3)
17. (11 × 5) _ _ _ (6 × 10)
18. (15 ÷ 3) _ _ _ (12 ÷ 6)

Tell whether these sentences are true or false.

19. 3 > 2
20. 11 < 14
21. (2 + 5) > (7 + 3)
22. (2 = 3) > (3 + 1)
23. (9 × 5) > (9 × 3)
24. (14 ÷ 2) < (15 ÷ 5)

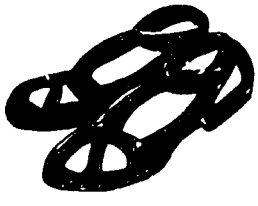
STORY PROBLEMS



1. Ali drives from Mombasa to Nairobi, a distance of 315 miles. One day he drove 250 miles. How many miles more must he drive to reach Nairobi?

2. Alaina planted a small maize field. She planted 9 rows of seeds with 7 seeds in each row. How many more seeds will she plant to have 72 in all?

3. Sahr lives in Sierra Leone. The money he uses is leones and cents. He goes to a shop and buys sandals. They cost 2 leones. Then he buys 6 oranges at 5 cents each. How much does he spend?



4. Kampanda's father and uncle together have 238 cattle. Last week his uncle sold 24 cattle and had 100 left. How many did he have before last week? How many cattle has Kampanda's father?

5. Three boys collect mangoes. Each boy collects 8 mangoes. The mangoes are put in two baskets with the same number in each basket. How many mangoes are put in each basket?

What number n makes the sentence true?

6. $34 + 13 = n$

7. $47 - 27 = n$

8. $10 \times 10 = n$

9. $25 + n = 45$

10. $5 \times 0 = n$

11. $22 \div 11 = n$

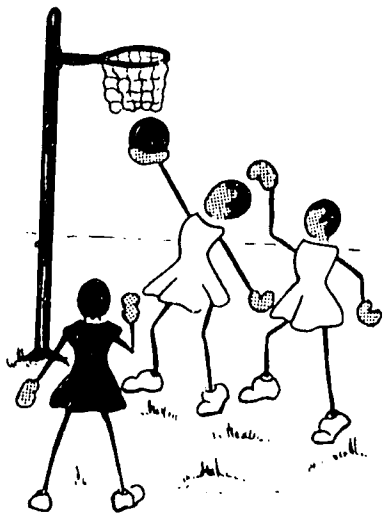
12. $21 \div 3 = n$

13. $307 + 114 = n$

STORY PROBLEMS

1. Alieu bought 15 oranges and Brimah bought 12 oranges. Who bought the greater number of oranges? How many more did he buy than the other boy?

2. In one week, Fatma receives 5 cents each day for five days. Fatu receives 4 cents each day for 6 days. Who receives the greater amount this week? How much more?



3. Team A and Team B play games of net ball. Team A wins the first game 7 to 4. Team B wins the second game 10 to 5. Which team scores more goals in all? How many more?

What number n makes the sentence true?

4. $62 + 26 = n$

5. $16 \times 2 = n$

6. $28 \div 7 = n$

7. $16 \div 4 = 10 - n$

8. $124 - 103 = n$

9. $5 \times 6 = 25 + n$

10. $n + 16 = 4 + 15$

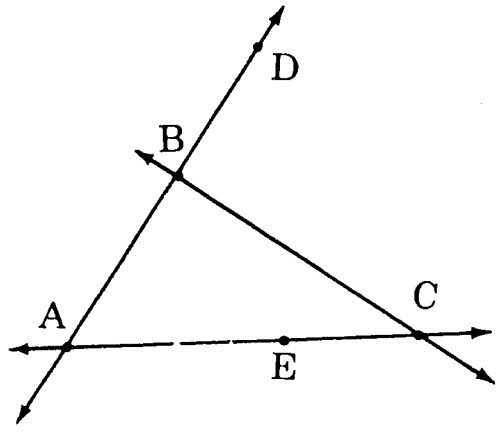
11. $21 + n = 49 + 21$

12. $15 \div 3 = n$

13. $4 \times 3 = n \times 6$

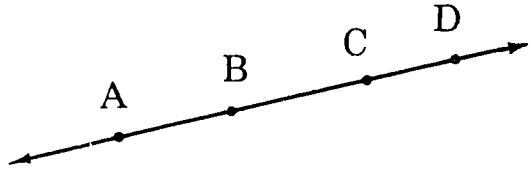
LINES

I.



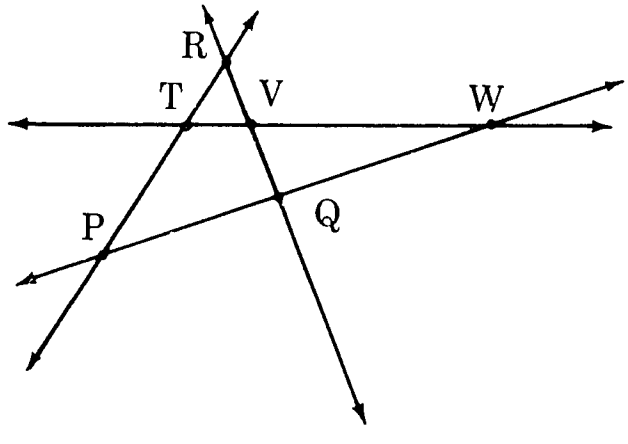
1. How many lines?
2. Give other names for line $\overleftrightarrow{AC}$.
3. Give other names for line $\overleftrightarrow{BD}$.

II. Here is a picture of a line.



4. Name all the line segments shown on the line.
5. How many line segments are there?

III.



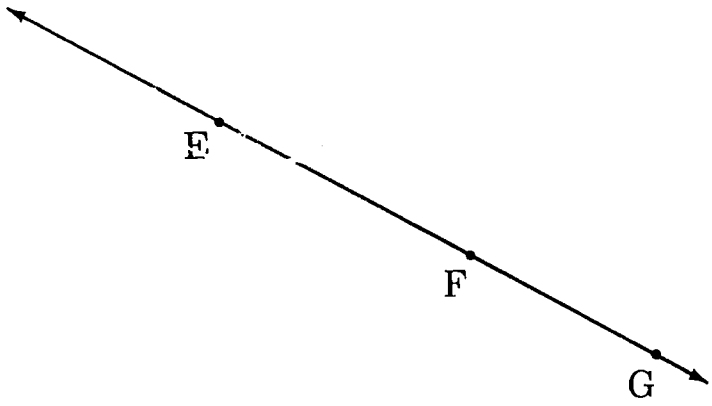
6. Name all the lines in this picture.
7. Name all the line segments in the picture.

RAYS

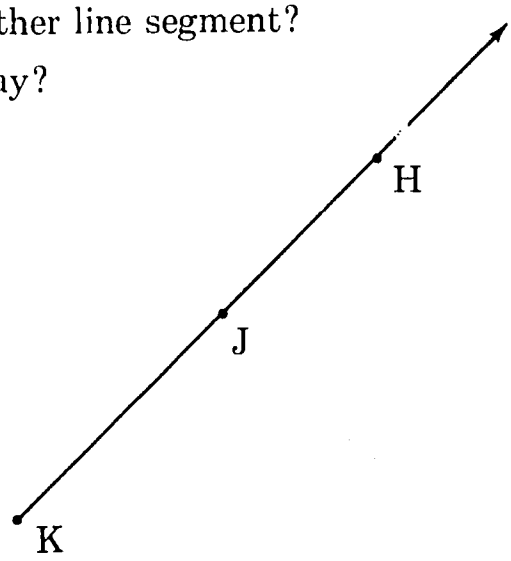
1.

This is the picture of a ray. Name the endpoint O. Name another point M on the ray. Write a name for the ray.

2. This is the picture of a line. Name two rays with the endpoint F.



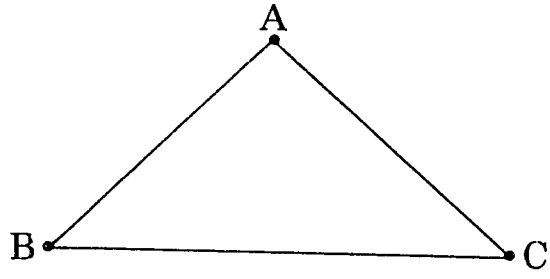
3. This is the picture of a ray.
$\overline{HJ}$ is part of what other line segment?
$\overline{HJ}$ is part of what ray?



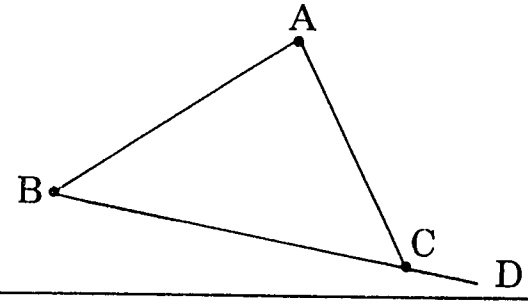
ANGLES

How many angles? Write the names of the angles.

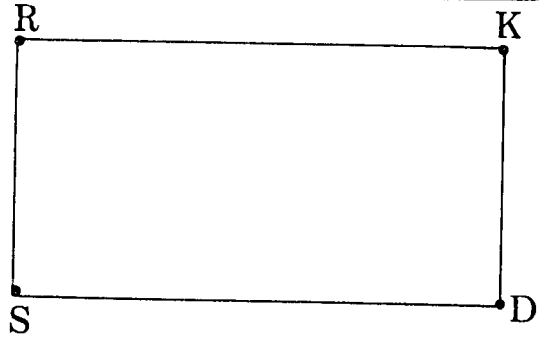
1.



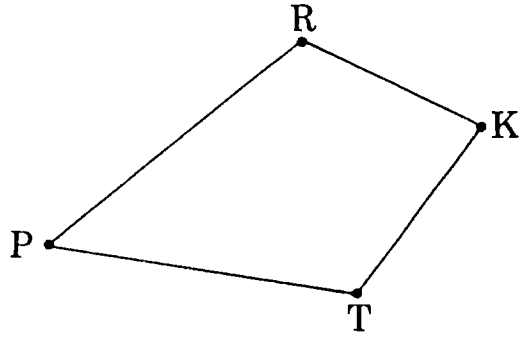
2.



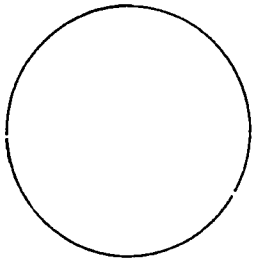
3.



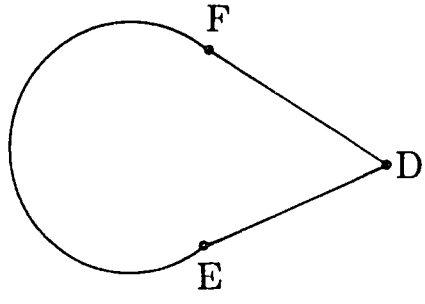
4.



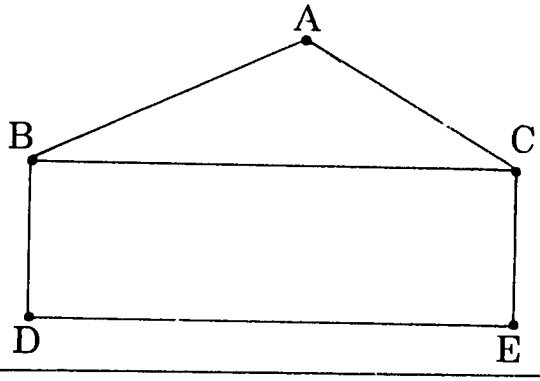
5.



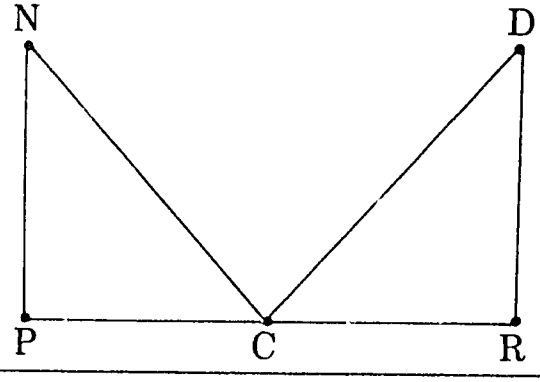
6.



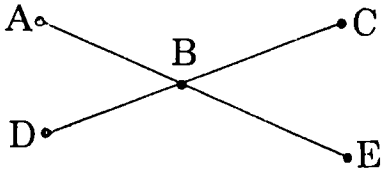
7.

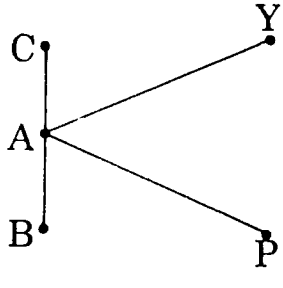


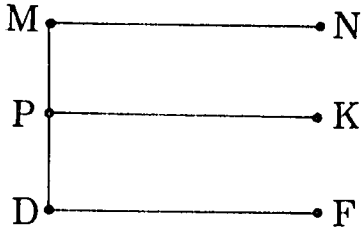
8.



9.



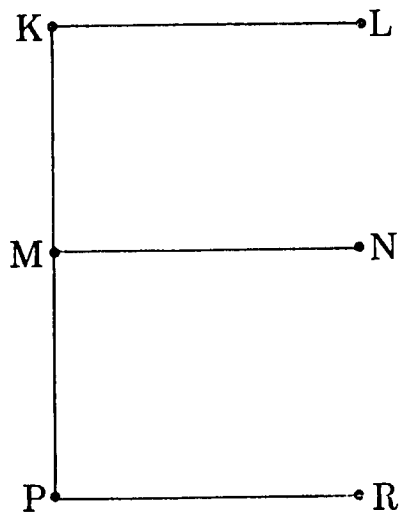




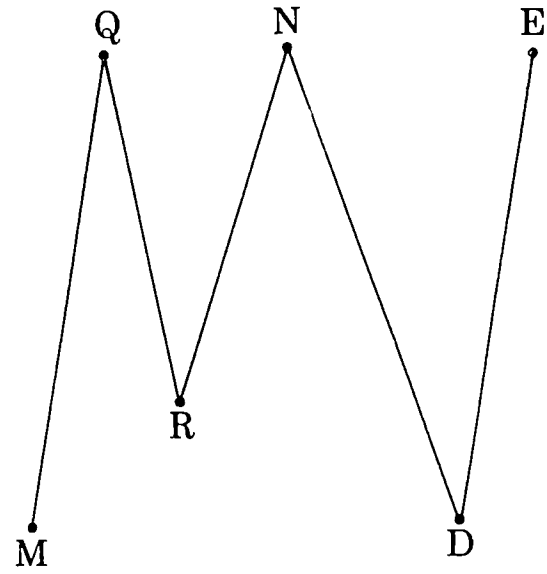
ANGLES

Draw angles with these names.

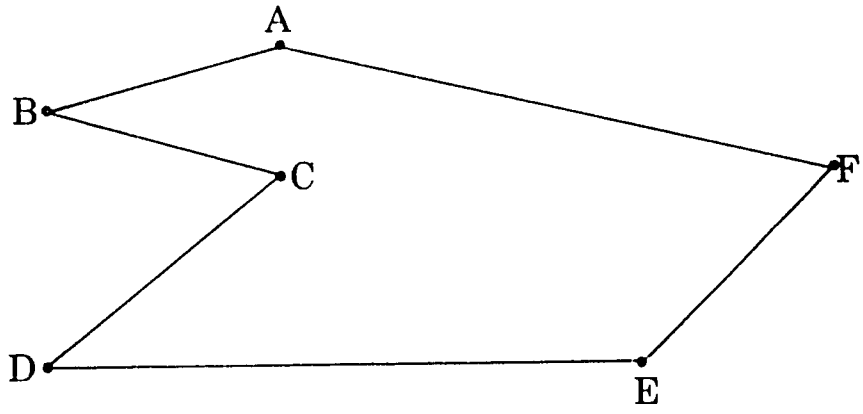
1. Angle ABC
2. Angle RST
3. Angle PQR
4. Angle XYZ



5. Name every vertex.



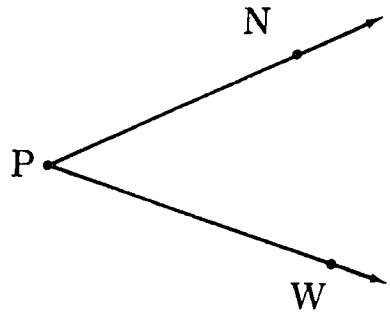
6. Name every vertex.



7. Name the angles.
8. Name the vertex of each angle.

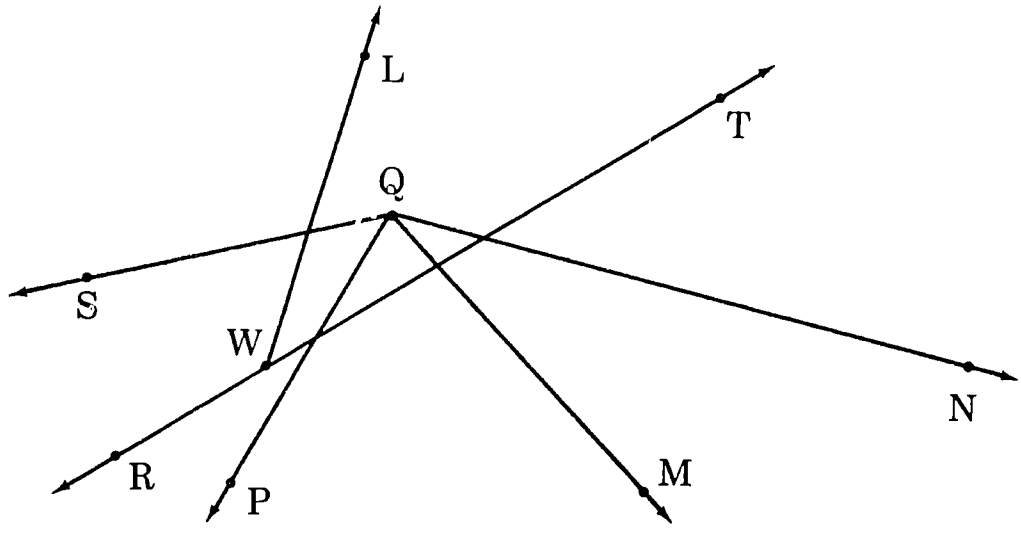
ANGLES

1. Here is a picture of an angle. Name the rays of the angle. Name the vertex of the angle. Name the angle in two ways.

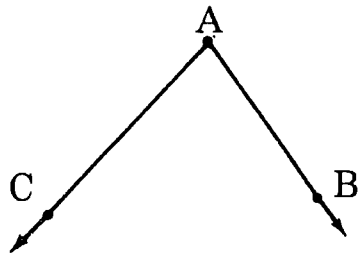


2. Mark a point M on your paper. Draw two rays with M as endpoint. Name another point on each ray. Name the figure you drew.

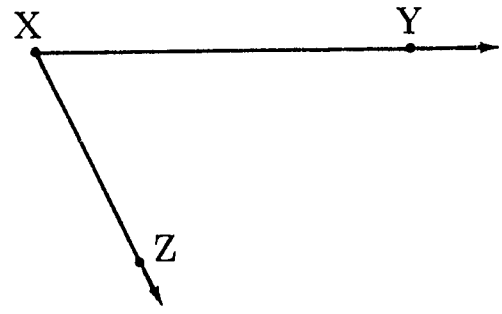
3. Name five angles in the figure.



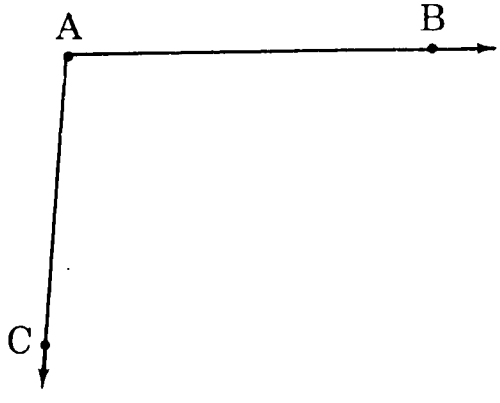
ANGLES



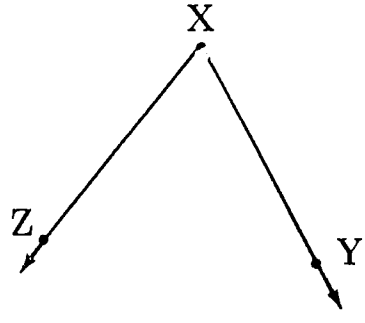
1. The vertex is___.
   The rays are___and___.
   The name of the angle is angle___.



2. The vertex is___.
   The rays are___and___.
   The angle is named angle___.

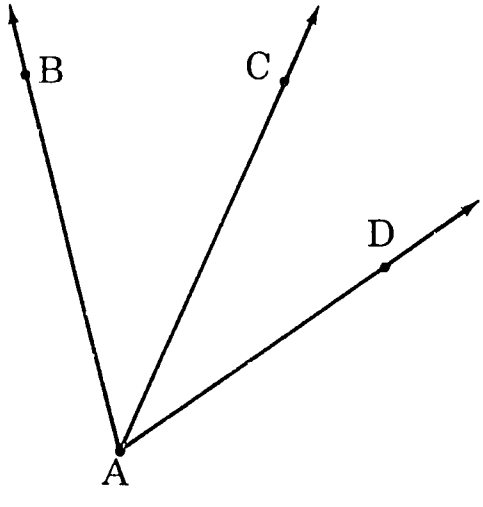


3. What are two names for this angle?

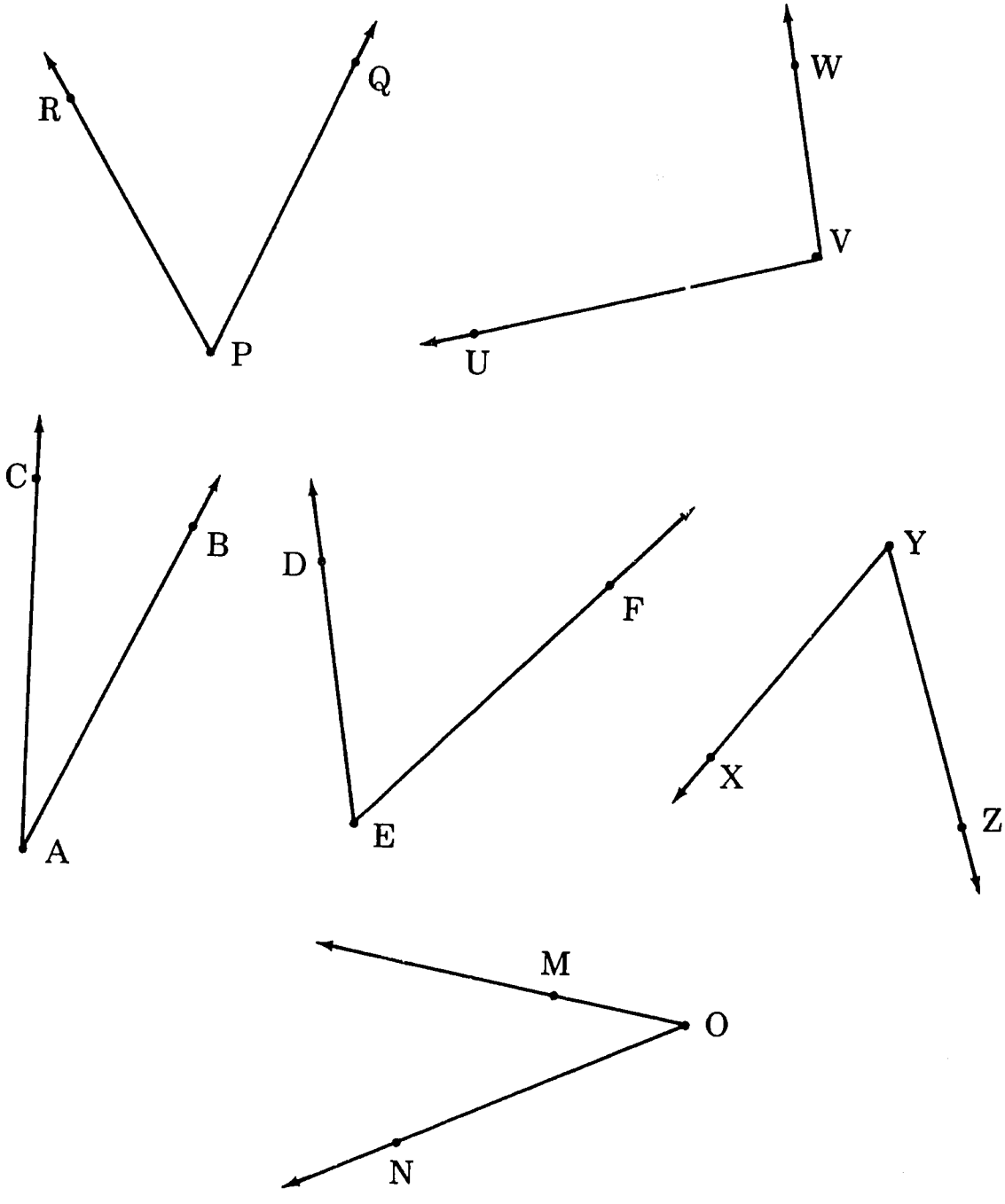


4. What are two names for this angle?

5. There are three rays in the figure below. Name three angles.



COMPARING ANGLES



(1) Which angle is greater than each of the others?

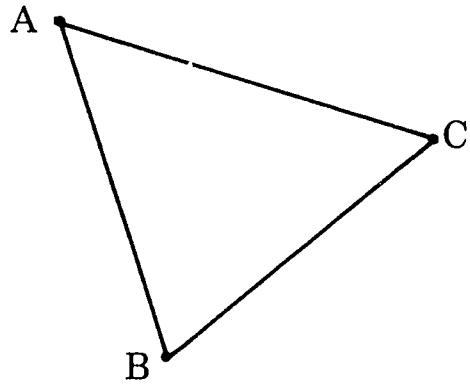
(2) Which angles are the same size?

(3) Is angle DEF greater than angle UVW?

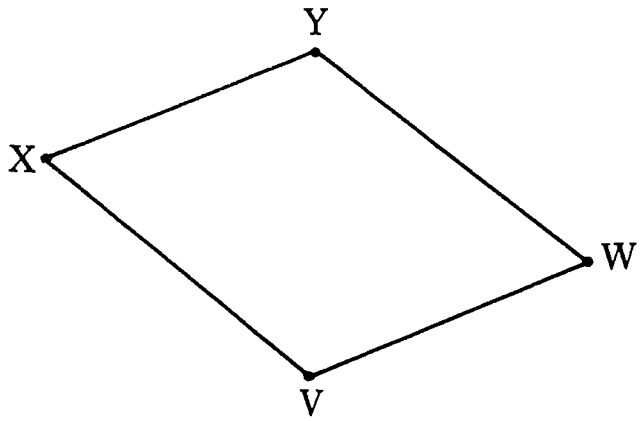
(4) Which angle is smaller than each of the others?

CONGRUENT ANGLES

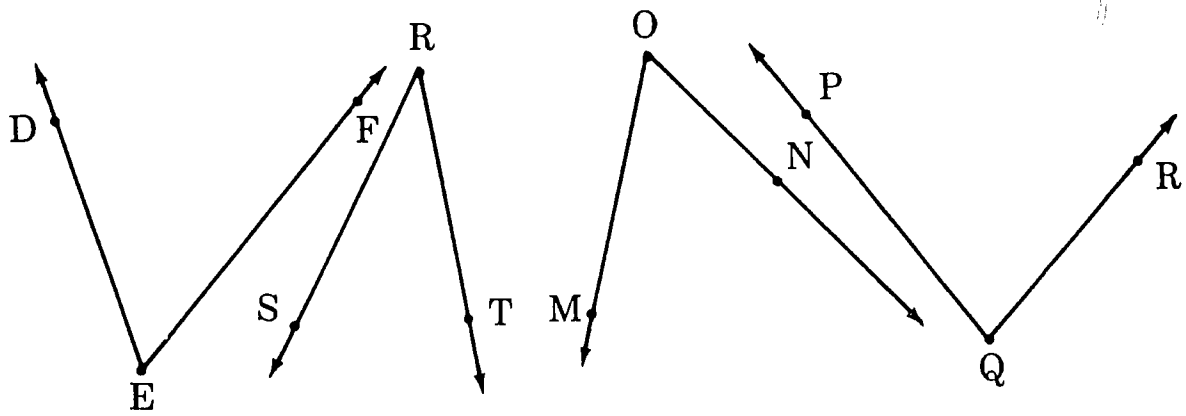
(1) Name the congruent angles in this triangle.



(2) Name the congruent angles in this four-sided figure.



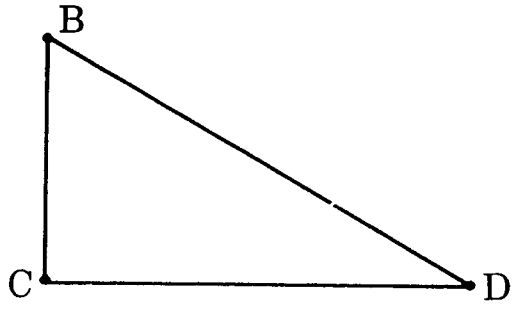
(3) Which angle is congruent to angle DEF?



RIGHT ANGLES

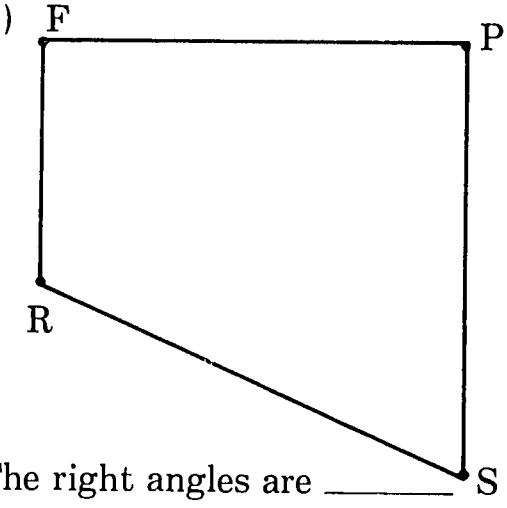
Name every right angle on each figure.

(1)



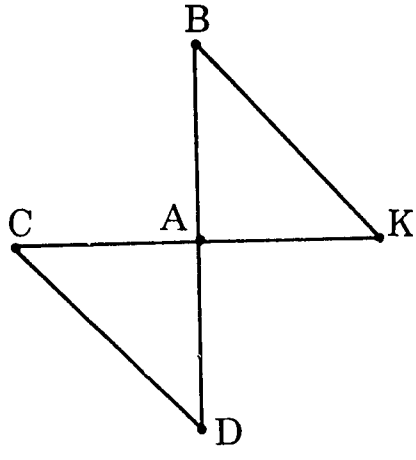
The right angle is_____.

(2)



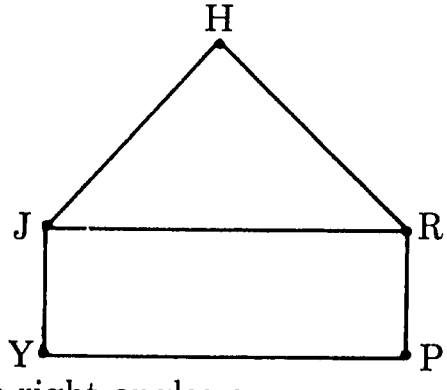
The right angles are _____ and _____.

(3)

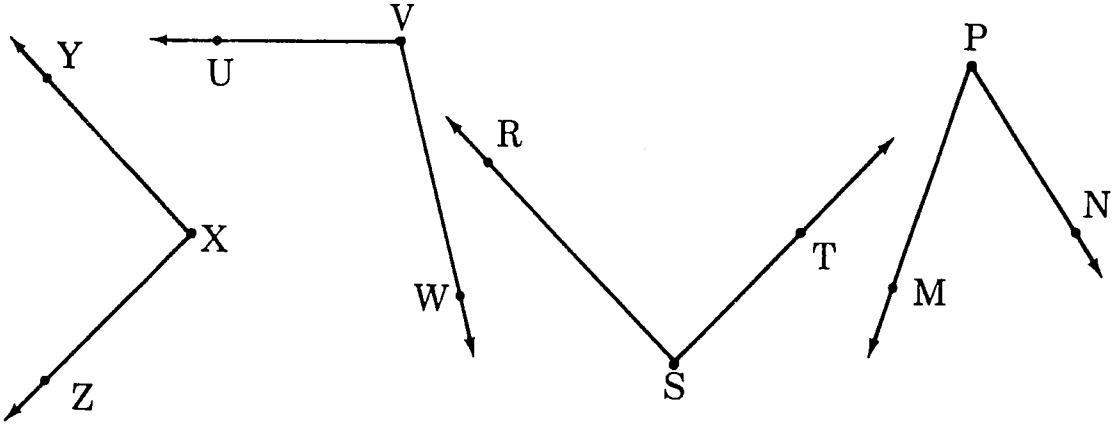


The right angles are_____ and_____.

(4)



The right angles are_____, _____, _____, _____, and_____.



(5) The right angles are angle_____and angle_____.

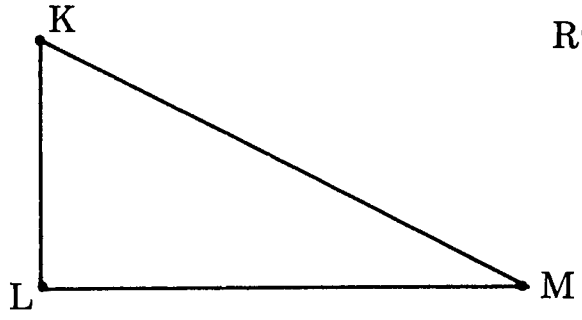
(6) Angle_____is smaller than a right angle.

(7) Angle_____is larger than a right angle.

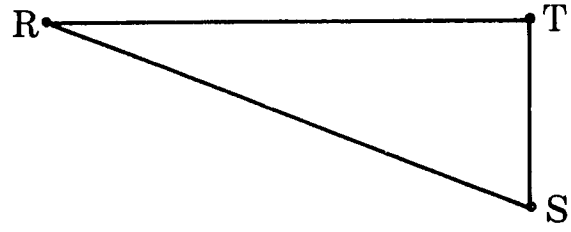
RIGHT-ANGLED TRIANGLES

Name the right-angled triangles.

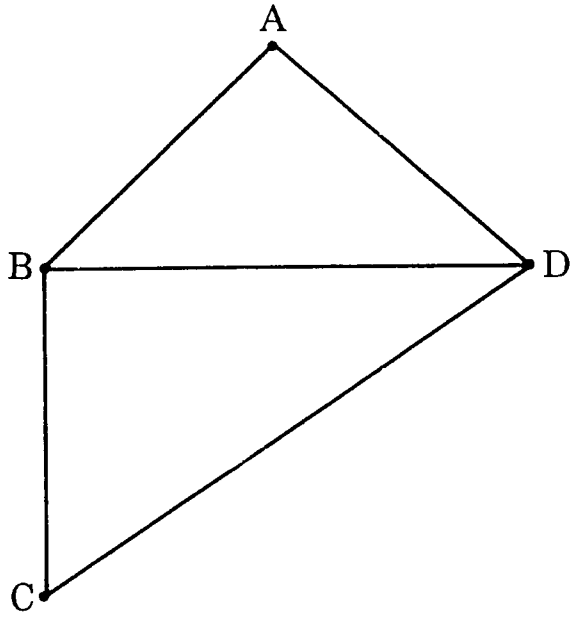
1.



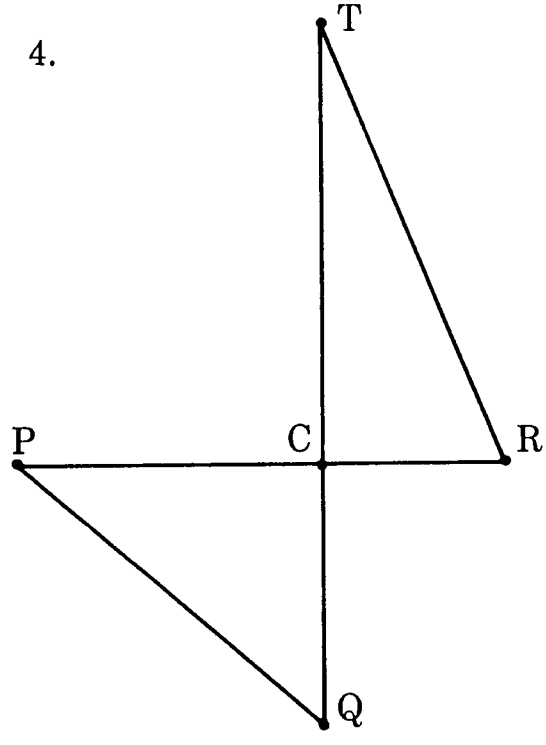
2.



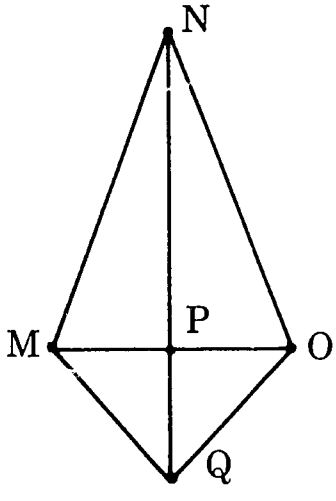
3.



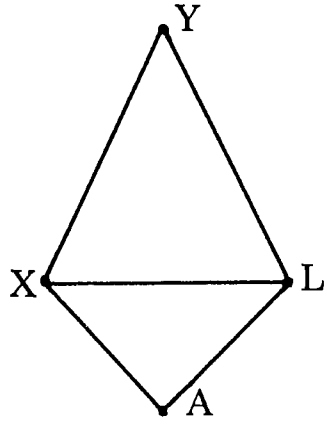
4.



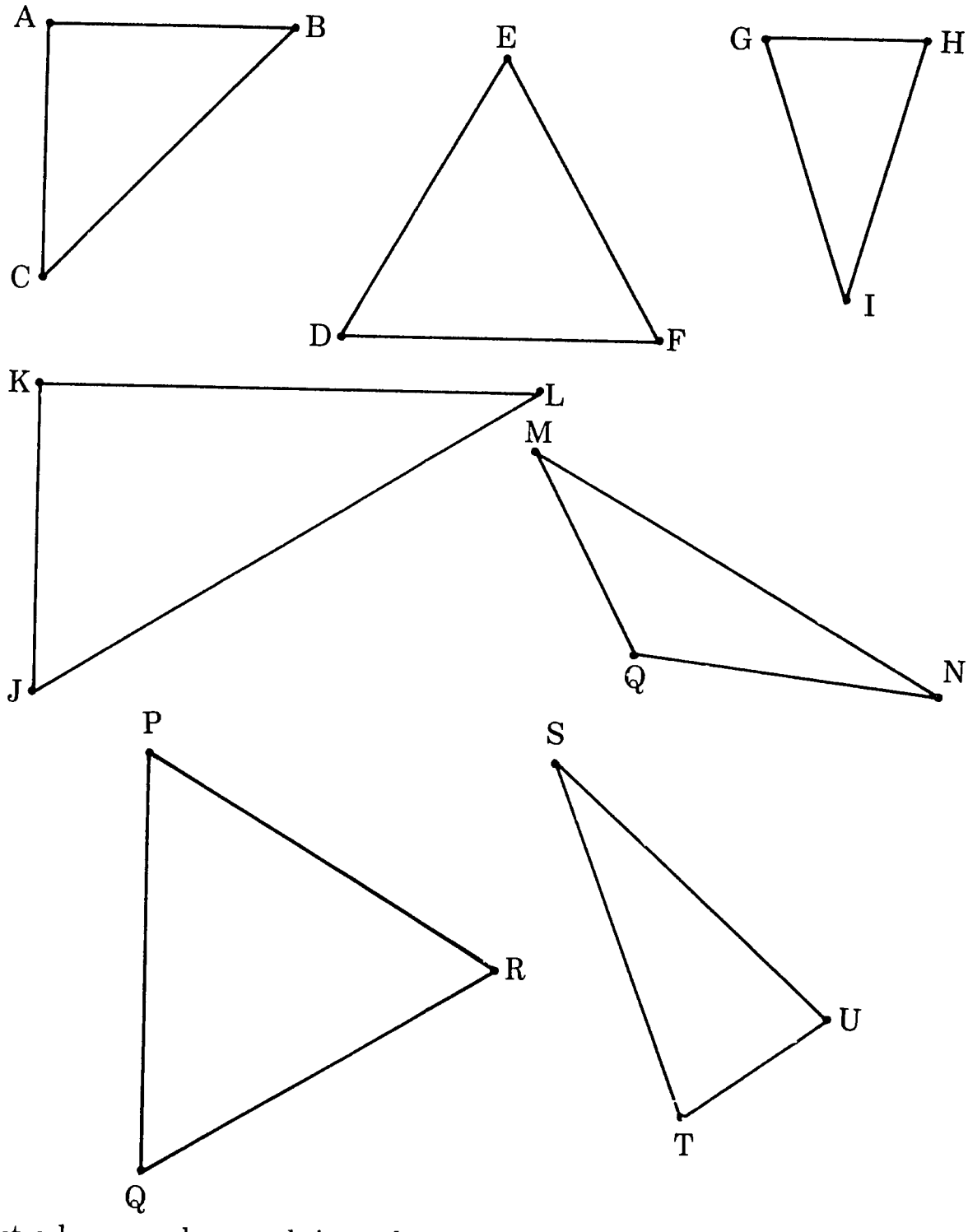
5.



6.



TRIANGLES



Put a bean seed on each isosceles triangle.

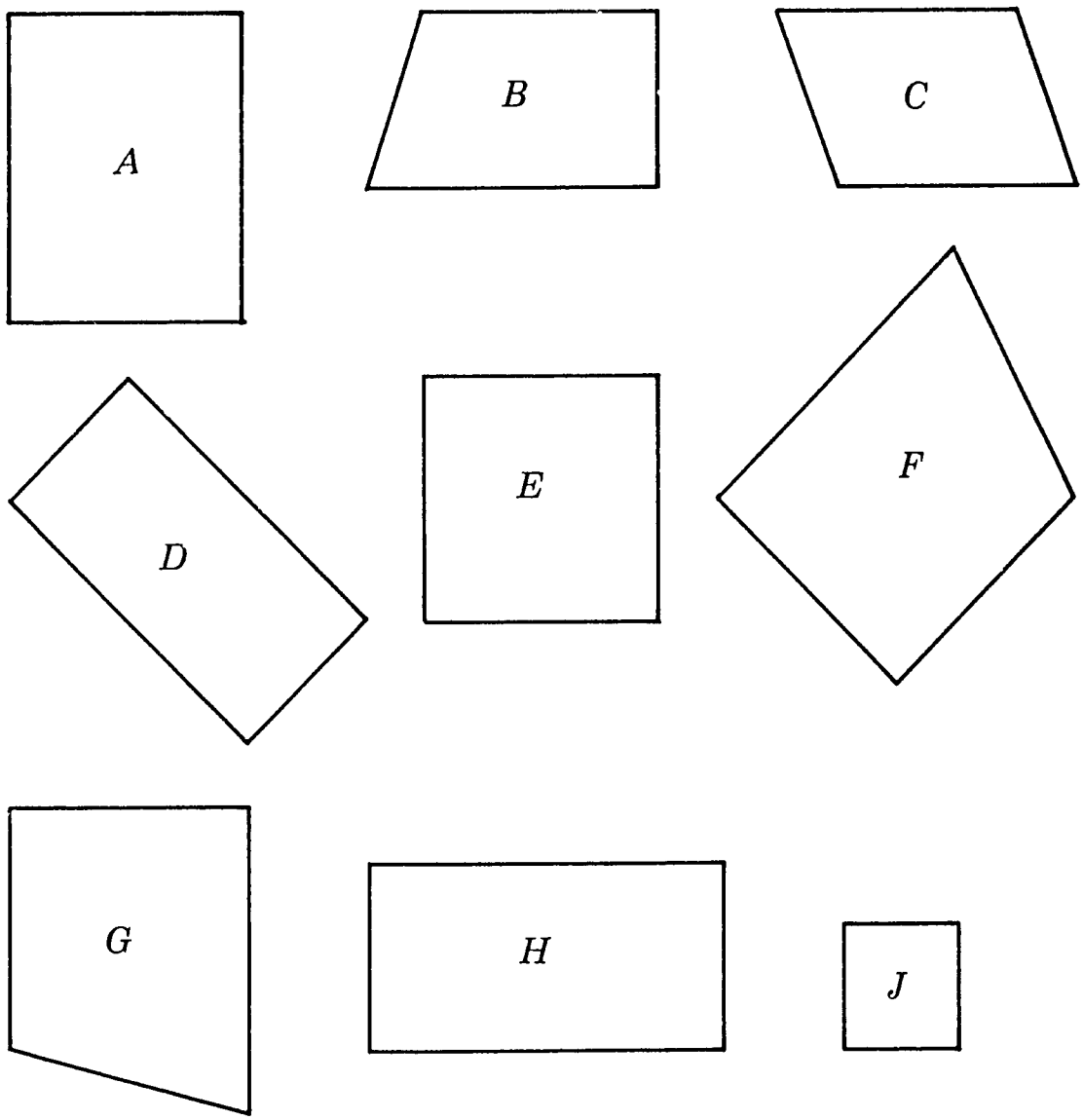
Put a stone on each equilateral triangle.

(1) Name the isosceles triangles.

(2) Name the equilateral triangles.

(3) Name the triangles that are neither isosceles nor equilateral.

RECTANGLES



1. The figures that are rectangles are _____, _____, _____, _____, and _____.

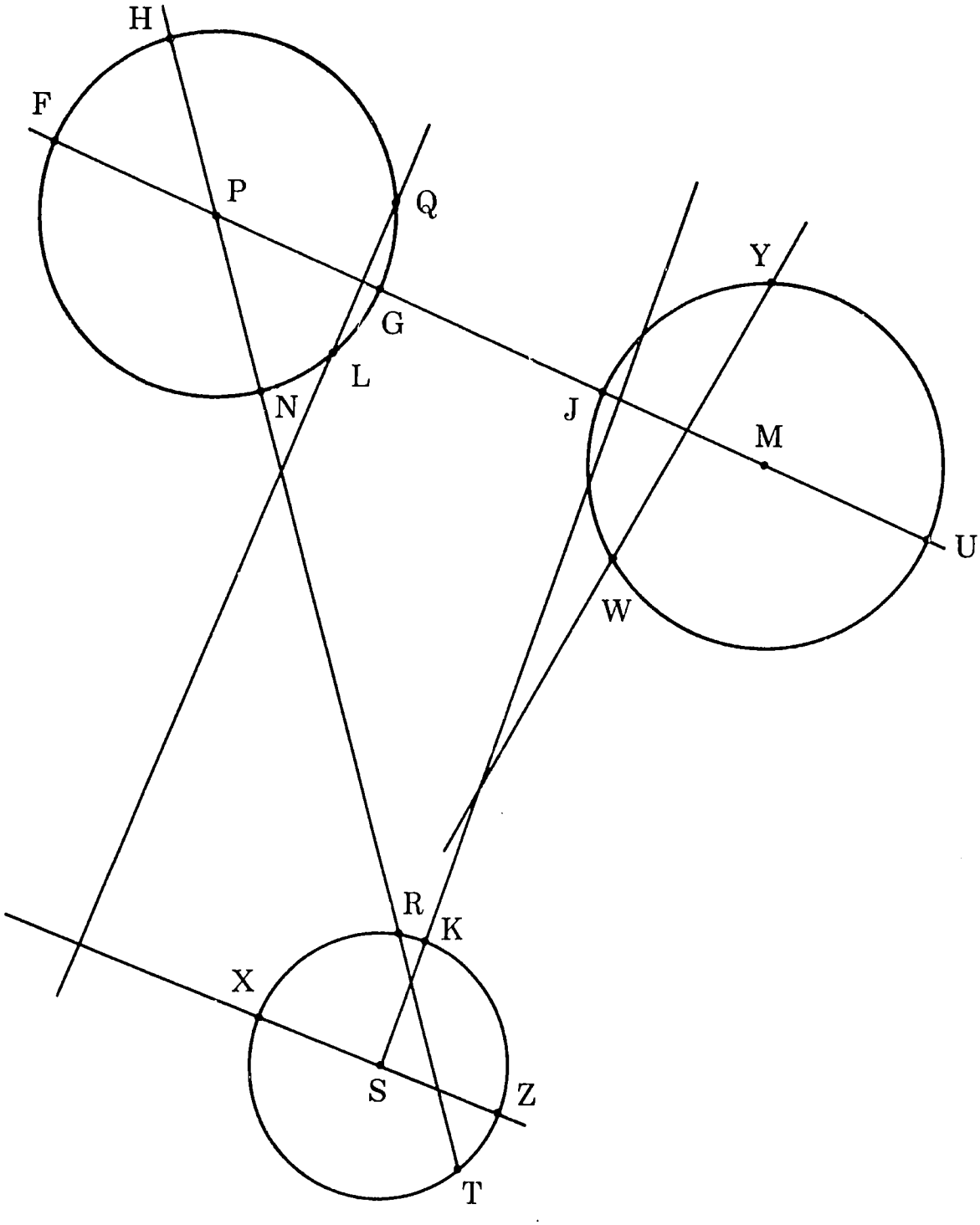
2. The rectangles that are squares are _____ and _____.

3. The rectangles that are *not* squares are _____, _____, and _____.

4. The figures that are neither squares nor rectangles are _____, _____, _____, and _____.

5. The figures with right angles are _____, _____, _____, _____, _____, _____, _____, and _____.

CIRCLES

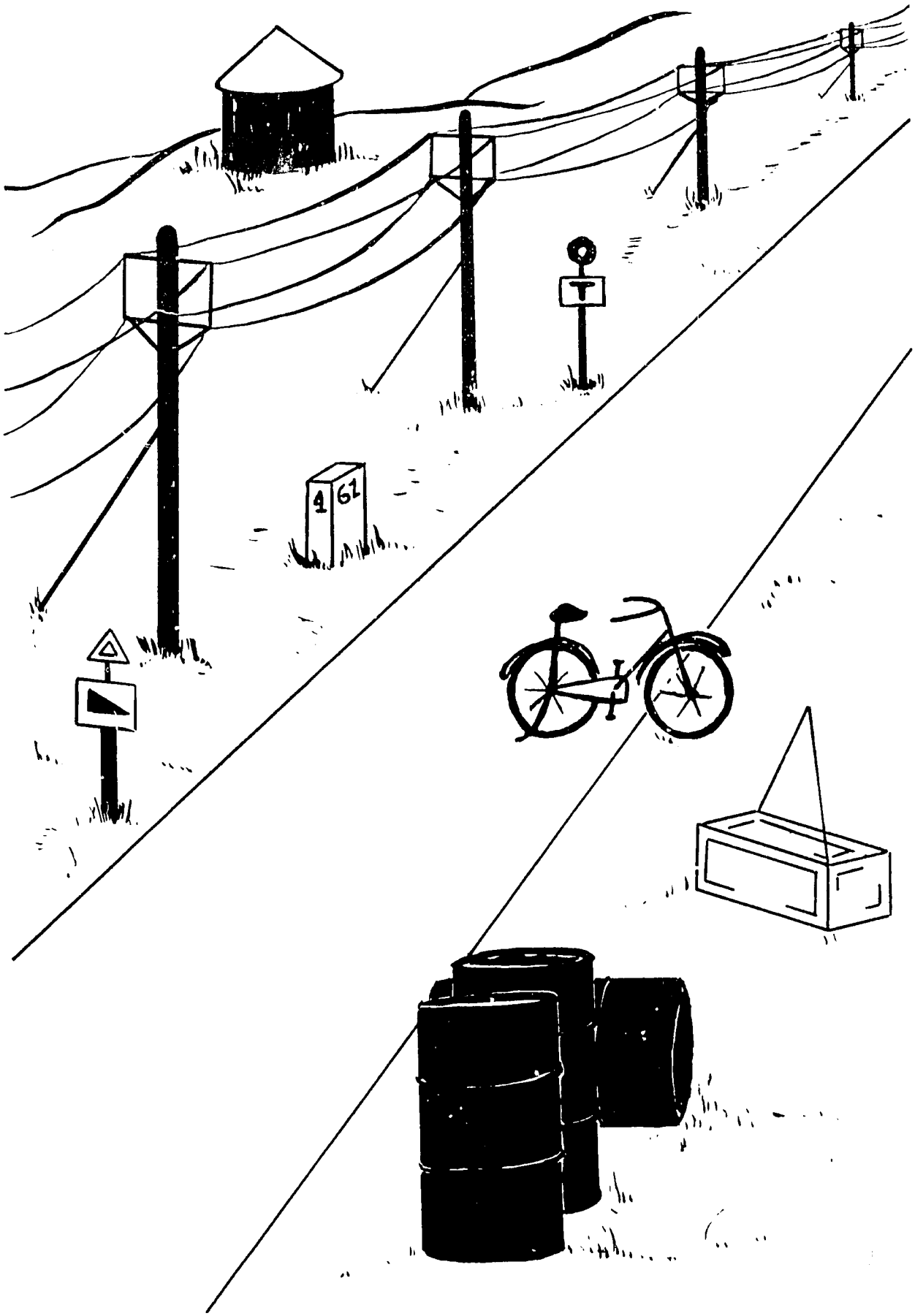


1. The diameters are _____, _____, _____, and _____.

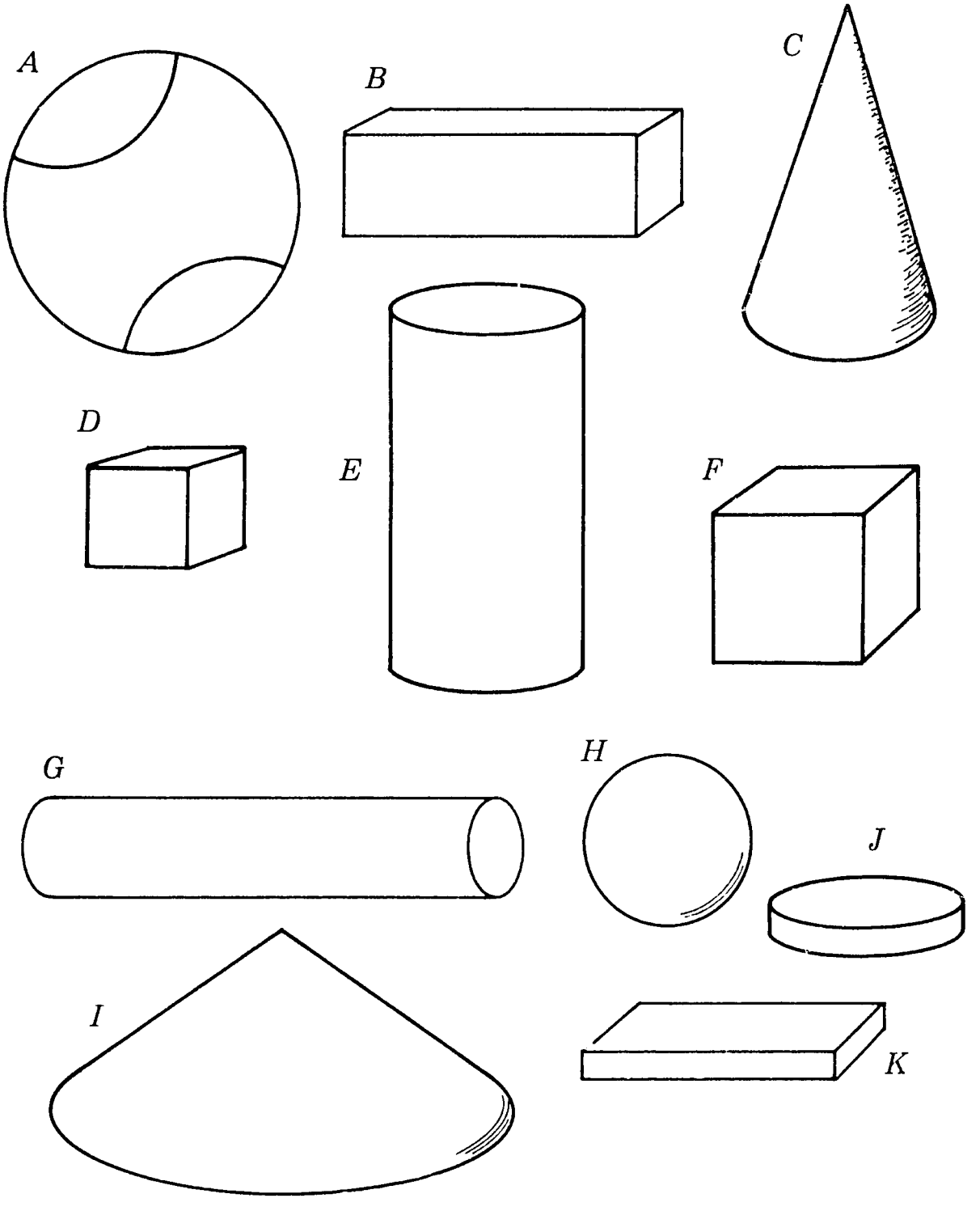
2. The radii are _____, _____, _____, _____, _____, _____, _____, _____, and _____.

3. The points that are centres of circles are _____, _____, and _____.

FIND SOME FIGURES



SOLID FIGURES



(1) Figures_____ and _____ are spheres.

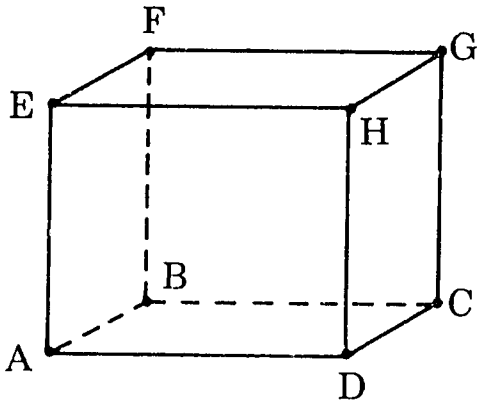
(2) Figures_____ and _____ and _____ are cylinders.

(3) Figures_____ and _____ are cones.

(4) Figures_____ and _____ are cubes.

(5) The rectangular solid figures are_____, _____, _____, and_____.

SOLID FIGURES



1. The vertices in the figure are

   _____, _____, _____, _____,

   _____, _____, _____, _____.

2. The edges are

   _____, _____, _____, _____, _____, _____,

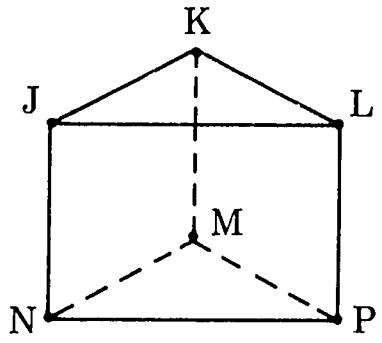
   _____, _____, _____, _____, _____, _____.

3. The faces are _____, _____, _____, _____, _____, _____.

4. How many vertices?

5. How many edges?

6. How many faces?



7. The vertices in the figure are

   _____, _____, _____, _____, _____, _____.

8. The edges are

   _____, _____, _____, _____, _____,

   _____, _____, _____, _____.

9. The faces are

   _____, _____, _____, _____, _____.

10. How many vertices?

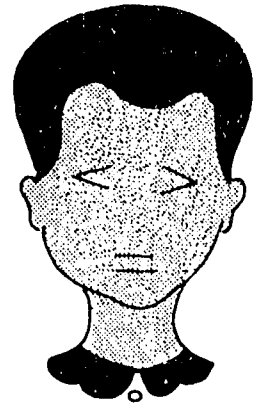
11. How many edges?

12. How many faces?

MATHEMATICAL SENTENCES

What symbol (< or > or =) makes the sentence true?

1. $(7 + 4) - 3$ ___ $(24 \div 3) \times 1$
2. $(15 - 10) \times 2$ ___ $(7 + 8) - 7$
3. $14 + (12 \div 3)$ ___ $(24 + 12) \div 2$
4. $(6 \times 5) + 3$ ___ $(18 + 10) + 6$
5. $23 - (8 + 5)$ ___ $(40 + 2) \div 2$
6. $(19 + 7) - 4$ ___ $(32 \div 8) + 21$
7. $(5 - 2) + 16$ ___ $8 + (6 + 2)$
8. $(27 \div 9) + 9$ ___ $27 \div (3 + 6)$
9. $4 \times (20 - 10)$ ___ $(7 \times 5) + 5$
10. $(25 + 25) - 25$ ___ $5 \times (5 + 5)$
11. $7 \times (12 \div 2)$ ___ $(12 \div 2) + 7$
12. $14 - (8 + 6)$ ___ $(8 + 6) - 14$
13. $(14 - 8) + 6$ ___ $8 + (14 - 6)$
14. $(20 \div 2) \div 2$ ___ $20 - (18 \div 3)$
15. $22 - (14 + 2)$ ___ $(14 + 2) - 13$
16. $(3 \times 4) + (3 \times 5)$ ___ $(4 \times 3) + (5 \times 3)$
17. $(12 \div 3) - (15 \div 5)$ ___ $(12 \div 4) - (15 \div 5)$
18. $(11 \times 4) \div 11$ ___ $16 \div (4 \div 2)$
19. $24 - (8 - 8)$ ___ $24 - (8 \times 0)$
20. $24 \div (8 \div 8)$ ___ $24 - (8 - 0)$



OPERATIONS

What numbers make the sentences true?

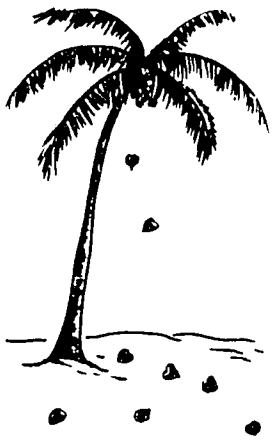
1. $(n + 5) \times 4 = 32$
2. $36 = (a \div 2) \times 4$
3. $b = (5 \times 7) + 13$
4. $(w - 6) + 4 = 24$
5. $14 = 7 \times (5 - k)$
6. $(18 \div 6) \times c = 18$
7. $23 + (d + 4) = 33$
8. $e = (30 \div 6) \times 4$
9. $29 = 49 - (11 + f)$
10. $(8 \times t) - 10 = 62$
11. $15 = s + (35 \div 7)$
12. $a = (45 \div 9) + 13$
13. $e - (55 \div 5) = 43$
14. $(17 \times 2) - k = 28$
15. $b = 8 + (9 \times 6)$
16. $(d \div 4) - 7 = 6$
17. $(60 - p) + 16 = 54$
18. $32 = c \times (32 \div c)$
19. $(6 + 3) \times 5 = b$
20. $7 = 21 \div (m - 11)$

STORY PROBLEMS

1. Seven children each made 4 animals from mud. The teacher liked six of them very much. She kept them and put the other n animals back on the mud pile. How many animals were put back?

   n is _____.

   _____ animals were put back on the mud pile.

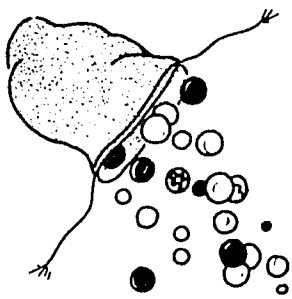
2. 

   There were n coconuts on the ground. A group of thirteen boys picked them up. Then 7 more coconuts fell. These were also picked up. All the coconuts were divided equally among the boys. Each received 2 coconuts. How many coconuts were on the ground at first?

   n is _____.

   There were _____ coconuts on the ground at first.

3. Juma had 32 marbles to give away. He divided them equally among 4 friends. Each friend already had k marbles of his own. Now each had 15 marbles. What number k of marbles did each have at first?



   k is _____.

   Each friend had _____ marbles at first.

4. A group of m boys each brought 8 bottle tops to school. They gave tops to other children who needed them. They gave a total of 14 tops away. They had 42 left. How many boys were there?

   m is _____.

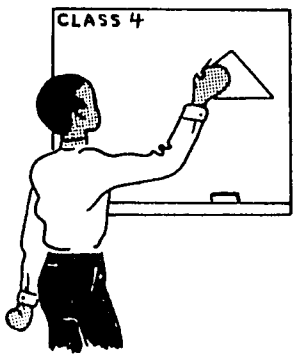
   There were _____ boys.

STORY PROBLEMS

5. Two boys had n beans together. They shared the n beans equally between them. Each boy lost two of his beans; each had 8 beans left. How many beans did they have together?

   n is _____.

   There were _____ beans.



6. The teacher drew p squares and p triangles on the blackboard. He drew a total of 56 line segments to make the sides of the figures. How many squares and triangles did he draw?

   p is _____.

   The teacher drew _____ squares and _____ triangles.

7. Each of 5 boys polished s pairs of shoes in one morning. In all they had 30 customers. How many pairs of shoes did each boy polish? Each customer paid 2 shillings to have his shoes polished. How much did each boy earn?

   s is _____.

   Each boy polished _____ pairs of shoes.

   Each boy earned _____ shillings.

8. Obi and his six friends gathered bananas. Each boy gathered t bananas. Then each boy ate 3 of his bananas. They took a total of 42 bananas home with them. How many bananas did each boy gather?

   t is _____.

   Each boy gathered _____ bananas.

OPERATIONS

What are the missing numerals or the missing symbols?

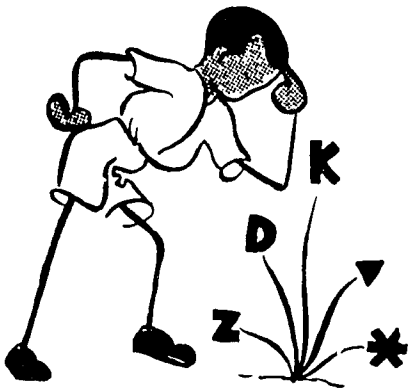
1. (10, 13) ? ↓ 23	2. (18, 6) ? ↓ 3	3. (_, _) + ↓ 20	4. (16, 7) − ↓ ?
5. (10, 4) ? ↓ 40	6. (_, _) × ↓ 15	7. (28, 11) ? ↓ 17	8. (_, 15) − ↓ 20
9. (45, 5) ? ↓ 9	10. (111, 78) + ↓ ?	11. (4, 3) ÷ ↓ ?	12. (90, _) ÷ ↓ 30
13. (1, 8) ÷ ↓ ?	14. (1, 5) ? ↓ 5	15. (0, 193) ? ↓ 193	16. (216, _) + ↓ 216
17. (298, 163) − ↓ ?	18. (_, _) ÷ ↓ 3	19. (15, _) + ↓ 15	20. (_, 35) × ↓ 35

OPERATIONS

Write a sentence for each. Find what number makes the sentence true.

1. $(10, 6) \xrightarrow{-} (\quad, 2) \xrightarrow{-} n$	2. $(6, 2) \xrightarrow{-} (10, \quad) \xrightarrow{-} p$	3. $(8, 2) \xrightarrow{\div} (\quad, 2) \xrightarrow{\div} t$
4. $(35, 25) \xrightarrow{-} (a, \quad) \xrightarrow{\div} 3$	5. $(6, 5) \xrightarrow{+} (8, \quad) \xrightarrow{\times} b$	6. $(2, 2) \xrightarrow{\div} (8, \quad) \xrightarrow{\div} d$
7. $(14, 12) \xrightarrow{+} (\quad, 11) \xrightarrow{+} q$	8. $(12, 11) \xrightarrow{+} (14, \quad) \xrightarrow{+} m$	9. $(13, 11) \xrightarrow{+} (\quad, 13) \xrightarrow{-} n$
10. $(5, 8) \xrightarrow{\times} (\quad, p) \xrightarrow{\div} 16$	11. $(8, 6) \xrightarrow{+} (\quad, 5) \xrightarrow{\times} b$	12. $(18, 2) \xrightarrow{\div} (\quad, a) \xrightarrow{-} 10$

OPERATIONS



1. $(4, 6) \xrightarrow{D} 2$ $(7, 6) \xrightarrow{D} 1$ $(7, 3) \xrightarrow{D} 4$

   What is operation D ?

2. $(9, 4) \xrightarrow{*} 14$ $(4, 5) \xrightarrow{*} 10$ $(2, 3) \xrightarrow{*} 6$

   What is operation * ?

3. $(3, 7) \xrightarrow{Z} 20$ $(3, 2) \xrightarrow{Z} 10$ $(4, 4) \xrightarrow{Z} 16$

   What is operation Z ?

4. $(2, 3) \xrightarrow{\nabla} 4$ $(10, 13) \xrightarrow{\nabla} 14$ $(7, 3) \xrightarrow{\nabla} 8$

   What is operation ▽ ?

5. $(1, 6) \xrightarrow{\Delta} 2$ $(3, 4) \xrightarrow{\Delta} 6$

   $(7, 4) \xrightarrow{\Delta} 8$ $(9, 2) \xrightarrow{\Delta} 4$

   What is operation △ ?

6. $(2, 4) \xrightarrow{K} 8$ $(10, 1) \xrightarrow{K} 21$ $(5, 4) \xrightarrow{K} 14$

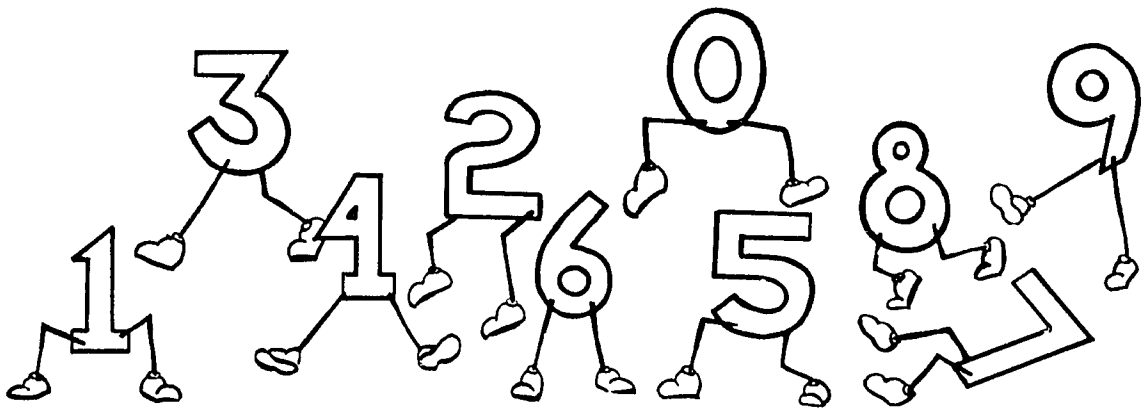
   $(1, 10) \xrightarrow{K} 12$ $(3, 5) \xrightarrow{K} 11$ $(2, 5) \xrightarrow{K} 9$

   What is operation K ?

MATHEMATICAL SENTENCES

Find what number makes the sentence true.

1. $9 + 7 = 7 + b$
2. $11 \times 4 = 4 \times c$
3. $196 + 39 = c + 196$
4. $39 + 98 = k + 39$
5. $11 \times b = 83 \times 11$
6. $h + 316 = 316 + 718$
7. $298 \times 7 = 7 \times p$
8. $18 + 60 = 60 + x$
9. $10 + 184 = 184 + w$
10. $q \times 11 = 11 \times 316$



True or false?

11. $3 + 5 > 5 + 2$
12. $8 \times 5 = 5 \times 8$
13. $17 \times 16 = 16 \times 18$
14. $348 + 97 < 96 + 348$
15. $1946 + 1310 = 1310 + 1946$
16. $734 \times 18 = 18 \times 734$
17. $1324 \times 12 < 112 \times 1324$
18. $90 + 6 = 6 + 19$
19. $1000 + 3000 = 3000 + 100$
20. $500 \times 60 > 60 \times 500$

MATHEMATICAL SENTENCES

What number makes the sentence true?

1. $(2 + 10) + 4 = 2 + (10 + a)$
2. $(18 + b) + 11 = 18 + (13 + 11)$
3. $(15 + 25) + c = 15 + (25 + 30)$
4. $d + (315 + 196) = (234 + 315) + 196$
5. $(3 \times 5) \times 4 = b \times (5 \times 4)$
6. $(8 \times c) \times 15 = 8 \times (12 \times 15)$
7. $(k \times 20) \times 5 = 11 \times (20 \times 5)$
8. $(15 \times 16) \times 193 = 15 \times (16 \times f)$
9. $(462 + 11) + 8 = b + (11 + 8)$
10. $25 \times (19 \times 4) = (w \times 19) \times 4$

True or false?

11. $(4 + 5) + 6 > 4 + (5 + 7)$
12. $(3 \times 2) \times 5 = 3 \times (2 \times 5)$
13. $(4 \times 7) \times 3 = 4 \times (6 \times 3)$
14. $(15 + 17) + 25 > 15 + (16 + 25)$
15. $(186 + 324) + 101 = 176 + (324 + 101)$
16. $(8 \times 19) \times 10 = 8 \times (19 \times 10)$
17. $(40 \times 8) \times 30 < 30 \times (8 \times 30)$
18. $(462 + 132) + 11 = 462 + (132 + 11)$
19. $(1384 + 763) + 936 < 1384 + (763 + 936)$
20. $(813 \times 84) \times 10 = 813 \times (84 \times 10)$

MATHEMATICAL SENTENCES

What number makes the sentence true?

1. $8 \times (10 + 6) = (8 \times 10) + (a \times 6)$
2. $(b \times 5) + (b \times 7) = 9 \times (5 + 7)$
3. $9 \times (8 + 7) = (c \times 8) + (c \times 7)$
4. $(11 \times b) + (11 \times 6) = 11 \times (9 + 6)$
5. $d \times (13 + 4) = (8 \times 13) + (8 \times 4)$
6. $7 \times (b + 15) = (7 \times 6) + (7 \times 15)$
7. $45 \times (3 + k) = (45 \times 3) + (45 \times 1)$
8. $25 \times (3 + 7) = (25 \times 3) + (q \times 7)$
9. $56 \times (4 + 6) = (56 \times 4) + (56 \times p)$
10. $(q \times 5) + (q \times 13) = 10 \times (5 + 13)$

True or false?

11. $2 + (3 \times 5) = (2 + 3) \times (2 + 5)$
12. $4 \times (8 + 6) = (4 \times 8) + (4 \times 7)$
13. $(20 + 13) \times 7 = (20 \times 7) + (13 \times 7)$
14. $16 \times (4 + 3) = (16 \times 4) + (16 \times 3)$
15. $13 \times (17 + 10) = (13 \times 7) + (13 \times 10)$
16. $9 \times (8 + 10) = (9 \times 8) + (9 \times 10)$
17. $5 + (4 \times 5) = (15 \times 3) + (15 \times 2)$
18. $15 + (3 \times 2) = (15 \times 3) + (15 \times 2)$
19. $11 \times (25 + 31) = (11 \times 25) + (11 \times 31)$
20. $7 \times (1 + 2) = (7 \times 1) + (7 \times 1)$

OPERATIONS

1. Riddle: I am a number. If I am added to a number, the sum is always that same number. What number am I?

2. If $a + b = a$, what is b?

3. What property do exercises 1 and 2 show?

4. Riddle: I am a number. If a number and I are multiplied, the product is always that number. What number am I?

5. If $a \times b = a$, what is b?

6. What property do exercises 4 and 5 show?

Solve each sentence and tell what property it shows.

7. $6 \times (3 + 2) = (6 \times a) + (6 \times 2)$
8. $193 \times n = 193$
9. $s = 415 \times 1$
10. $733 + m = 1920 + 733$
11. $(4 \times 2) \times 7 = r \times (2 \times 7)$
12. $45 = 45 + m$
13. $(9 + 0) + 5 = 9 + (0 + t)$
14. $230 + 1 = u + 230$
15. $(5 + h) + 0 = 5 + 5$
16. $(14 + 2) + 60 = k + (14 + 2)$
17. $d \times 21 = 21 \times 14$
18. $5 + 2 + 2 = z + 7$
19. $(9 \times 2) + g = 3 + (3 \times 6)$
20. $4 \times 3 = (4 \times b) + (4 \times 1)$

OPERATIONS AND THEIR PROPERTIES

I. The F operation gives the *first* number of the pair.

1. $(7, 3) \xrightarrow{F} 7$
2. $(4, 9) \xrightarrow{F} 4$
3. $(8, 10) \xrightarrow{F}$ ___
4. $(2, 0) \xrightarrow{F}$ ___
5. $(2, 10) \xrightarrow{F}$ ___
6. $(0, 2) \xrightarrow{F}$ ___
7. $(10, 2) \xrightarrow{F}$ ___
8. $(7, 7) \xrightarrow{F}$ ___
9. $(3, 7) \xrightarrow{F}$ ___
10. $(8, 7) \xrightarrow{F}$ ___
11. $(1, 6) \xrightarrow{F}$ ___
12. $(7, 8) \xrightarrow{F}$ ___
13. Is $4 \text{ F } 6 = 6 \text{ F } 4$ true or false?
14. Is $(2 \text{ F } 3) \text{ F } 4 = 2 \text{ F } (3 \text{ F } 4)$ true or false?

II. The G operation gives the *greater* number of the pair.

15. $(3, 5) \xrightarrow{G} 5$
16. $(7, 4) \xrightarrow{G} 7$
17. $(5, 3) \xrightarrow{G}$ ___
18. $(2, 9) \xrightarrow{G}$ ___
19. $(1, 6) \xrightarrow{G}$ ___
20. $(6, 1) \xrightarrow{G}$ ___
21. $(9, 3) \xrightarrow{G}$ ___
22. $(3, 9) \xrightarrow{G}$ ___
23. $(10, 11) \xrightarrow{G}$ ___
24. $(0, 3) \xrightarrow{G}$ ___
25. $(2, 1) \xrightarrow{G}$ ___
26. $(1, 2) \xrightarrow{G}$ ___
27. Is $7 \text{ G } 5 = 5 \text{ G } 7$ true or false?
28. Is $(0 \text{ G } 2) \text{ G } 1 = 0 \text{ G } (2 \text{ G } 1)$ true or false?

III. The Δ operation gives *half the sum* of the pair.

29. $(7, 1) \xrightarrow{\Delta} 4$
30. $(2, 4) \xrightarrow{\Delta}$ ___
31. $(2, 6) \xrightarrow{\Delta} 3$
32. $(6, 2) \xrightarrow{\Delta}$ ___
33. $(7, 3) \xrightarrow{\Delta}$ ___
34. $(3, 7) \xrightarrow{\Delta}$ ___
35. $(2, 2) \xrightarrow{\Delta}$ ___
36. $(2, 0) \xrightarrow{\Delta}$ ___
37. $(0, 2) \xrightarrow{\Delta}$ ___
38. $(1, 1) \xrightarrow{\Delta}$ ___
39. Is $2 \Delta 4 = 4 \Delta 2$ true or false?
40. Is $0 \Delta (2 \Delta 4) = (0 \Delta 2) \Delta 4$ true or false?

OPERATIONS

What is the operation? What are the missing numbers?
Do you always get a whole number?

A.

$(5, 7) \xrightarrow{A} 12$
$(3, 15) \xrightarrow{A} 18$
$(16, 4) \xrightarrow{A} 20$
$(12, 8) \xrightarrow{A} 20$
$(9, 12) \xrightarrow{A}$ ___
$(10, 7) \xrightarrow{A}$ ___
$(13, 13) \xrightarrow{A}$ ___

1. Operation A is _____.
2. The missing numbers are ____, ____, and ____.

B.

$(5, 7) \xrightarrow{B} 5$
$(3, 15) \xrightarrow{B} 3$
$(16, 4) \xrightarrow{B} 16$
$(12, 8) \xrightarrow{B} 12$
$(9, 12) \xrightarrow{B}$ ___
$(10, 7) \xrightarrow{B}$ ___
$(13, 13) \xrightarrow{B}$ ___

3. Operation B is _____.
4. The missing numbers are ____, ____, and ____.

C.

$(5, 7) \xrightarrow{C} 5$
$(15, 15) \xrightarrow{C} 15$
$(16, 4) \xrightarrow{C} 4$
$(12, 8) \xrightarrow{C} 8$
$(9, 12) \xrightarrow{C}$ ___
$(10, 7) \xrightarrow{C}$ ___
$(13, 13) \xrightarrow{C}$ ___

5. Operation C is _____.
6. The missing numbers are ____, ____, and ____.

D.

$(5, 7) \xrightarrow{D} 6$
$(5, 9) \xrightarrow{D} 7$
$(16, 4) \xrightarrow{D} 10$
$(12, 8) \xrightarrow{D} 10$
$(9, 13) \xrightarrow{D}$ ___
$(10, 7) \xrightarrow{D}$ ___
$(13, 13) \xrightarrow{D}$ ___

7. Operation D is _____.
8. The missing numbers are ____, ____, and ____.

9. The set of whole numbers is *closed* under which of these operations?

A; B; C; D.

10. The set of whole numbers is *not closed* under which of these operations?

A; B; C; D.

OPERATIONS

What is the operation? What are the missing numbers?
Do you always get a whole number?

E.

$(4, 7) \xrightarrow{E} 28$
$(9, 2) \xrightarrow{E} 18$
$(5, 6) \xrightarrow{E} 30$
$(0, 4) \xrightarrow{E} 0$
$(5, 1) \xrightarrow{E}$ ___
$(8, 3) \xrightarrow{E}$ ___
$(7, 7) \xrightarrow{E}$ ___

11. Operation E is _____.
12. The missing numbers are ____, ____, and ____.

F.

$(5, 8) \xrightarrow{F} 4$
$(10, 3) \xrightarrow{F} 5$
$(6, 6) \xrightarrow{F} 3$
$(0, 4) \xrightarrow{F} 2$
$(5, 1) \xrightarrow{F}$ ___
$(8, 3) \xrightarrow{F}$ ___
$(7, 7) \xrightarrow{F}$ ___

13. Operation F is _____.
14. The missing numbers are ____, ____, and ____.

G.

$(4, 7) \xrightarrow{G} 3$
$(9, 2) \xrightarrow{G} 1$
$(5, 5) \xrightarrow{G} 4$
$(5, 1) \xrightarrow{G} 0$
$(8, 3) \xrightarrow{G}$ ___
$(0, 4) \xrightarrow{G}$ ___
$(7, 7) \xrightarrow{G}$ ___

15. Operation G is _____.
16. The missing numbers are ____, ____, and ____.

H.

$(4, 7) \xrightarrow{H} 6$
$(9, 2) \xrightarrow{H} 14$
$(5, 5) \xrightarrow{H} 0$
$(5, 1) \xrightarrow{H} 8$
$(8, 3) \xrightarrow{H}$ ___
$(0, 4) \xrightarrow{H}$ ___
$(7, 7) \xrightarrow{H}$ ___

17. Operation H is _____.
18. The missing numbers are ____, ____, and ____.

19. The set of whole numbers *is closed* under which of these operations?

E: F: G: H.

20. The set of whole numbers is *not closed* under which of these operations?

E: F: G: H.

ADDITION

Rename and add.

$45 + 42 = n$ $\quad$ $45 = 40 + 5$

$87 = n$ $\quad$ $42 = 40 + 2$

n is 87 $\quad$ $87 = 80 + 7$

1. $45 + 24 = n$
2. $53 + 32 = a$
3. $67 + 14 = m$
4. $96 + 33 = d$
5. $27 + 85 + 43 = p$
6. $46 + 27 + 31 = g$

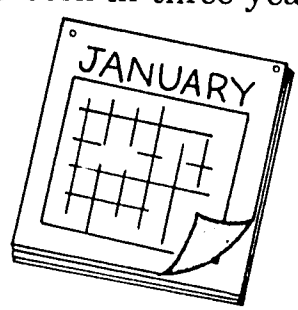
---

7. Haile played football at school for 65 minutes. Then he took 32 minutes to walk home. How many minutes did he take to play football and walk home?

8. Kaman looks after 67 cattle, Mutua looks after 29 cattle, and Juma looks after 85 cattle. How many cattle do they look after altogether?

9. In one town 532 babies were born in 1960, 604 babies in 1961, and 977 babies in 1962. How many babies were born in three years?

10. How many days are there in the first three months of the year, if February has 28 days?



11. The monthly salaries of three men are 72 shillings, 147 shillings, and 665 shillings. Find the total number of shillings paid in one month to the three men.

FIND THE SUMS

Rename and add.

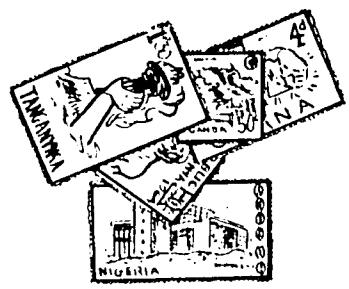
$77 + 36 = n$
$113 = n$
n is 113

$$\begin{array}{rl} 77 = & 70 + 7 \\ 36 = & 30 + 6 \\ \hline & = 100 + 13 \\ & = 100 + 10 + 3 \\ & = 113 \end{array}$$

1. $53 + 16 = c$
2. $68 + 28 = m$
3. $348 + 151 = a$
4. $282 + 509 = n$
5. $256 + 130 + 613 = n$
6. $876 + 235 + 544 = m$

---

7. Kalua collected 59 stamps. His sister collected 74 stamps. How many stamps did they collect together?



8. Find the sum of the weights of two men who each weigh 185 pounds.

9. The town council gave three schools some library books. The first school got 347 books, the second 897 books, and the third 304 books. How many books were given to the three schools?

10. Jumbe wants to buy a book. He has 1 shilling 75 cents. He needs 50 cents more. What is the cost of the book? (100 cents = 1 shilling)

FINDING MISSING NUMBERS

Find the sum.

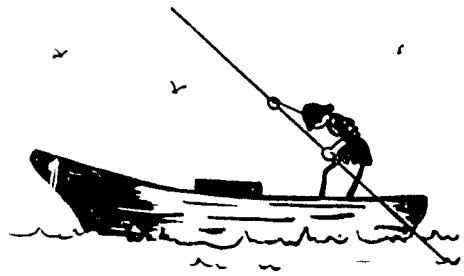
$36 + 57 = d$
$93 = d$
d is 93

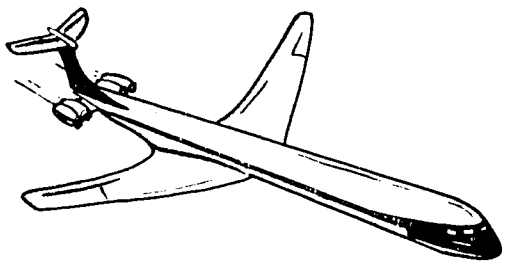
$$\begin{array}{r} 36 \\ 57 \\ \hline 93 \end{array}$$

1. $67 + 84 = m$
2. $134 + 29 = n$
3. $257 + 84 + 489 = m$
4. $3782 + 3665 + 555 = n$
5. $126 + 67 + 1148 = d$
6. $323 + 612 = d$

---

7. One fishing boat carried 687 fish, a second boat carried 490 fish, and a third boat carried 600 fish. Find the total number of fish which were carried by the three fishing boats.





8. In three days an aeroplane flew 3286 miles, 3078 miles, and 5000 miles. How many miles did it fly in the three days?

9. Mary read a book in two days. She read 196 pages the first day and 205 pages the second day. How many pages are in the book?

10. Boys in a boarding school collected old newspapers and magazines. At the end of the collection, House 1 had a pile weighing 546 pounds, House 2 had a pile weighing 875 pounds, and House 3 had a pile weighing 324 pounds. What was the total weight of the newspapers and magazines collected in the three houses?

FIND THE SUMS

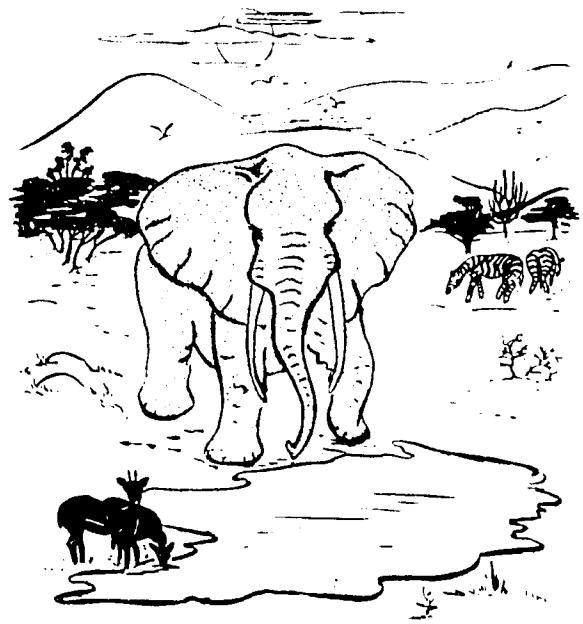
1. 32
   571
   349

2. 1079
   345
   761

3. 2174
   1035
   437
   211

---

4. In Tsavo National Park, Jonah saw 375 elephants, 472 zebras, and 139 gazelles. How many animals did he see altogether?



5. Kola picked 79 coconuts one day, 135 coconuts the second day, and 119 coconuts the third day. How many coconuts did he pick in the three days?

What number makes the sentence true?

6. $35 + m = 174$

7. $349 + 475 = g$

8. $p = 1473 + 279$

9. $129 + n = 245$

10. $t + 74 = 217$

11. $b = 476 + 1297 + 345$

ADDITION

Find the missing numbers.

1.
```
  495
  A7B
  871
```

A is____
B is____

2.
```
  3N5
  492
  86N
```

N is____

3.
```
  78E
  E59
  12E3
```

E is____

4.
```
  763
  49G
  1HG8
```

H is____
G is____

5.
```
  1493
   2F8
  1F71
```

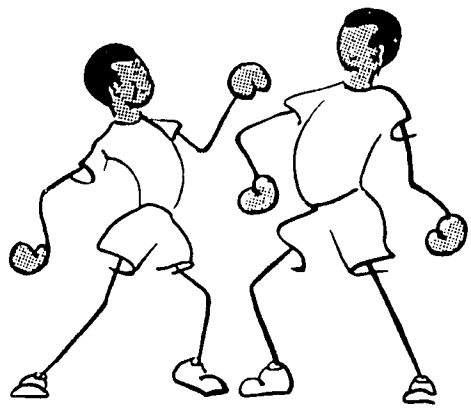
F is____

6.
```
  93K
  4P7
  1R22
```

K is____
P is____
R is____

---

7. Nume weighs 139 pounds, Ikuwa weighs 156 pounds, and Kabaza weighs 147 pounds. How much do the children weigh together?



Find the sums.

8.
```
  1473
   527
   495
```

9.
```
  462
  729
  1317
```

10.
```
  394
  1287
  2729
```

SUBTRACTION

Rename and subtract.

$583 - 256 = t$

$327 = t$

t is 327

$$\begin{array}{r} 583 \\ \underline{256} \\ 327 \end{array}$$

1. $98 - 54 = c$
2. $72 - 37 = s$
3. $676 - 232 = f$
4. $940 - 718 = e$

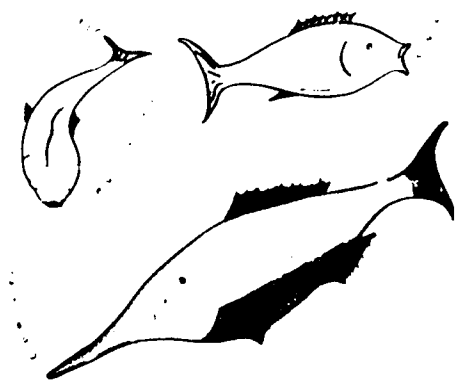
What number makes the sentence true?

5. $6784 = 6127 + t$
6. $460 + n = 8713$

---

7. A builder ordered some doors and windows. The total number of doors and windows ordered was 1538. There were 825 doors ordered. How many windows were ordered?

8. In a fish pond there were 256 fish. Some were silver and some were gold. If 160 were silver, how many were gold?



9. In one school there are 720 children. If 308 are girls, how many are boys?

10. Jere's father wants to buy a car that costs 725 pounds. He has 615 pounds. How many more pounds does he need to buy the car?

SUBTRACTION

1. 1746
   924

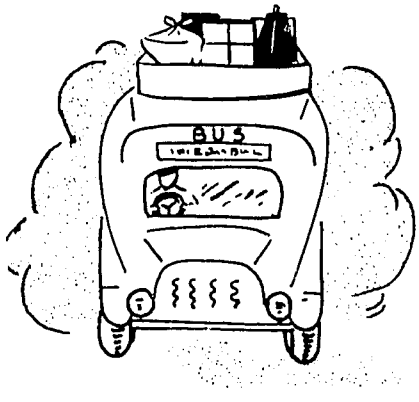
2. 4763
   1295

3. 4931
   2753

---

4. In two days, Jumbe picked 275 mangoes. Swai picked 313 mangoes. How many more mangoes did Swai pick than Jumbe?

5. Jawali went on a long bus ride. The first day he went 239 miles. The second day he went 267 miles. How many more miles did he go the second day than the first?



6. Nakku's father used 1475 bricks to build his house. Sadia's father used 1289 bricks to build his house. How many fewer bricks did Sadia's father use than Nakku's father?

Find the missing addend.

7. $876 + m = 1542$

8. $m + 39 = 472$

9. $3654 + m = 4741$

10. $472 + m = 5645$

SUBTRACTION

Find the missing numbers.

1. 495
   2A8
   21A

   A is ____

2. 5B6
   39B
   1B9

   B is ____

3. 173N
   988
   7N6

   N is ____

4. 1936
   1E59
   EHH

   E is ____
   H is ____

5. M74
   4MM
   475

   M is ____

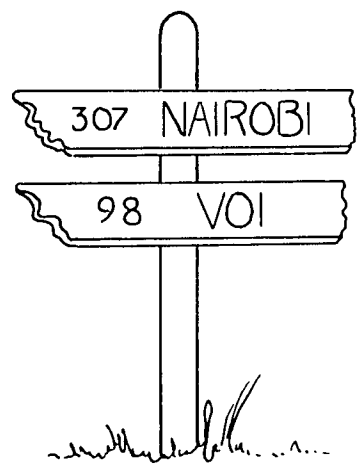
6. 1435
   79K
   KP9

   P is ____
   K is ____

---

7. Azza collected 947 bottle tops. Nina collected 789 bottle tops. How many fewer bottle tops did Nina collect than Azza?

8. The road from Mombasa to Nairobi passes through Voi. It is 98 miles from Mombasa to Voi and 307 miles from Mombasa to Nairobi. What is the distance from Voi to Nairobi along this road?



Subtract.

9. 1756
   947

10. 1947
    758

11. 1452
    891

COMPARING NUMBERS

1. In Zambia, the units of money are shillings and pence. There are 12 pence (d.) to 1 shilling (s.) Shirley wishes to buy articles costing 3s. 5d., 4s. 8d., and 8s. 7d. She has 16s. 6d. Does she have enough money to buy all three articles?

Which symbol, <, >, or =, makes each sentence true?

2. 549 + 637 _ _ _ 473 + 395 + 319
3. (472 − 361) + 25 _ _ _ 1033 − 897
4. 46 + (379 + 75) _ _ _ (45 + 380) + 75
5. 394 + (271 − 37) _ _ _ (271 + 394) − 37
6. 642 + 642 + 642 _ _ _ 962 + 962
7. 3421 − 1308 _ _ _ 704 + 704 + 704

---

8. Tamu travels from one city to a second city in three days. The first day he goes 214 miles, the second day 179 miles and the third day 249 miles. Mambue makes the trip between the two cities in two days. He goes a different way. He travels 317 miles the first day and 329 the second day. Which one travels more miles than the other?

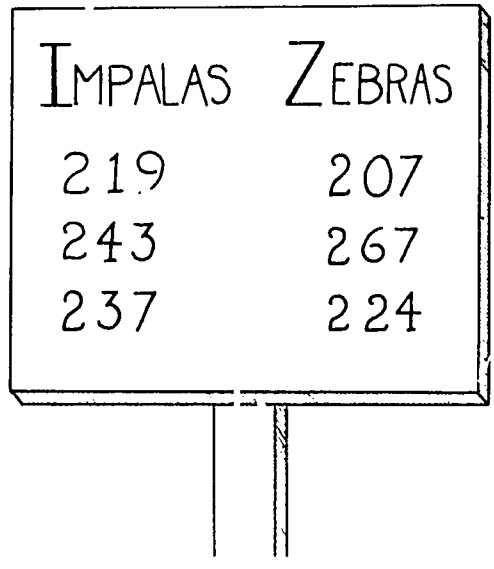
COMPARING NUMBERS

Which symbol, <, >, or =, makes each sentence true?

1. (1726 − 454) − 371 _ _ _ 450 + 450
2. 1726 − (454 − 371) _ _ _ 823 + 823
3. (1726 + 454) − 374 _ _ _ 602 + 602 + 602

---

4. Two cricket teams are called the Impalas and the Zebras. They played three games. The Impalas won the first game 219 to 207. The Zebras won the second game 267 to 243. The Impalas won the third game 237 to 224. Which team scored the most runs?



5. Kwami measured two edges of a rectangular table top with a yardstick. He said the two edges were 2 yards, 1 foot, 5 inches and 1 yard, 2 feet, 8 inches long. Yaa said the two edges together are 13 feet, 3 inches. Is Yaa's answer correct?

Which symbol, <, >, or =, makes each sentence true?

6. 1729 + (476 + 1571) _ _ _ 1728 + (474 + 1575)
7. 1729 + (476 − 439) _ _ _ 476 + (1729 − 439)
8. 6432 − 4719 _ _ _ 856 + 856

FIND THE NUMBER

Use the commutative property. Complete each table.

1.

+	0	5	13	34	233	987
0	0	5	13		233	
5		10	18		238	992
13			26	47	246	
34	34	39		68		1021
233				267	466	1220
987	987		1000			1974

2.

+	76	134	
76	152	210	362
134		268	

+ ↓ ; → +

3.

+	139	247	
139		386	664
247			
		880	

+ ↓ ; → +

*4. (Challenge Problem)

Find the sum n: $1 + 2 + 3 + 4 + 5 + 6 = n$

Fatu has a quick way of finding n.

Fatu's way: $1 + 2 + 3 + 4 + 5 + 6 = n$

$(1 + 6) + (2 + 5) + (3 + 4) = n$

$3 \times 7 = n$

n is 21.

Which properties are used in Fatu's way?

*5. Use Fatu's way to find the sum m:

$2 + 5 + 8 + 11 + 14 + 17 + 20 + 23 = m$

$4 \times$ _____ $= m$

m is _____.

FIND THE NUMBER

Use the associative property.

The teacher asked, "Who can find the sum of 732 and 368?" Wakabi said, "I have an easy way to do it". See what he wrote on the blackboard.

$$\begin{aligned} 782 + 368 &= 782 + (18 + 350) \\ &= (782 + 18) + 350 \\ &= 800 + 350 \\ &= 1150 \end{aligned}$$

Which property did Wakabi use?

Use Wakabi's method to find the sums. First fill in the missing numbers.

1. $$\begin{aligned} 98 + 14 &= 98 + (___ + 12) \\ &= (98 + ___) + 12 \\ &= 100 + ___ \\ &= ___ \end{aligned}$$

2. $$\begin{aligned} 375 + 49 &= 375 + (25 + ___) \\ &= (375 + 25) + ___ \\ &= 400 + ___ \\ &= ___ \end{aligned}$$

3. $$\begin{aligned} 942 + 178 &= 942 + (54 + ___) \\ &= (942 + 54) + ___ \\ &= 1000 + ___ \\ &= ___ \end{aligned}$$

4. $$\begin{aligned} 1356 + 474 &= 1356 + (44 + ___) \\ &= (1356 + 44) + ___ \\ &= 1400 + ___ \\ &= ___ \end{aligned}$$

Wakabi could also find missing addends by his method. See what he wrote on the blackboard.

$$\begin{aligned} 44 + n &= 142 \\ (42 + 2) + n &= 42 + 100 \\ 42 + (2 + n) &= 42 + 100 \end{aligned}$$

Wakabi says, "$2 + n = 100$. So n is 98".

Use Wakabi's method to find the missing addends.

5. $$\begin{aligned} 79 + n &= 175 \\ 75 + (4 + n) &= 75 + 100 \\ 4 + n &\text{ is } ___ \\ n &\text{ is } ___ . \end{aligned}$$

6. $$\begin{aligned} 176 + n &= 373 \\ ___ + (3 + n) &= 373 \\ 3 + n &\text{ is } ___ \\ n &\text{ is } ___ . \end{aligned}$$

FINDING SUMS

What is n?

1. $n = 2268 + 2376 + 3013$
2. $4681 + 972 + 5135 = n$
3. $6610 + 3462 + 2108 = n$
4. $n = 3445 + 1009 + 7659$
5. $n = 833 + 7142 + 90 + 5134$
6. $8465 + 3276 + 35 + 176 = n$
7. $494 + 903 + 1363 = n$
8. $n = 4116 + 7002 + 876$

Find the sum.

9.
```
 1234
 5678
 2016
 1002
```

10.
```
  932
 1063
 4300
 1762
```

11.
```
 7914
 3008
 5161
 2007
```

12.
```
 4176
 5283
 9761
```

---

13. Abu's father bought four houses. The first house cost him 3352 pounds. The second cost him 3162 pounds, the third cost him 2876 pounds, and the fourth cost him 4708 pounds. What did the four houses cost altogether?

14. In a four-day sports meeting the daily attendances were: 2013, 3713, 4500, and 5400. How many people attended on the four days?

ADDITION

1. A train carries four trucks of coconuts. The coconuts in the first truck weigh 3422 pounds, those in the second truck weigh 3346 pounds, those in the third truck weigh 4015 pounds, and those in the fourth truck weigh 4203 pounds. What is the weight of the coconuts in the four trucks?

2. On Friday Juma slept for 623 minutes, on Saturday he slept for 613 minutes, and on Sunday he slept for 695 minutes. Kamau slept for 509 minutes on Friday, for 703 minutes on Saturday, and for 725 minutes on Sunday. Who slept longer for these three days, Juma or Kamau?

Find the sum.

3.
```
  14,000
   8,060
  22,009
  19,110
  ------
```

4.
```
 806,103
  80,700
   9,062
   3,104
 -------
```

5.
```
  26,004
  13,462
  15,100
  19,711
  ------
```

Find the code.

6.
```
  400,P76
  N23,814
  200,001
   34,203
  -------
  858,194
```

P is _____

N is _____

7.
```
  176,3K2
  300,164
   1T,023
  100,F71
  -------
  589,820
```

K is _____

T is _____

F is _____

8.
```
   86,314
   2W,423
   10,000
   Y2 86X
  -------
  129,601
```

W is _____

X is _____

Y is _____

WHAT NUMBER MAKES THE SENTENCE TRUE?

1. $a = 11284 + 9763 + 7188 + 987 + 765.$ a is _____

2. $15346 + 22134 + 29124 + 7162 = p.$ p is _____

3. $15632 + 189 + 4163 + 98 + 7246 = q.$ q is _____

4. $x = 18007 + 970 + 4638 + 75.$ x is _____

5. $w = 817 + 72 + 1416 + 42100 + 716.$ w is _____

6. $736 + 9417 + 13778 + 130 = k.$ k is _____

7. $23417 + 14620 + 9462 + 8513 + 7812 = s.$ s is _____

8. $b = 32127 + 9762 + 15632 + 4482 + 7622.$ b is _____

9. $t = 430 + 8146 + 2478 + 74614 + 802.$ t is _____

10. $15633 + 8449 + 20086 + 7120 + 11436 = r.$ r is _____

11. $d = 314002 + 116204 + 98416 + 72135.$ d is _____

12. $900000 + 620000 + 876469 + 130019 + 78325 = z.$ z is _____

ADDITION

1. Ade decided to walk from Lagos to Abeokuta. He took five days. On the first day he walked 23,136 yards, on the second day he walked 20,864 yards, on the third day he walked 19,893 yards, on the fourth day he walked 20,106 yards, and on the fifth day he walked 21,242 yards. He walked d yards in all. What is d?

2. Five friends visited a car shop. The first bought a new car for 19,260 shillings, the second bought one for 16,486 shillings, the third bought a secondhand car for 8,243 shillings, the fourth bought one for 7,004 shillings, and the fifth bought a new car for 12,415 shillings. The five cars cost h shillings. What is h?

Find the sums.

3.
```
 2389
 4751
 1604
 8237
 9062
```

4.
```
 14623
 21587
 46790
 30014
  8407
```

5.
```
 84762
   976
  1284
 18342
  2786
   172
```

ADDITION

What are the missing numerals?

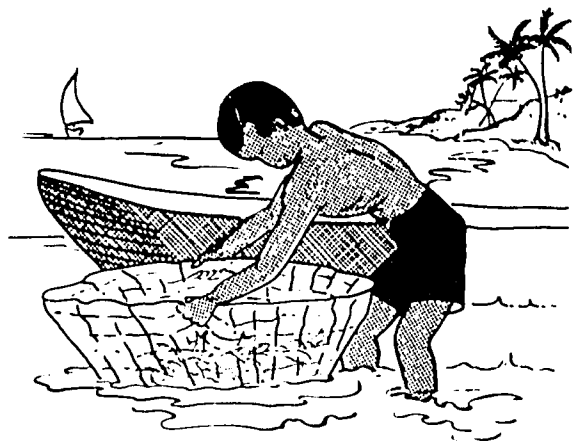
1.
```
  23641
  78512
  1□300
   6709
  102□6
 ------
 133288
```

2.
```
  □601
  28340
  21609
  13142
   9277
 ------
  □6□□□
```

3.
```
  15128
  30□41
  34100
  16092
   279□
 ------
  □□6□8
```

---

4. Hawa's father is a fisherman. In May last year he caught 7246 fish. In June he caught 5876 fish. In July he caught 8314 fish. In August he caught 4713 fish, and in September he caught 6492 fish. He caught *f* fish in these five months. What is *f*?

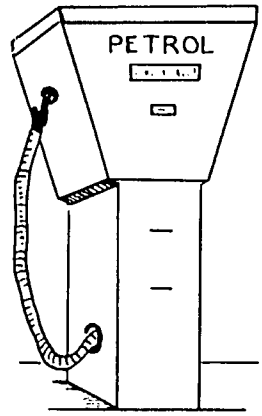


5. Tommy's village is a large one. They have four water tanks. The first tank holds 15,200 gallons, the second holds 22,147 gallons, the third holds 35,100 gallons, and the fourth holds 43,897 gallons. The four tanks together hold *w* gallons of water. What is *w*?

6. In one year a local council spent the following: 80,340 shillings on school buildings; 17,146 shillings on roads; 150,016 shillings on hospitals; 18,136 shillings on water; and 217,384 shillings on salaries. Find how many shillings the council spent in all.

FIND THE SUM

1. In the first quarter of 1963 the people in Kenya used 8,673,019 gallons of petrol. In the second quarter they used 8,635,106 gallons; in the third quarter they used 8,937,070 gallons. How many gallons of petrol did they use in the first three quarters of 1963?



2. Nume's father has three cotton farms. In the first farm there are 43,025 plants, in the second there are 38,176 plants, and in the third there are 29,733 plants. Ikuwa's father has four cotton farms. In the first there are 28,176 plants, in the second there are 30,207 plants, in the third there are 17,172 plants, and in the fourth there are 9821 plants. How many plants has Nume's father? How many plants has Ikuwa's father? Who has the greater number?

Find the sum.

3.
```
 163,418
 208,176
  59,814
 101,309
  78,162
```

4.
```
 389,215
 172,008
 139,762
 496,497
 100,112
```

5.
```
  17,314
  22,876
  13,103
  20,011
  14,122
  10,001
```

SUBTRACTION

1. 4586
   2657

2. 8622
   1346

3. 5682
   473

4. 4929
   2859

5. 10340
   8156

6. 3521
   3499

7. 9090
   1666

8. 10453
   5561

9. 2651
   2599

10. 7486
    4599

11. 5000 − 2999 = (5000 − 3000) + 1 = _____

12. 5000 − 3001 = (5000 − 3000) − 1 = _____

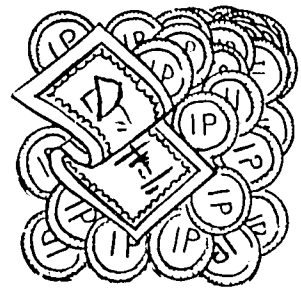
13. 5000 − 3004 = (5000 − 3000) − 4 = _____

14. 5000 − 2499 = (5000 − 2500) + 1 = _____

15. 5000 − 2995 = (5000 − 3000) + 5 = _____

FIND THE MISSING ADDEND

1. This is a picture of money used in Ghana. One is called a *cedi*. The other is called a *pesewa*. A cedi equals 100 pesewas.



Matilda and her mother went to the shop. They bought one thing for 87 pesewas and something else for 45 pesewas. How much did the two things cost?

Matilda's mother gave the shopkeeper 2 cedi notes. If each cedi equals 100 pesewas, what change did the shopkeeper give her?

2. It costs a pesewa to ride across the river on the ferry. On Monday, the ferry took 2652 people. On Sunday the ferry took 3581 people. How many more pesewas were collected on Sunday than on Monday?

Subtract.

3. $\begin{array}{r} 6205 \\ \underline{1148} \end{array}$

4. $\begin{array}{r} 5970 \\ \underline{2483} \end{array}$

5. $\begin{array}{r} 9200 \\ \underline{566} \end{array}$

6. $\begin{array}{r} 6431 \\ \underline{1615} \end{array}$

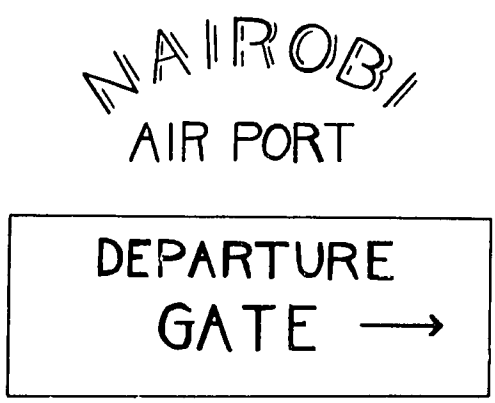
7. $\begin{array}{r} 7209 \\ \underline{6364} \end{array}$

8. $\begin{array}{r} 4081 \\ \underline{3927} \end{array}$

SUBTRACT

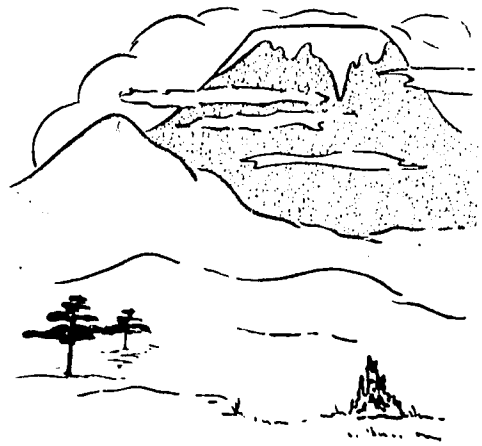
1.	46,598 21,472	2.	16,534 10,417	3.	55,942 31,778
4.	95,659 92,377	5.	20,981 18,365	6.	40,507 12,183
7.	81,666 25,477	8.	17,294 6,815	9.	16,800 4,005
10.	15,000 12,001	11.	40,000 39,999	12.	20,000 15,001
13.	59,670 22,815	14.	18,222 4,333	15.	21,444 10,778

16. In 1960, 91,700 passengers left the Nairobi Airport in aeroplanes. In 1963, the number was 140,900. Did more passengers leave Nairobi Airport in planes in 1960 or 1963? How many more?



NUMBERS FROM EAST AFRICA

1. In East Africa there are many high mountains. Mount Kenya is 17,058 feet high. Kilimanjaro is 19,340 feet high. Mount Elgon is 14,178 feet high. Of these three mountains, which is the highest? Which is next? How much higher is Kilimanjaro than Mount Elgon? Which is higher, Mount Kenya or Kilimanjaro? How much higher?

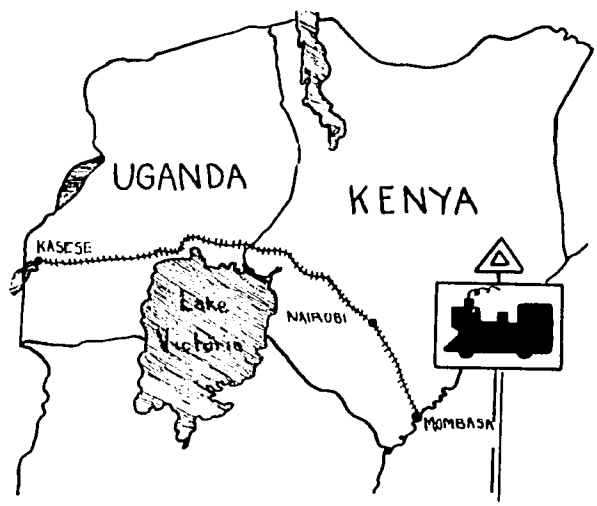


2. The two largest cities in Kenya are Mombasa and Nairobi. In 1962 the population of Nairobi was about 315,000. The population of Mombasa was about 179,000. Which city is the larger? Write a mathematical sentence to show this.

   How much larger is the largest city in Kenya than the second largest?

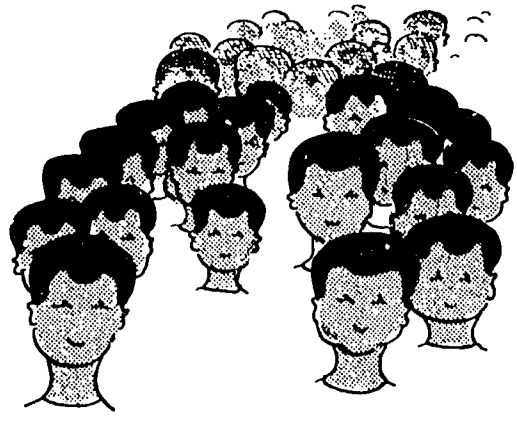
3. The distance of the railroad from Mombasa in Kenya to Kasese in Uganda is 1036 miles. The train goes through Nairobi. If it is 307 miles by train from Mombasa to Nairobi, how much farther does the train go from Nairobi to Kasese?

4. Kalambo Falls are 740 feet high. Murchison Falls are 160 feet high. Thomson's Falls are 243 feet high. Which is the highest? How much higher are Kalambo Falls than Thomson's Falls? How much higher are Kalambo Falls than Murchison Falls?



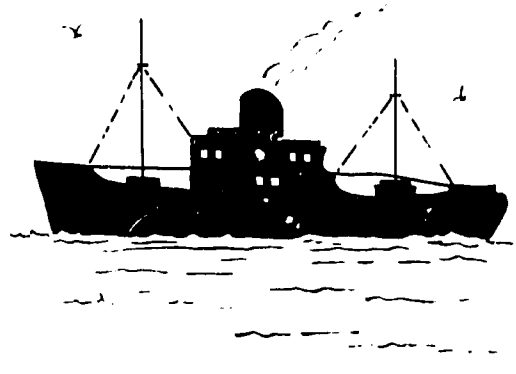
NUMBERS FROM WEST AFRICA

1. In 1950, there were almost 1,000,000 children enrolled in primary schools in Nigeria. Eleven years later, in 1961, the number was over 2,900,000. About how many more children were enrolled in primary schools in Nigeria in 1961 than in 1950?



2. In Sierra Leone there are iron mines. In 1960, 1,530,453 tons of iron ore were sold. In 1963, 1,953,651 tons of iron ore were sold. How many more tons were sold in 1963 than in 1960?

3. Ghana grows a large share of the world's cocoa. In 1964, about 381,506 tons of cocoa beans were sent to other parts of the world. In the month of December, 21,930 tons of the total were sent. How many tons were sent out during the other months?



4. Nigeria ships palm oil to other parts of the world. In 1963, 63,561 tons were shipped. In 1964, 69,539 tons of palm oil were shipped. How much more palm oil was shipped in 1964 than in 1963?

ADD AND SUBTRACT

1. Okeke's family wants to buy a new house. The type of house they want costs 2560 pounds. Okeke's father has 1750 pounds in the bank. This year he plans to save 245 pounds more for the house. How many pounds more will the family need to buy the house?

2. Add:

   4,320
   8,289

3. Add:

   675
   132
   316

4. Subtract:

   72,345
   11,860

5. Add:

   14,295
   17,234

6. Subtract:

   4,306
   1,427

7. Subtract:

   65,810
   7,257

8. $26{,}000 - 14{,}000 = a$ a is _____

9. $42{,}000 + b = 84{,}000$ b is _____

10. $10{,}000 - c = 30{,}000$ c is _____

ESTIMATE THE SUM

1. $420 + 373 = n$. n is about _____

2. $5442 + 7025 = p$. p is about _____

3. $918 + 427 = r$. r is about _____

4. $1208 + h = 3142$. h is about _____

5. $8274 + 12{,}340 = d$. d is about _____

6. $926 - 419 = b$. b is about _____

7. $82{,}420 + a = 97{,}026$. a is about _____

8. $935 + 2641 = h$ h is about _____

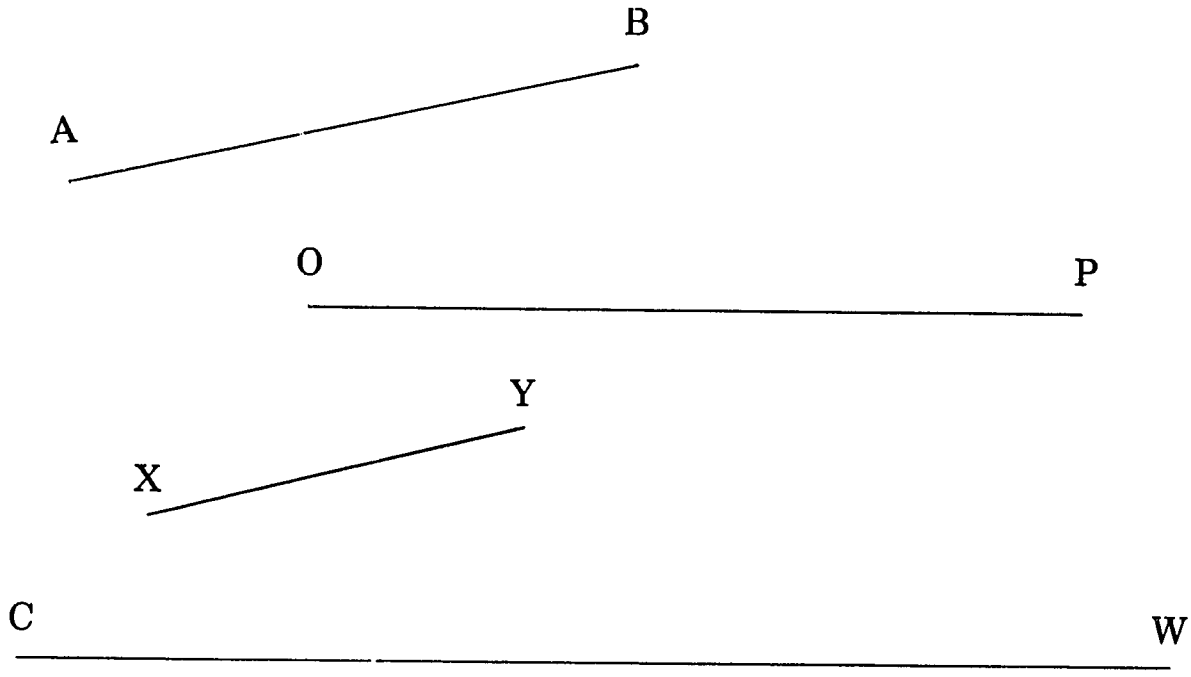
9. $2756 + n = 11{,}762$. n is about _____

10. $6342 + 18{,}272 = p$. p is about _____

11. The population of country A is 34,265,320 and of country B is 14,026,510. What is an estimate of the sum of the populations of A and B?

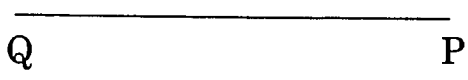
LENGTH OF LINE SEGMENTS

1. Find the lengths of the line segments. Use an inch unit.

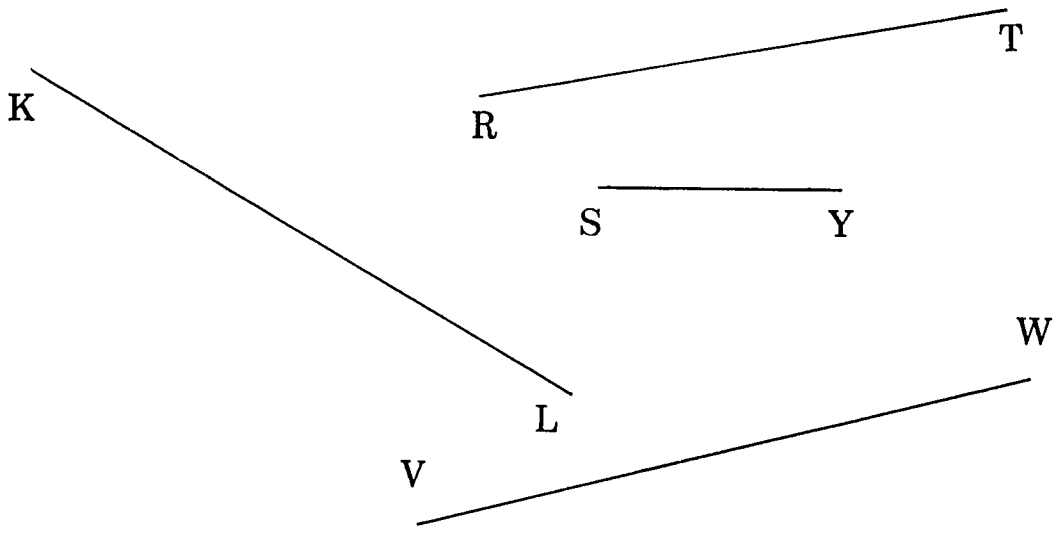


2. Find the lengths of the line segments. Use an inch unit.

Example:

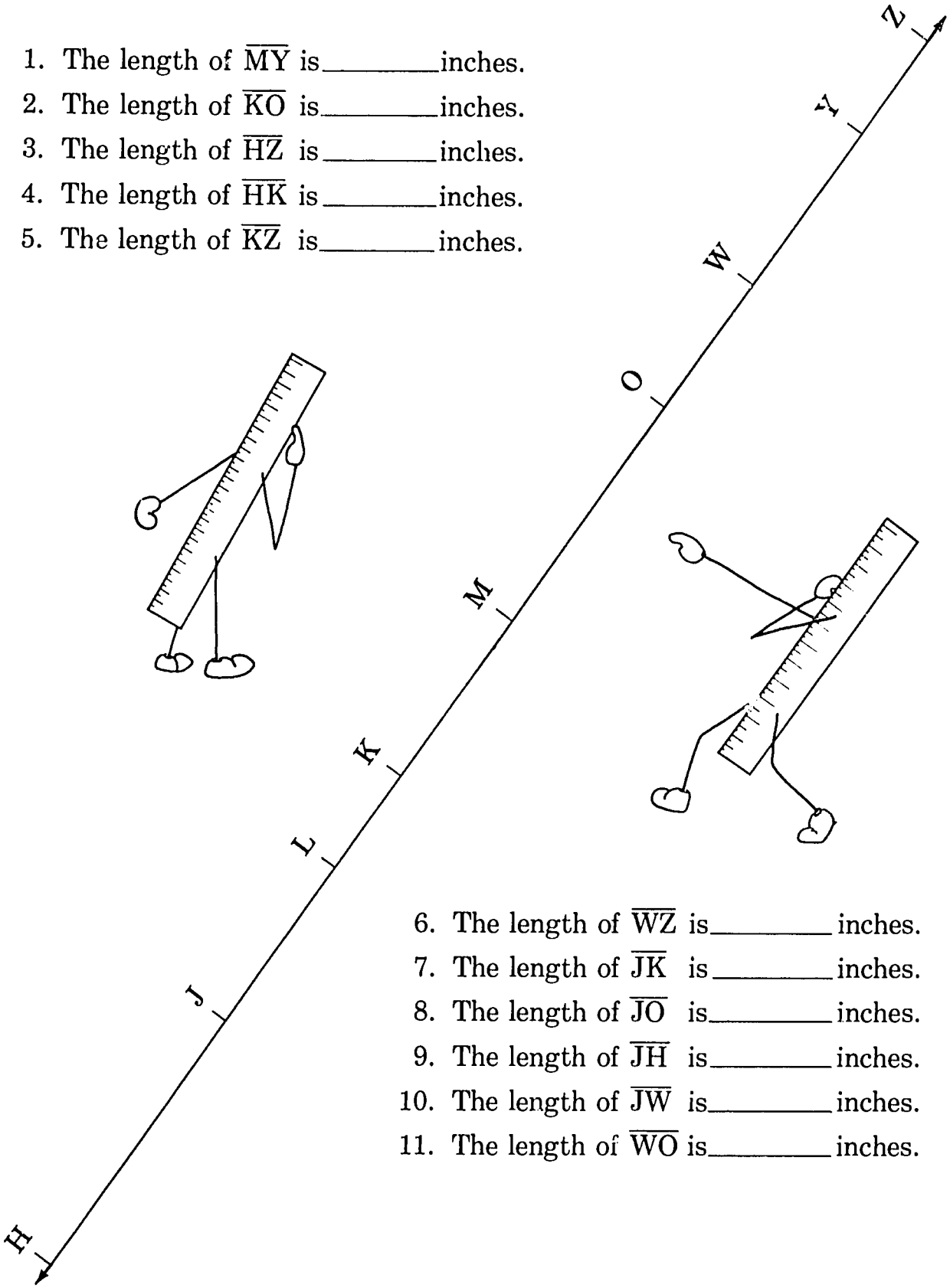


$\overline{QP}$ is longer than 2 inches and shorter than 3 inches.



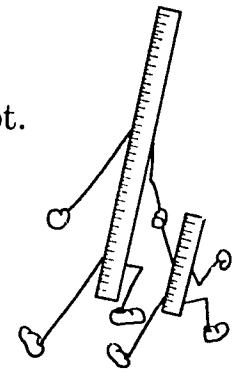
THE MEASUREMENT OF LINE SEGMENTS

1. The length of $\overline{MY}$ is_____inches.
2. The length of $\overline{KO}$ is_____inches.
3. The length of $\overline{HZ}$ is_____inches.
4. The length of $\overline{HK}$ is_____inches.
5. The length of $\overline{KZ}$ is_____inches.



6. The length of $\overline{WZ}$ is_____inches.
7. The length of $\overline{JK}$ is_____inches.
8. The length of $\overline{JO}$ is_____inches.
9. The length of $\overline{JH}$ is_____inches.
10. The length of $\overline{JW}$ is_____inches.
11. The length of $\overline{WO}$ is_____inches.

CHANGING UNITS



Examples:

(a) 7 feet = 2 yards and 1 foot.

(b) 1 yard and 1 foot = 4 feet.

(c) 2 feet and 6 inches = 30 inches.

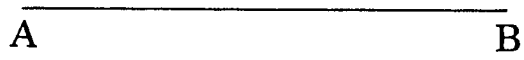
(d) 49 inches = 4 feet and 1 inch.

1. 9 feet = _____ yards and _____ feet.
2. 4 yards and 1 foot = _____ feet.
3. 2 feet = _____ inches.
4. 49 inches = _____ feet and _____ inches.
5. 16 feet = _____ yards and _____ feet.
6. 5 yards = _____ feet.
7. 1 foot and 7 inches = _____ inches.
8. 65 inches = _____ feet and _____ inches.
9. 31 feet = _____ yards and _____ feet.
10. 9 yards and 1 foot = _____ feet.
11. 2 feet and 9 inches = _____ inches.
12. 100 inches = _____ feet and _____ inches.
13. 49 feet = _____ yards and _____ feet.
14. 11 yards = _____ feet.
15. 3 miles = _____ yards.
16. 39 inches = _____ feet and _____ inches.
17. 65 feet = _____ yards and _____ feet.
18. 7 yards = _____ feet.
19. 4 feet and 6 inches = _____ inches.
20. 75 inches = _____ feet and _____ inches.
21. 54 feet = _____ yards and _____ feet.
22. 8 yards and 2 feet = _____ feet.
23. 2 feet and 8 inches = _____ inches.
24. 52 inches = _____ feet and _____ inches.

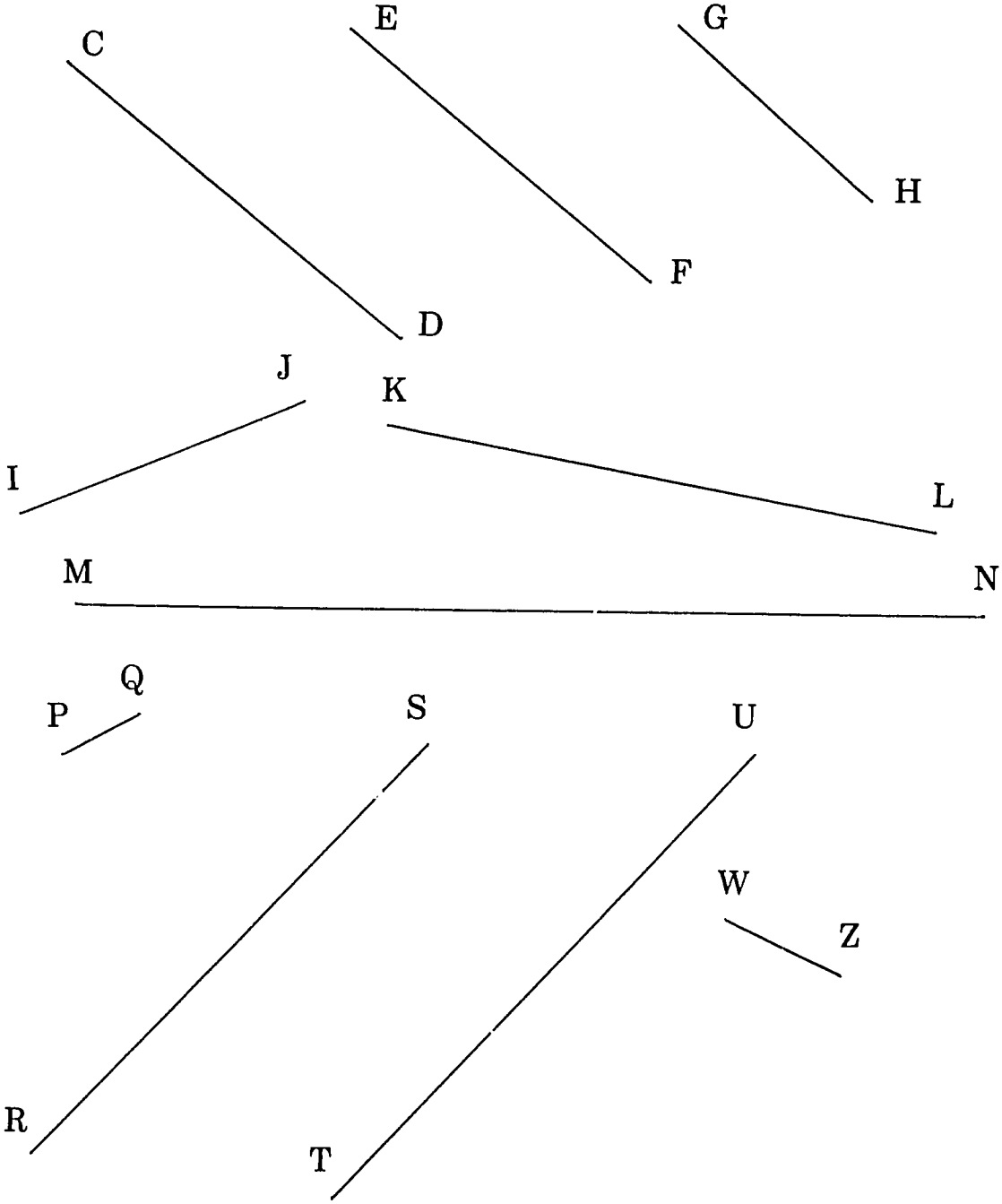
LENGTHS OF LINE SEGMENTS

Find the lengths of the line segments. Use inches and half-inches or inches and quarter-inches.

Example:

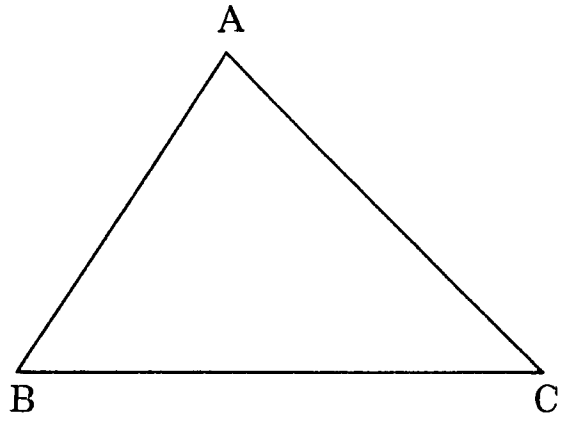


The length of $\overline{AB}$ is $2\frac{1}{2}$ inches.

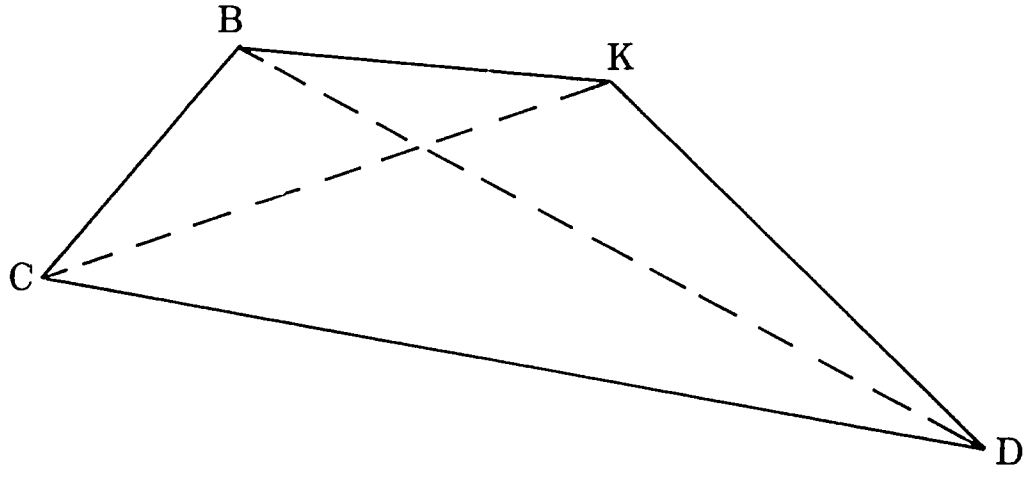


LENGTHS OF LINE SEGMENTS

Measure the line segments in these figures:

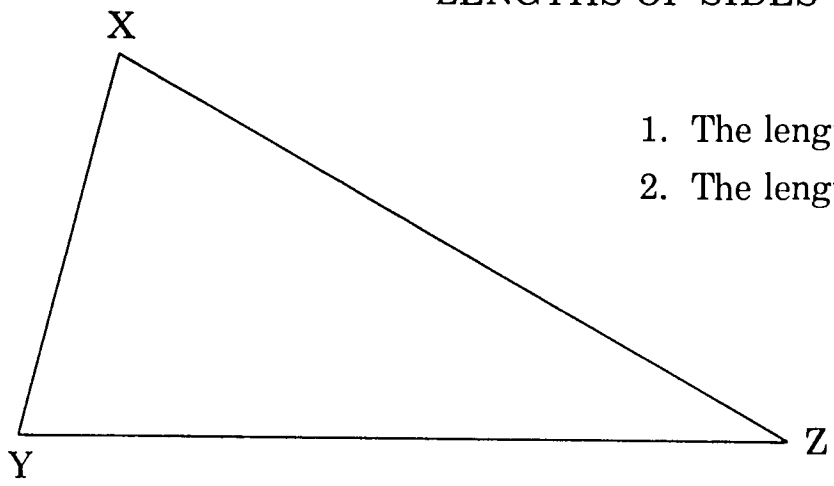


1. The length of $\overline{AB}$ is_____ cm.
2. The length of $\overline{BC}$ is_____ cm.
3. The length of $\overline{AC}$ is_____cm.



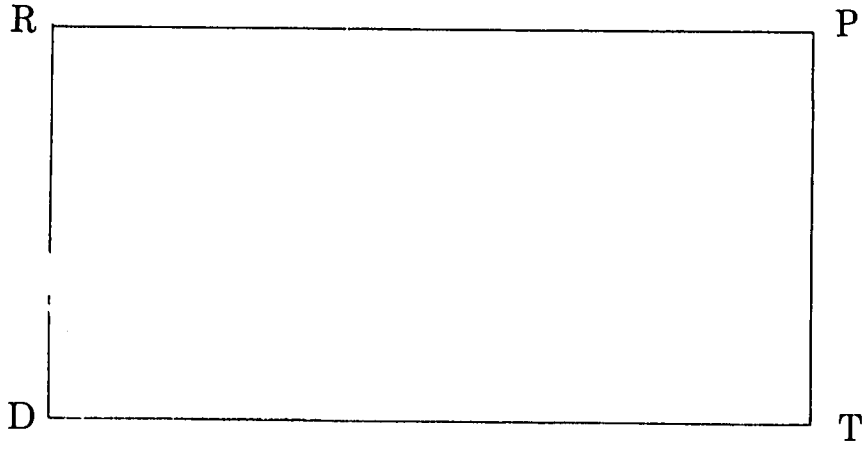
4. The length of $\overline{KD}$ is_____cm.
5. The length of $\overline{BC}$ is_____cm.
6. Line segment _____ is 13 cm. long.
7. Line segment_____ is 5 cm. long.
8. The length of the line segment from vertex K to vertex C is_____ cm.
9. The length of the line segment from vertex B to vertex D is between _____ cm. and _____cm.
10. What is the length of line segment $\overline{CD}$ in inches?

LENGTHS OF SIDES



1. The length of $\overline{XZ}$ is _____ cm.
2. The length of $\overline{XZ}$ is _____ in.

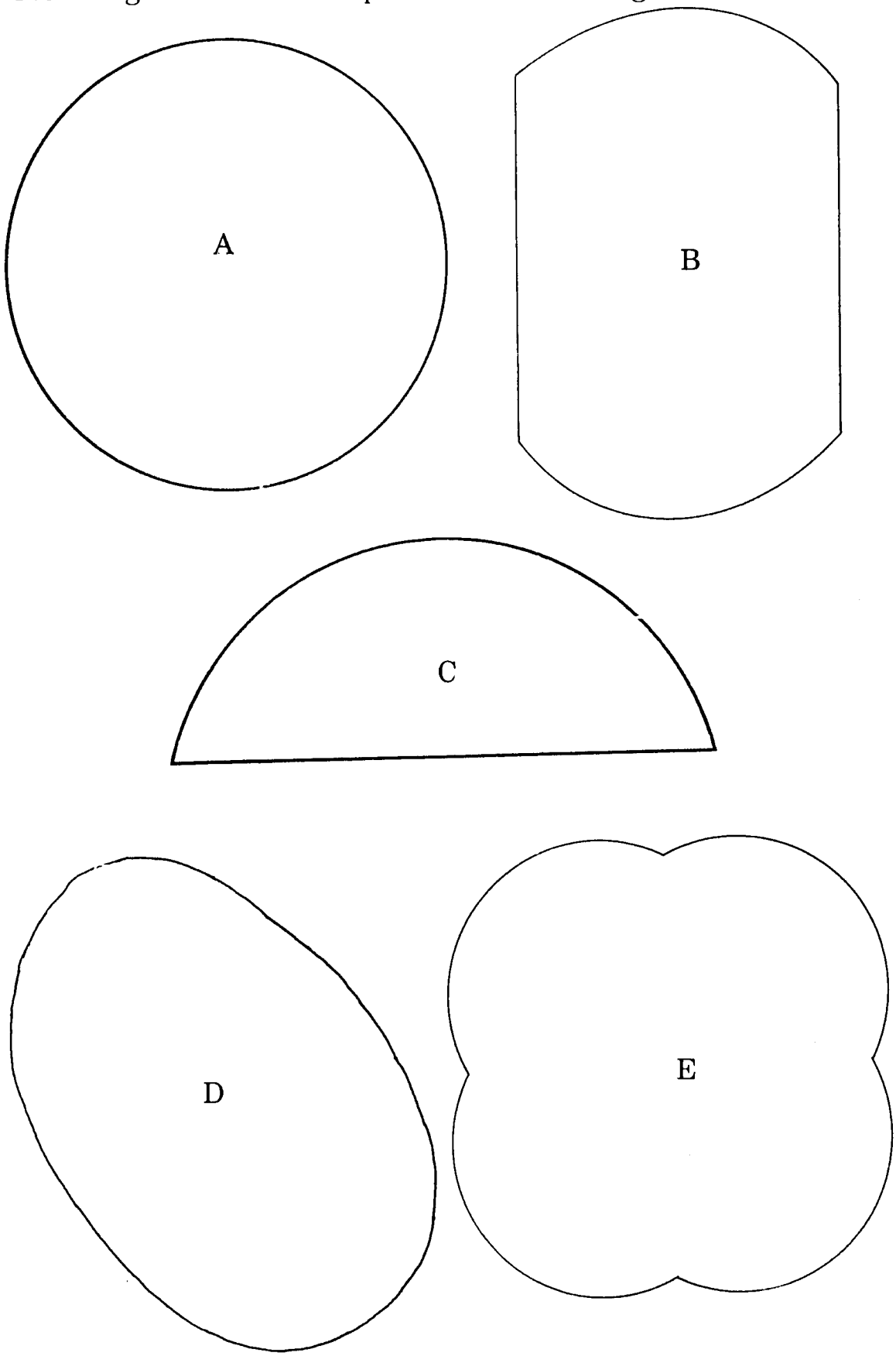
3. The length of $\overline{XY}$ is _____ cm.
4. The length of $\overline{XY}$ is _____ in.
5. The length of $\overline{YZ}$ is _____ cm.
6. The length of $\overline{YZ}$ is _____ in.
7. The perimeter of triangle XYZ is _____ cm.
8. The perimeter of triangle XYZ is _____ in.



9. The length of $\overline{DT}$ is _____ cm.
10. The length of $\overline{DT}$ is _____ in.
11. The length of $\overline{RP}$ is _____ cm.
12. The length of $\overline{RP}$ is _____ in.
13. The length of $\overline{RD}$ is _____ cm.
14. The length of $\overline{RD}$ is _____ in.
15. The length of $\overline{PT}$ is _____ cm.
16. The length of $\overline{PT}$ is _____ in.
17. The perimeter of the figure is _____ cm.
18. The perimeter of the figure is _____ in.

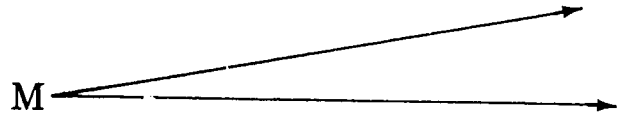
PERIMETERS

Use strings to measure the perimeters of these figures in centimetres.

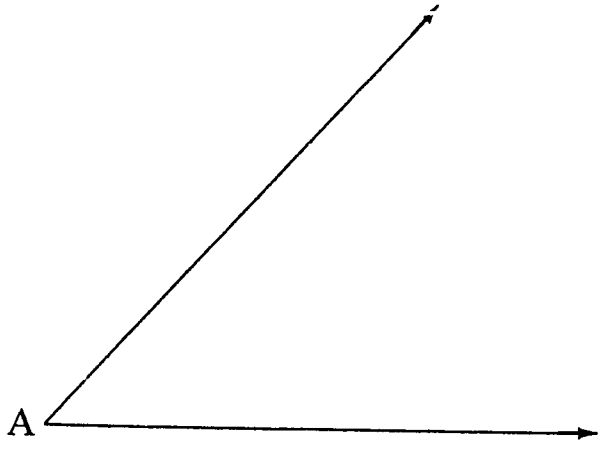


ANGLE MEASURE

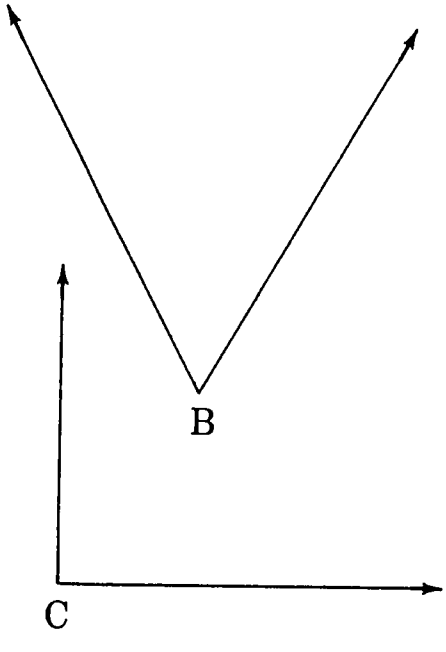
Trace angle M on a paper and cut along the traced angle.



Use angle M as a unit and measure these angles.

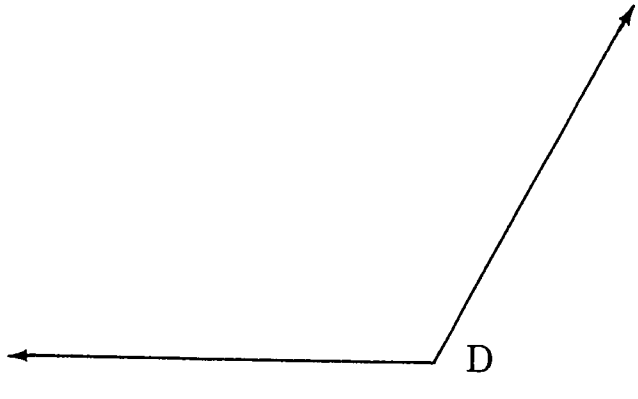


1. The measure of angle A is greater than _____ and less than _____.



2. The measure of angle B is greater than _____ and less than _____.

3. The measure of angle C is _____.



4. The measure of angle D is greater than _____ and less than _____.

MULTIPLICATION CHARTS

Fill in the squares without multiplying.

1.

×	1	4	6	8	9
1	1	4	6	8	9
4		16	24	32	36
6			36	48	54
8				64	72
9					81

2.

×	1	10	15	20	32
1	1		15		32
10	10	100		200	
15		150	225		480
20	20		300	400	
32		320		640	1024

MULTIPLICATION CHART

Complete each chart.

1)

×	3	7	10
5	15	35	50
9			
14			

↓ +

→ +

$5 \times (3 + 7) =$ _____

$9 \times (3 + 7) =$ _____

$(5 \times 7) + (3 \times 7) =$ _____

2)

×	6	8	
4	24		
7	42		
	66		154

↓ +

→ +

$(4 + 7) \times 6 =$ _____

$(4 + 7) \times 8 =$ _____

$(4 + 7) \times (6 + 8) =$ _____

3)

×	30	5	
40			
9	270	45	315

↓ +

→ +

$40 \times (30 + 5) =$ _____

$9 \times (30 + 5) =$ _____

$(40 + 9) \times (30 + 5) =$ _____

4)

×	50	7	
80			
6			

↓ +

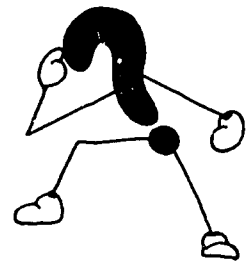
→ +

$(80 + 6) \times 50 =$ _____

$(80 + 6) \times 7 =$ _____

$(80 + 6) \times (50 + 7) =$ _____

MULTIPLICATION



Find what number makes the sentence true.

1. $25 \times 10 = a$
2. $13 \times b = 130$
3. $f \times 10 = 760$
4. $8 \times 40 = p$
5. $9 \times d = 450$
6. $h \times 60 = 540$
7. $70 \times 80 = k$
8. $m \times 50 = 3500$
9. $30 \times i = 1200$
10. $80 \times 35 = z$
11. $13 \times 90 = u$
12. $65 \times 30 = v$

13. Kanu bought 9 boxes of pins. Each box contains 50 pins. How many pins did Kanu buy in all?

14. Nandege was given a skipping rope 30 feet long. If 1 foot is 12 inches long, how many inches of rope was she given?

15. Nina's mother bought 15 boxes of ginger ale for a party. There are 24 bottles in each box. How many bottles of ginger ale did she buy?

16. In Koso's city there are 40 Class I's. There are 30 pupils in each of these classes. How many pupils are in all the Class I's in Koso's city?

PRODUCTS

Find the missing number.

1. $6 \times 23 = a$
2. $b = 11 \times 46$
3. $c = 9 \times 85$
4. $12 \times 53 = d$
5. $60 \times 35 = p$
6. $q = 73 \times 7$

Find the products.

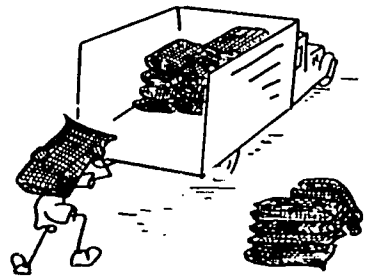
7. $\begin{array}{r} 87 \\ \underline{14} \end{array}$
8. $\begin{array}{r} 96 \\ \underline{24} \end{array}$
9. $\begin{array}{r} 84 \\ \underline{45} \end{array}$
10. $\begin{array}{r} 76 \\ \underline{63} \end{array}$
11. $\begin{array}{r} 39 \\ \underline{74} \end{array}$
12. $\begin{array}{r} 28 \\ \underline{94} \end{array}$
13. $\begin{array}{r} 146 \\ \underline{24} \end{array}$
14. $\begin{array}{r} 234 \\ \underline{14} \end{array}$
15. $\begin{array}{r} 107 \\ \underline{27} \end{array}$

Make each sentence true with >, or <, or =.

16. 48×70 _ _ _ 75×48
17. 60×30 _ _ _ 40×50
18. $(300 + 24) \times 11$ _ _ _ $(300 \times 11) + (24 \times 11)$
19. 67×32 _ _ _ 68×34
20. 240×9 _ _ _ 21×60
21. 134×70 _ _ _ 84×96

STORY PROBLEMS

1. Kiyao found the trees in a coconut farm in 38 rows with 45 trees in each row. How many trees are there in the farm?



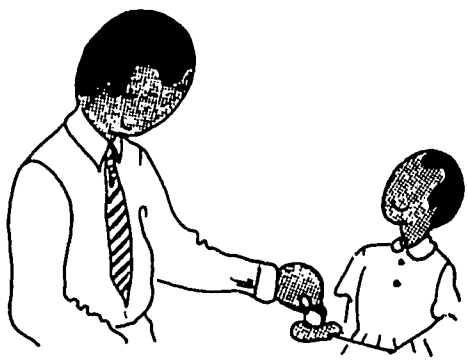
2. A lorry driver loaded 25 bags of coffee. Each bag weighs 88 pounds. What is the total weight of the coffee?

3. There are 38 children in a class. Each child has a raincoat which cost 12 shillings. What is the total cost of the raincoats?

4. Thirty-six inches are the same as a yard. How many inches are the same as 65 yards?

5. Chirwa and his friends collected a large number of match sticks. He arranged them in piles of 20. He made exactly 18 piles. How many match sticks did he collect in all?

6. There are 52 weeks in a year. Each week Mbalu received 25 cents as pocket money. How many cents did she receive as pocket money in one year?



7. Chintu bought twenty-five 20-cent stamps and eighteen 15-cent stamps. How many cents did she use to buy all the stamps?

8. In one part of a sports field, there are 69 benches. If 18 people sit on each bench, how many people can sit on the 69 benches?

DIVISION

Find the missing number.

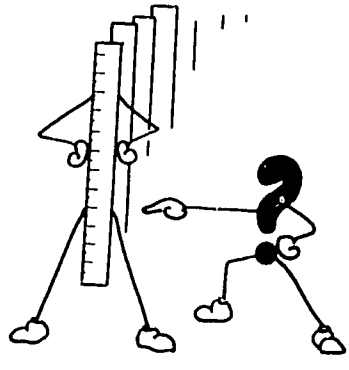
1. $30 \times n = 600$
2. $p \times 10 = 700$
3. $900 \div 30 = q$
4. $850 \div 50 = x$
5. $40 \times k = 920$
6. $560 \div 70 = w$
7. $175 \div 7 = x$
8. $152 \div 8 = p$

Divide.

9. $30\overline{)360}$
10. $50\overline{)750}$
11. $11\overline{)242}$
12. $12\overline{)276}$
13. $8\overline{)624}$
14. $9\overline{)576}$

---

15. How many feet are the same as 216 inches? (One foot = 12 inches.)

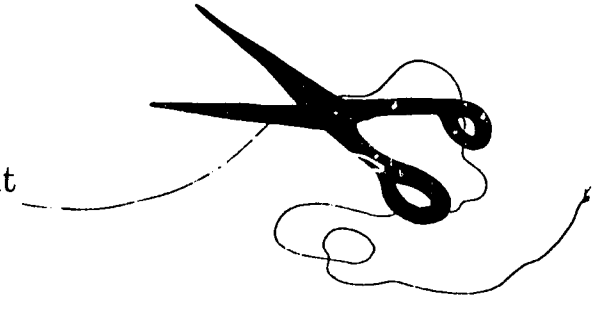


16. Azza arranged 198 beans in rows with 9 beans in each row. How many rows did she make?

17. The cost of 7 pairs of shoes is 105 shillings. Each pair costs the same. What is the cost of each pair?

18. Potatoes are packed into boxes. Each box of potatoes has the same weight. Eleven of these boxes weigh 308 pounds. What is the weight of one box of potatoes?

19. A string 144 inches long was cut into 8 congruent parts. What is the length of each part?



DIVISION

Fill in the spaces.

1. $11\overline{)482}$

   482 = (___ × 11) + ___

2. $9\overline{)365}$

   365 = (___ × 9) + ___

3. $12\overline{)487}$

   487 = (___ × 12) + ___

4. $6\overline{)672}$

   672 = (___ × 6) + ___

5. $8\overline{)392}$

   392 = (___ × 8) + ___

6. $7\overline{)518}$

   518 = (___ × 7) + ___

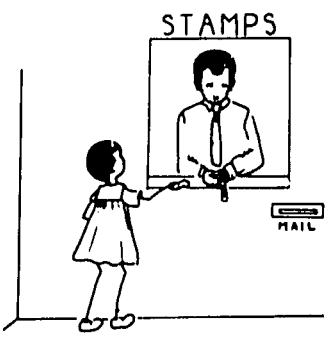
---

7. Kanu's father employs 245 labourers. He asked Kanu to place them equally on his 7 farms. How many were placed on each farm?

8. Khadija had 194 bars of chocolate. She gave 11 to each of her friends. To how many friends did she give chocolate bars? Did she have any bars left? How many?

9. The 96 pupils in a class were separated into groups of 12. How many groups were there? Was every pupil put in a group? Why?

10. How many 10-cent stamps can I buy with 183 cents? What change do I get?



MULTIPLY OR DIVIDE

1. $\begin{array}{r} 76 \\ \underline{6} \end{array}$

2. $\begin{array}{r} 46 \\ \underline{8} \end{array}$

3. $40\overline{)1160}$

4. $8\overline{)216}$

5. $\begin{array}{r} 93 \\ \underline{29} \end{array}$

6. $\begin{array}{r} 73 \\ \underline{56} \end{array}$

7. $7\overline{)315}$

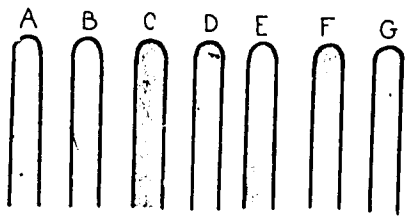
8. $6\overline{)486}$

9. $12\overline{)624}$

---

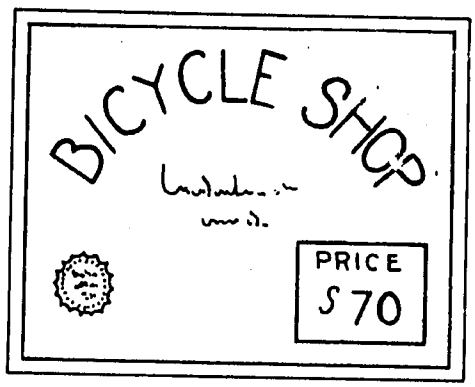
10. A bus travelled four times a day from Kampala to Entebbe and back. The distance from Kampala to Entebbe is 21 miles. How many miles does the bus travel in a day?

11. There are 60 minutes in 1 hour. How many minutes are there in 24 hours?

12. 

A, B, C, D, E, F, G are posts. They are equally spaced. The distance from A to G is 396 feet. What is the distance between D and E?

13. A shop sells some bicycles for 70 shillings each. A trader had 1460 shillings. How many bicycles can he buy? How much will he have left?



ESTIMATE THE PRODUCT

1. $26 \times 9 = n$ — n is about 260
2. $89 \times 6 = n$ — n is about _____
3. $98 \times 7 = n$ — n is about _____
4. $99 \times 11 = n$ — n is about _____
5. $121 \times 7 = n$ — n is about _____
6. $39 \times 12 = n$ — n is about _____
7. $86 \times 14 = n$ — n is about _____
8. $47 \times 23 = n$ — n is about _____
9. $79 \times 104 = n$ — n is about _____
10. $103 \times 21 = n$ — n is about _____
11. $52 \times 28 = n$ — n is about _____

12. Sahr sees a man unload 42 boxes of soda at a store in his town. There are 24 bottles of soda in each box. About how many bottles of soda are unloaded?

13. Kolu and his friends must wash the windows in a hotel building. There are 74 windows. Each of these windows has 12 panes. About how many panes must they wash?

ESTIMATE THE MISSING FACTOR

1. $5 \times n = 52$ — n is about 10
2. $6 \times n = 50$ — n is about _____
3. $7 \times n = 139$ — n is about _____
4. $8 \times n = 483$ — n is about _____
5. $9 \times n = 100$ — n is about _____
6. $11 \times n = 90$ — n is about _____
7. $12 \times n = 100$ — n is about _____
8. $9 \times n = 550$ — n is about _____
9. $7 \times n = 355$ — n is about _____
10. $8 \times n = 650$ — n is about _____
11. $11 \times n = 150$ — n is about _____

12. Next year, 425 children are expected to attend a certain primary school. The headmaster will try to have about 40 pupils in each classroom. About how many classrooms will he need?

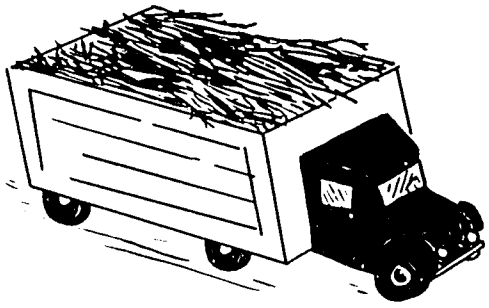
13. On a certain farm, there are about 700 coconut trees planted in rows. There are 30 coconut trees in each row. About how many rows are there?

ESTIMATE n

Sentence	____ < n		n < ____	
1. $26 \times 8 = n$	25X8=200	200 < n	30X8=240	n < 240
2. $92 \times 6 = n$				
3. $124 \times 8 = n$				
4. $82 \times 11 = n$				
5. $304 \times 9 = n$				
6. $47 \times 32 = n$				
7. $59 \times 12 = n$				
8. $6 \times n = 125$	20 < n		n < 30	
9. $11 \times n = 100$				
10. $12 \times n = 125$				
11. $9 \times n = 110$				
12. $5 \times n = 127$				
13. $11 \times n = 450$				
14. $12 \times n = 293$				

SOLVE THE PROBLEMS

1. The distance along the road from A to B is 937 yards. A lorry carrying firewood made the journey from A to B and back to A. How many yards did it travel? How many feet?

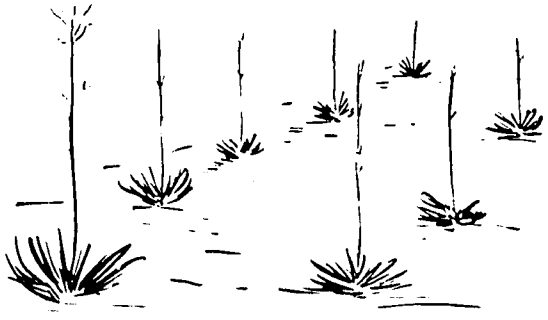


2. A room is 6 yards long and 4 yards wide. Find the distance around the room in yards. Find the distance in feet. Find the distance in inches.

3. Find n to make this sentence true: $593 = (11 \times n) + 10$.

4. In Zambia the units of money are shillings and pence. Twelve pence may be exchanged for one shilling. Zombe has 42 shillings and 7 pence. Chirwa has 37 shillings and 9 pence. How much money in pence does Zombe have? How much money in pence does Chirwa have? How much more money does Zombe have than Chirwa?

5. In a field there are 79 rows of sisal. In each row there are 137 plants. How many plants are in the field?



6. In a primary school, there are 276 children. The children are divided equally into 12 teams to play games. How many children are on each team?

COMPARISON

1.	35 × 7	___	14 × 26
2.	212 × 5	___	342 × 4
3.	39 × 27	___	42 × 23
4.	132 ÷ 11	___	96 ÷ 8
5.	143 ÷ 13	___	75 − 63
6.	196 ÷ 6	___	96 ÷ 4
7.	(13 × 15) + 5	___	13 × (15 + 5)
8.	(34 × 27) + 17	___	(33 × 28) + 15
9.	(39 + 26) ÷ 13	___	(27 + 18) ÷ 9
10.	(75 + 105) ÷ 5	___	(276 + 144) ÷ 12

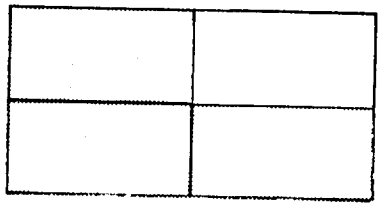
11. Juma and Kamau each climbed a tree. Juma climbed 36 feet and 9 inches. Kamau climbed 465 inches. Which boy climbed higher? How many feet higher?

12. Obi and Bade each hit a ball one time with a stick. Obi hit the ball a distance of 85 yards. Bade hit the ball 253 feet. Which boy hit the ball farther? How many inches farther?

FRACTIONS

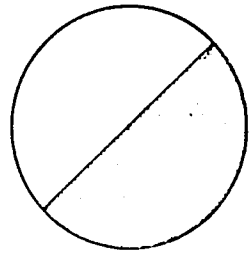
What fraction completes the statement?

A



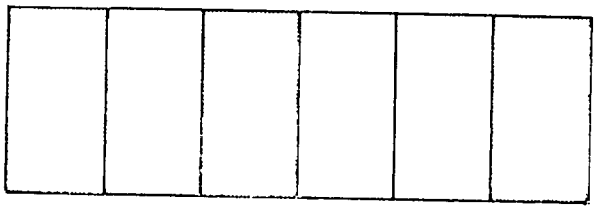
1. The shaded region of A shows _____ of the region.

B



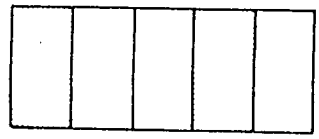
2. The shaded region of B shows _____ of the region.

C



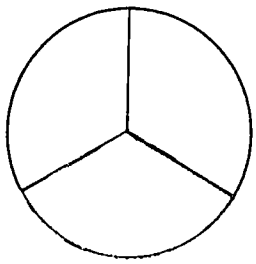
3. The unshaded region of C shows _____ of the region.

D



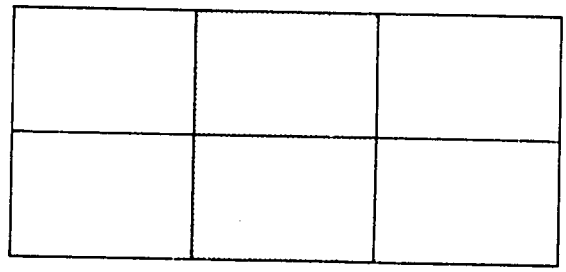
4. The shaded region of D shows _____ of the region.
5. The unshaded region of D shows _____ of the region.

E



6. The unshaded region of E shows _____ of the region.
7. The shaded region of E shows _____ of the region.

F

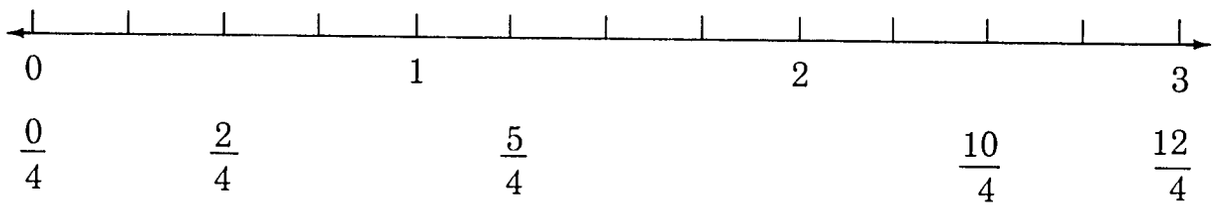


8. The shaded region of F shows _____ of the region.
9. The unshaded region of F shows _____ of the region.

10. You used the number $\frac{3}{4}$ in (1). What other numbers did you use on this page?
11. What do we call numbers like these?

COUNTING WITH FRACTIONS

1. Supply the missing numbers for the points on the number line below:



2. Begin at $\frac{11}{4}$ and count by $\frac{1}{4}$'s to 4. Write the name for each number you use.

3. Begin at 0 and skip count by three-fourths to 3. Write the name for each number you use.

4. Begin at 3 and skip count backwards by two-halves to 0. Write the name for each number you use.

Complete these counting patterns.

5. $\frac{0}{3}$, $\frac{2}{3}$, $\frac{4}{3}$, ____, ____.

6. $\frac{1}{5}$, $\frac{4}{5}$, $\frac{7}{5}$, ____, ____.

7. $\frac{11}{2}$, $\frac{9}{2}$, $\frac{7}{2}$, ____, ____.

8. $\frac{0}{6}$, $\frac{3}{6}$, $\frac{9}{6}$, ____, ____.

NUMBER NAMES FOR POINTS

Find the missing numbers for the points on the number lines shown below:

1. $\frac{0}{2}$ $\square$ $\frac{2}{2}$ $\frac{3}{2}$ $\frac{4}{2}$

2. $\square$ $\frac{1}{4}$ $\frac{2}{4}$ $\frac{3}{4}$ $\square$ $\frac{5}{4}$ $\frac{6}{4}$ $\frac{7}{4}$ $\frac{8}{4}$

3. $\frac{0}{3}$ $\frac{1}{3}$ $\square$ $\frac{3}{3}$ $\frac{4}{3}$ $\square$ $\square$

4. $\square$ $\frac{1}{6}$ $\square$ $\square$ $\frac{4}{6}$ $\square$ $\square$ $\frac{7}{6}$ $\square$ $\square$ $\frac{10}{6}$ $\square$ $\square$

5. $\frac{0}{12}$ $\frac{1}{12}$ $\square$ $\square$ $\square$ $\square$ $\square$ $\square$ $\square$ $\square$ $\square$ $\square$ $\square$ $\frac{13}{12}$ $\square$ $\square$ $\square$ $\square$ $\square$ $\square$ $\square$ $\square$ $\square$ $\square$ $\square$

Find fractions that make the sentences true.

6. $\frac{1}{2}$ ____ 7. $\frac{24}{12}$ ____ 8. $\frac{1}{3}$ ____ 9. $\frac{6}{4}$ = ____

10. $\frac{0}{2}$ ____ 11. $\frac{3}{6}$ ____ 12. $\frac{8}{12}$ ____ 13. $\frac{3}{4}$ = ____

14. 1 ____ 15. $\frac{5}{6}$ ____

Study the number lines above.

16. What names do you find for two-fourths?
17. What is the simplest name you found for two-fourths?
18. Did you choose $\frac{1}{2}$ as the simplest name?
19. What is the simplest name used on the number line for three-thirds?
20. Did you choose the whole number name as the simplest name?

FRACTIONS

Make these sentences true using =, or <, or >. Use the number line to help you.

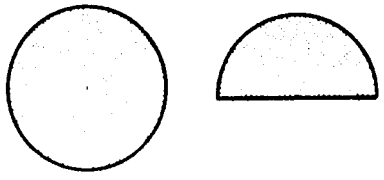
1. $\frac{1}{3}$ ___ $\frac{1}{4}$
2. $\frac{1}{2}$ ___ $\frac{1}{3}$
3. $\frac{1}{2}$ ___ $\frac{1}{4}$
4. $\frac{1}{6}$ ___ $\frac{1}{3}$
5. $\frac{3}{6}$ ___ $\frac{3}{12}$
6. $\frac{2}{3}$ ___ $\frac{8}{12}$
7. $\frac{3}{4}$ ___ $\frac{9}{12}$
8. $\frac{2}{3}$ ___ $\frac{3}{4}$
9. $\frac{5}{6}$ ___ $\frac{11}{12}$
10. $\frac{10}{6}$ ___ $\frac{15}{12}$

Use the number line to help you find the missing numerator or denominator to make these sentences true.

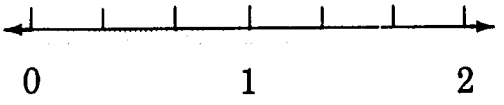
11. $\frac{1}{2} = \frac{n}{4}$
12. $\frac{3}{4} = \frac{b}{12}$
13. $\frac{1}{3} = \frac{m}{6}$
14. $\frac{10}{12} = \frac{t}{6}$
15. $\frac{1}{2} = \frac{c}{12}$
16. $\frac{d}{6} = \frac{1}{2}$
17. $2 = \frac{k}{4}$
18. $\frac{a}{3} = 2$
19. $1 = \frac{h}{3}$
20. $\frac{4}{6} = \frac{p}{3}$

NAMES FOR FRACTIONS

A



B



1. How many circular regions are shaded in A?

2. Your answer in (1) is a mixed name for a fraction. What is the common name for the fraction?

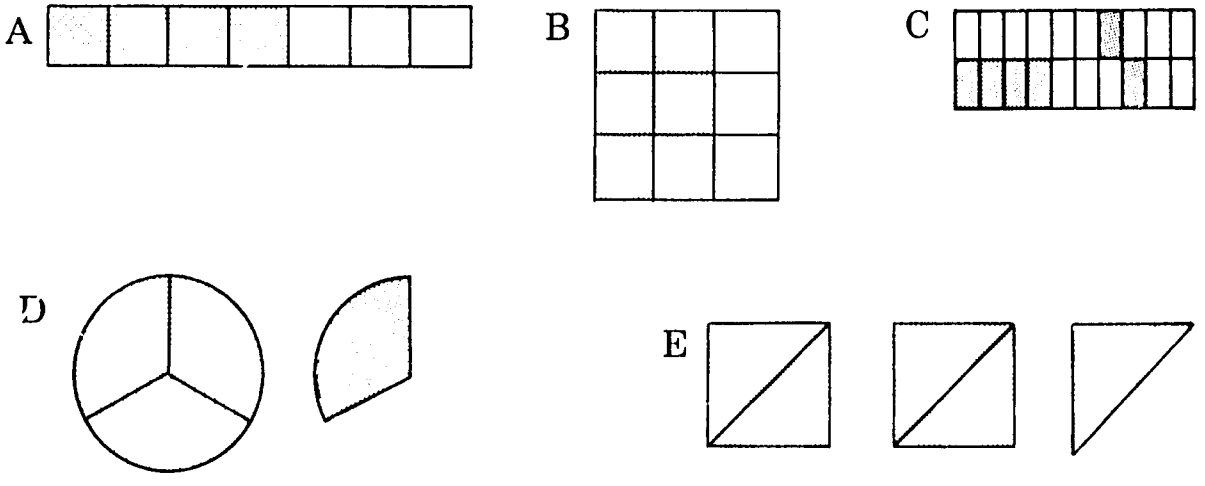
3. What is the fraction for the shaded part of the number line in B?

4. What is a mixed name for your answer in (3)?

Complete the chart. Use the number line on page 94.
Remember that some fractions do not have mixed names.

	Fraction	Common names	Mixed name
5.	One-half	$\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{6}{12}$	none
6.	Six-fourths		
7.	Three-thirds		
8.	Four-thirds		
9.	Seven-sixths		

NAMES FOR FRACTIONS



1. The shaded part of region A shows the fraction ____

2. The shaded part of region B shows the fraction _____.

3. The shaded part of region C shows the fraction _____.

4. How many circular regions are shaded in D?

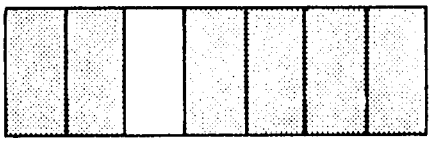
5. Your answer in (4) is a mixed name for a fraction. What is a common name for the fraction?

6. How many squares are shaded in E?

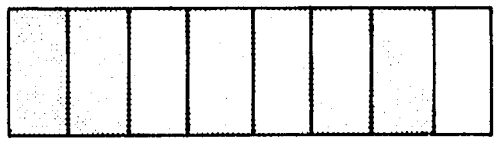
7. Your answer in (6) is a mixed name for a fraction. What is a common name for the fraction?

NAMES FOR FRACTIONS

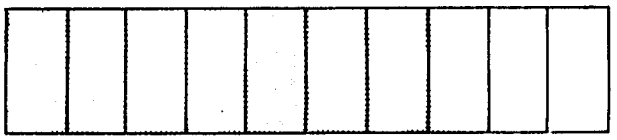
F



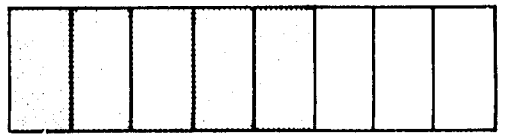
G



H



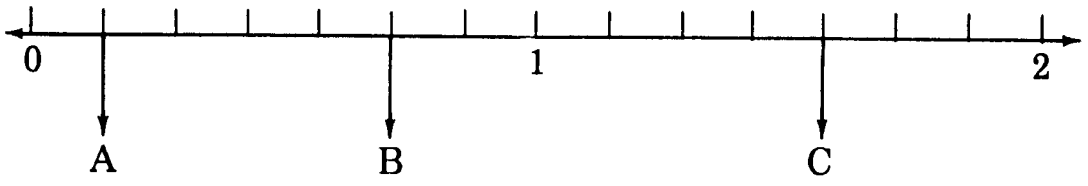
I

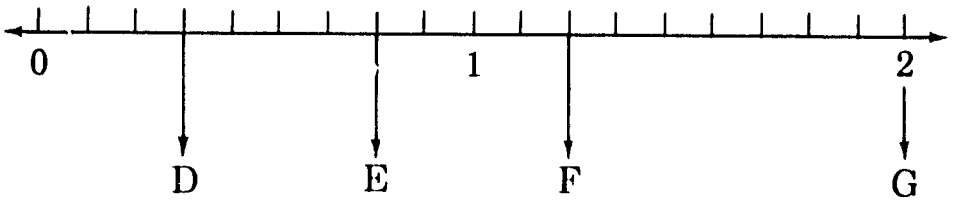


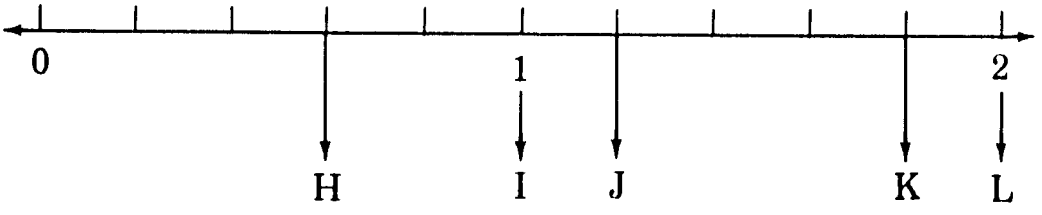
What fractions do these regions show?

1. The shaded part of F
2. The unshaded part of F
3. The shaded part of G
4. The unshaded part of G
5. The unshaded part of H
6. The shaded part of H
7. The shaded and unshaded parts of H
8. The shaded part of I
9. The unshaded part of I
10. The shaded and unshaded parts of I

FRACTIONS







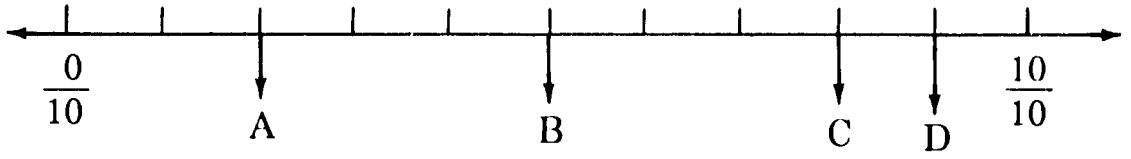
What are common names of the numbers for these points?

1. A	2. B	3. C	4. D
5. E	6. F	7. G	8. H
9. I	10. J	11. K	12. L

13. What is a common name of the number for the point between H and I?

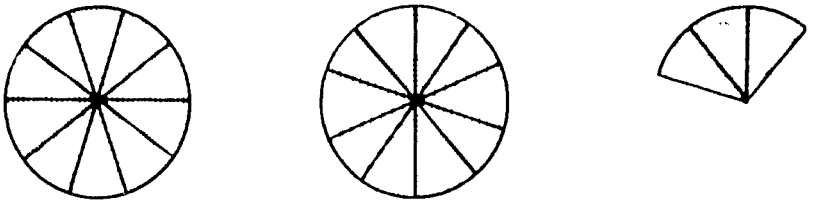
14. What are the common names of the numbers for the points between E and F?

TENTHS AND HUNDREDTHS

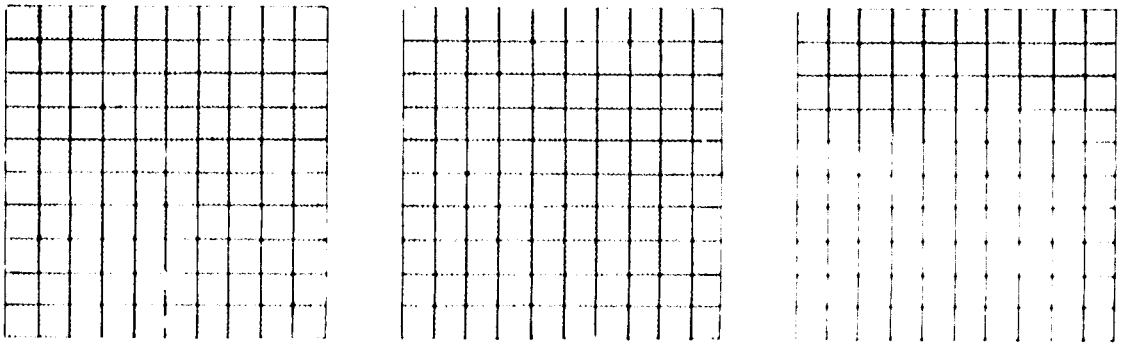


What are the fractions for these points?

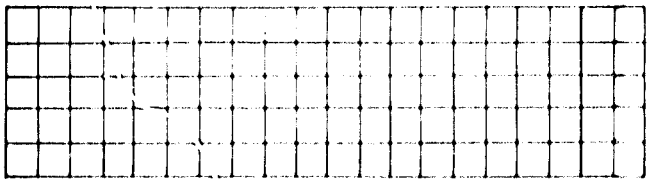
1. A 2. B 3. C 4. D



5. How many circles are shaded?
6. What is a common name for your answer in (5)?



7. There are $2\frac{35}{100}$ large squares shaded. Write the common name for $2\frac{35}{100}$.



8. Write the multiplication sentence shown by the array.

9. How many small square regions are in the array?
10. Imagine you shade 25 of the 100. What fraction shows the part of the array shaded?
11. Imagine you shade 90 of the 100. What fraction shows the part of the array shaded?

NAMES OF FRACTIONS

Complete the chart.

	A	B	C
1.	$\frac{2}{10}$	·2	two-tenths
2.		·8	
3.	$\frac{6}{10}$		
4.		1·5	one and five-tenths
5.	$\frac{24}{10}$		
6.	$\frac{10}{10}$		one
7.	$\frac{36}{10}$		

8. Are the names in A common names or decimal names for fractions?
9. Are the names in B common names or decimal names for fractions?

10. Write all the names you know for the number five-tenths.
11. Write all the names you know for the number three and five-tenths.

Do these names show the same number?

12. $\frac{1}{2}, \frac{5}{10}, \cdot 5$

13. $\frac{1}{2}, \frac{2}{4}, \frac{4}{8}, \frac{5}{10}$

Are these sentences true or false?

14. ·7 ·9

15. 1·8 1·7

16. 3·2 $3\frac{2}{10}$

NAMES OF FRACTIONS

Complete the chart.

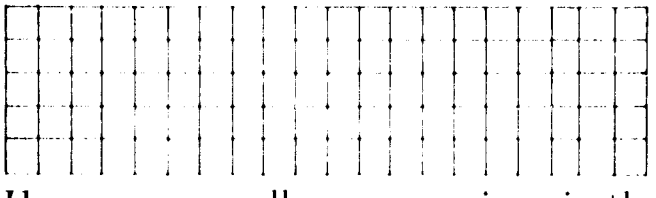
	Common name	Mixed name	Decimal name
1.	$\frac{5}{100}$	none	·05
2.	$\frac{12}{10}$		
3.	$\frac{225}{100}$		
4.		none	·37
5.		$1\frac{13}{100}$	
6.		$12\frac{9}{10}$	
7.			14·60

8. Write all the names you know for fifty-hundredths. (Think of the number line marked in $\frac{1}{2}$'s, marked in $\frac{1}{4}$'s, marked in $\frac{1}{10}$'s.)

Do these name the same number? (Think of 10 · 10 arrays.)

9. ·10; $\frac{10}{100}$; $\frac{1}{10}$,

10. $1\frac{25}{100}$; $\frac{125}{100}$; 12·5



11. Write the multiplication sentence this array shows.

12. How many small square regions in the array?

13. Imagine you shade 75 of the 100. What fraction shows the part of the array shaded? Write the decimal name for the fraction.

14. Imagine you shade 30 of the 100. What fraction shows the part of the array shaded? Write the decimal name for the fraction.

FRACTIONS

Are these sentences true?

1. $\cdot 25 > \cdot 75$ 2. $\cdot 2 > \cdot 20$ 3. $2\cdot 79 < 2\cdot 80$

Begin with $\frac{5}{100}$. Skip count by $\frac{5}{100}$'s to $\frac{30}{100}$.

4. Write the common names of the fractions you use.
5. Write the decimal names of the fractions you use.

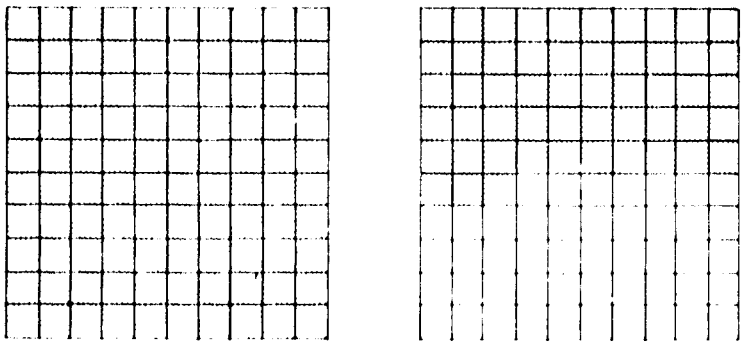
Make the following sentences true using $<$, or $>$, or $=$.

6. $\cdot 30$ ____ $\frac{30}{100}$ 7. $\frac{28}{100}$ ____ $\cdot 30$ 8. $\cdot 40$ ____ $\frac{80}{100}$

9. $\cdot 20$ ____ $\frac{2}{10}$ 10. $5\frac{6}{10}$ ____ $5\cdot 06$ 11. $\cdot 09$ ____ $\frac{9}{10}$

12. $\cdot 76$ ____ $\frac{67}{100}$ 13. $\frac{8}{10}$ ____ $\frac{79}{100}$ 14. $\frac{40}{100}$ ____ $\cdot 04$

15. $\frac{420}{100}$ ____ $4\frac{20}{100}$



16. There are $1\frac{53}{100}$ large squares shaded. Write the common name for $1\frac{53}{100}$.

17. Write the decimal name for $1\frac{53}{100}$.

PER CENT NAMES

Write the per cent name for each of these.

1. $\frac{1}{100}$ 2. $\frac{17}{100}$ 3. $\frac{450}{100}$ 4. $3\frac{10}{100}$

5. ·06 6. $\frac{200}{100}$ 7. ·48 8. 2·15

Write the common name for each of these.

9. 15% 10. 125% 11. 3·25 12. 6%

13. 100% 14. 50% 15. ·11 16. 1%

---

17. There are 100 eggs in a box. 25 of them are bad. What per cent of the eggs are good?

18. In a school there are 60 boys and 40 girls.
What per cent of children in the school are girls?
What per cent of children are boys?

Write the decimal name for each of these.

19. 25% 20. $\frac{135}{100}$ 21. 225% 22. $\frac{1}{2}$

23. $\frac{10}{100}$ 24. $2\frac{35}{100}$ 25. 80% 26. 6%

NAMES FOR FRACTIONS

Complete the chart.

	Common Name	Mixed Name	Decimal Name	Per cent Name
1.	$\frac{27}{100}$	none	·27	
2.		$2\frac{5}{100}$		205%
3.			1·20	
4.	$\frac{3}{100}$	none		
5.			·07	
6.				45%
7.	$\frac{1}{2}$			
8.	$\frac{200}{100}$			
9.				8%
10.		$1\frac{50}{100}$		
11.		3		
12.			1·00	
13.	$\frac{1}{100}$	none		
14.	$\frac{10}{100}$	none		
15.	$\frac{100}{100}$			
16.			·38	
17.				2%

FRACTIONS

Are these sentences true?

1. $\frac{1}{2} = \frac{2}{4}$
2. $\frac{3}{4} > \frac{6}{8}$
3. $\frac{10}{100} < \frac{9}{100}$
4. $25\% > \frac{25}{100}$
5. $2\frac{1}{2} = 2\frac{5}{10}$
6. $\cdot 75 = 70\%$

Make these sentences true. Use =, or >, or <.

7. 25% ____ $\frac{20}{100}$
8. 6% ____ $\cdot 06$
9. $2\frac{13}{100}$ ____ $2\cdot 31$
10. $\frac{1}{2}$ ____ $\frac{3}{4}$
11. $\frac{50}{100}$ ____ $\frac{1}{10}$
12. $\cdot 20$ ____ 30%

Find the numbers that make these sentences true.

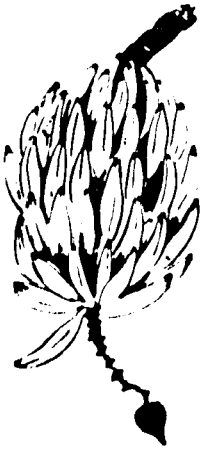
13. $50\% = \frac{n}{2}$
14. $\frac{a}{100} = \cdot 12$
15. $\frac{4}{8} = \frac{b}{4}$
16. $\frac{240}{t} = 240\%$
17. $\frac{50}{100} = \frac{g}{10}$
18. $100\% = \frac{h}{100}$

Modupe has 100 marbles; 25 are green.

19. What per cent of his marbles are green?

20. Write the common name and the decimal name for the fraction named in (19).

Mr Nyasa pulled 8 bananas from a bunch. There were 100 bananas in the bunch.



21. What per cent of the bananas did Mr. Nyasa leave?

22. Write the common name and decimal name for the fraction named in (21).

ADDITION

Find the missing number.

1. $a = 8356 + 7010 + 9102 + 369 + 1028 + 68$

2. $329 + 2078 + 46 + 5004 + 2100 + 6042 = b$

3. $c = 11{,}276 + 930 + 4011 + 30{,}002 + 11 + 1122$

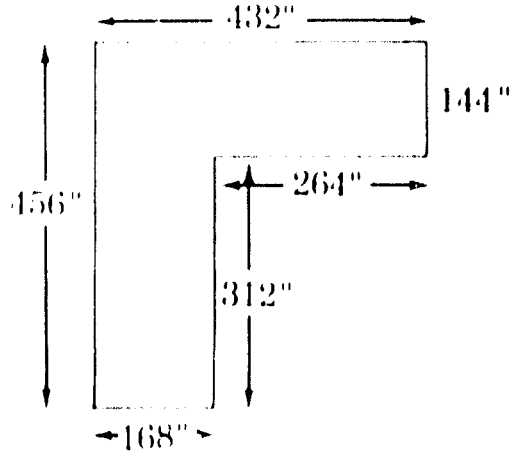
4. $14{,}634 + 20{,}176 + 9814 + 494 + 100 + 15{,}213 = d$

5. $f = 9246 + 3142 + 972 + 1803 + 2047 + 813 + 278$

6. $2{,}140{,}278 + 730{,}109 + 3{,}015{,}008 + 68{,}017 + 173{,}165 = g.$

7. In one school in Freetown the school fees collected in the first week of term were: on Monday 240 leones, on Tuesday 180 leones, on Wednesday 135 leones, on Thursday 210 leones, and on Friday 126 leones. How many leones were collected that week? If one leone equals 100 cents, how many cents were collected that week?

8. Morlai measured the sides of his house. The lengths in inches are shown in the figure. What is the distance around the house in inches? If 12 inches equals 1 foot, what is this distance in feet?



9. There are seven buildings in a certain compound. The roofs are made of tiles. The number of tiles used in the roofs are 18,015; 90,246; 347,009; 82,106; 17,784; 23,416, and 427,634. How many tiles were used for the roofs of all the seven buildings?

MISSING ADDENDS

Find the number that makes the sentence true.

1. $n + 934 = 1266$
2. $9406 = 833 + p$
3. $14623 - 10476 = k$
4. $w = 83411 - 47106$
5. $267319 + t = 439602$
6. $413426 - 145638 = z$

---

7. The weight of a car and the five people in it is 2647 pounds. The car alone weighs 1968 pounds. What is the total weight of the five people?

8. The number of pupils in Kofi's school is 655. The number in Kobina's school is 478. How many more pupils are there in Kofi's school than in Kobina's school?

9. Kalua buys a car for 17,500 shillings. Rashidi buys a car for 14,763 shillings. How much more does Kalua's car cost than Rashidi's car?

10. A school bought six tables at 82 shillings each and four cupboards at 112 shillings each. Which cost more, the tables or the cupboards? How much more?

11. The swimming pool in Sahr's school holds 6500 gallons of water. The pool in Alieu's school holds 4785 gallons. How many more gallons of water does the pool in Sahr's school hold?

12. The height of a tower is 312 feet. Odieki climbed up the tower. After he climbed 148 feet he stopped to rest. How many more feet did he climb to get to the top? What is this distance in inches?

ADD OR SUBTRACT

1. Add

```
   146,219
    80,321
     7,633
    11,201
   356,124
       946
     1,273
```

2. Add

```
 5,132,604
 3,216,426
   893,102
 1,012,067
    85,362
   113,278
 1,432,811
```

3. Subtract

```
 4,076,103
 2,582,174
```

4. Subtract

```
   886,312
   493,876
```

FILL IN THE BOXES

5. Add

```
   9,41□
   2,137
     □36
      19
   1,042
  18,763
   2,416
  □4,724
```

6. Add

```
 3,□62,172
 1,004,036
   786,□13
   819,665
 2,0□6,110
   246,35□
 □,81□,2□3
```

7. Subtract

```
 612,□53
 □□0,8□□
 221,562
```

8. Subtract

```
 79□,284
 □□8,□□8
 497,496
```

COMPARISON

Use >, or <, or = to make the sentence true.

1. 3,462,856 + 1,342,889 _ _ _ 4,129,246 + 876,633
2. 483,763 + 795,211 + 44,362 _ _ _ 795,211 + 44,362 + 483,763
3. 4,013,208 + 3,142,622 _ _ _ 8,497,502 − 1,341,672
4. 594,346 − 270,143 _ _ _ 716,219 − 624,346

Each day Alieu and Tommy went around their town collecting bottle tops. This table shows the number each collected last week.

	Alieu	Tommy
Sunday	36	45
Monday	123	106
Tuesday	80	66
Wednesday	74	92
Thursday	76	78
Friday	84	120
Saturday	165	82

5. Who collected more bottle tops?
6. Write a mathematical sentence comparing the number of bottle tops Alieu and Tommy collected.

Here is a table showing the number of loaves of bread a baker baked in two weeks:

	1st Week	2nd Week
Sunday	6386	4685
Monday	10243	12138
Tuesday	7462	7200
Wednesday	8132	6876
Thursday	8469	10143
Friday	4934	6122
Saturday	12462	13249

7. How many loaves did he bake in each week?
8. In which week did he bake more?
9. How many more?
10. Did he bake more or fewer on the first three days of the first week than on the same days of the second week?
11. About how many loaves did he bake on the last two days of each week?

FIND THE CODES

Add:

1.
```
 J905
 38DM
 573M
 ----
14J39
```

2.
```
 T8625
  7503
 28724
 -----
1248S2
```

3.
```
 KA2458
 905707
  64K76
 ------
KK02A4K
```

Subtract:

4.
```
 A55A
 5A76
 ----
 35B3
```

5.
```
 Z2581
 2312R
 -----
 3G454
```

6.
```
 1P6E92
  648PF
 ------
 111P22
```

Add:

7.
```
 U062
 72N1
 564R
 17054
 -----
 UU046
```

8.
```
 20651
 1A5A2
 715B6
 C7975
 -----
15975C
```

9.
```
 664Y4X
  73926
 13XYZ2
 973467
 ------
18YZ443
```

Subtract:

10.
```
 MN24P05
   P62631
 -------
 PP621N4
```

11.
```
 1EF845G9
   608F279
 --------
 10F00260
```

12.
```
 7G7G564
 36583ED
 -------
 36D4D73
```

RIDDLES

1. I am a number. If you add me to 26, you get the same sum as if you add me twice to 11. What number am I?

2. I am a number. If you multiply me by 3 and add 7 to the product, you get 40. What number am I?

3. I am a number. If you add me to 14, you get the same result as if you subtract me from 40. What number am I?

4. I am a number between 320 and 330. If you add me to 99, you get a number whose name is my name with the digits written in reverse order. What number am I?

5. I am a number. The difference between 45 and 92 is 3 more than twice me. What number am I?

6. I am a number between 70 and 80. If 18 is subtracted from me, the digits of my name are reversed. What number am I?

7. I am a number which gives Nina's age in years. Nina's father is 35 years old. His age in years is twice me plus 7. What number am I?

*8. (Challenge) We are two numbers. Our sum is 50 and our difference is 24. What numbers are we?

SUBSETS

Find the subset of {0, 6, 7, 8, 9} whose members make the sentence true.

1. $99 + \square = 99$
2. $369 + \square = 378$
3. $7825 = 7818 + \square$
4. $7658 - 7650 = \square$
5. $19357 - 19349 = \square$
6. $192 + \square > 200 - 8$

Choose the subset of {25, 75, 125, 500} whose members make the sentence true.

7. $83 + 17 = a + 25$
8. $c + 273 = 700 + 73$
9. $25 + 25 = a - 25$
10. $660 + 8 < 793 - d$

Which subset of {48, 84} has members which make the sentence true?

11. $65 + \square \neq 65 + 48$
12. $103 - \square \neq 84 + 65$
13. $376 + 48 \neq \square + 376$
14. $9205 + 84 \neq a + 9205$
15. $(43768 - 20) + 48 \neq 43748 + n$
16. $(84 - 48) + 48 \neq (84 + 48) - n$

CROSS-NUMERAL PUZZLE

1.	2.	3.		4.	5.
6.			7.		
8.		9.			10.
	11.			12.	
13.			14.		15.
16.		17.		18.	

Across

1. 147 + 225
4. 153 − 79
6. 6 + (9 × 2)
7. 321 + 321 + 321
8. 3 yards in feet
9. (3 × 25) + 3
10. 1, 3, 5, □, 9, 11, ...
11. 29 + (38 − 14)
12. 2, □, 8, 11, 14, ...
13. 3 × 3 × 3 × 3
14. 175 + 347 + 322
16. (3 × 100) + (6 × 10) + (2 × 1)
18. (74 + 29) − 12

Down

1. (4 × 80) + 9
2. 6 feet 2 inches in inches
3. 0, □, 4, 6, 8, 10, ...
4. 151 − 75
5. 129 + 129 + 179
7. 7 × 7 × 2
9. (5 × 15) − 2
11. 257 + 259
12. 658 − 109
13. (9 × 9) + 2
14. 1, 1, 2, 3, 5, □, 13, 21, ...
15. 82 ÷ 2
17. 1,000 − 998

PUZZLES

1. Find the message.

16 − 9 + 0	21 − 3	15 + 6		(16 : 8) × 2	4 + 2 + 2	9 + 8	(4 × 5) + 3	75 : 5
(108 : 9) × 2	19 − 14	26 − 24	4 + 5 + 1	19 − 18		13 + 7	2 + 0	(121 × 1) : 11
		72 − 56	(4 × 10) : 5	0 + 0	(99 : 3) : 11	4 + 2		
(7 − 5) + 0	81 : 9	26 − 5	5 × (13 − 13)			4 + (9 − 6)	18 + (2 − 2)	11 + 2 + 8
	(4 × 7) − 14	18 + 7	65 : 5	(96 − 12) : 7		11 + 9 + 2	7 − 5 + 0	(24 − 9) + 4

A	B	C	D	E	F	G	H	I	J	K	L	M
25	24	23	22	21	20	19	18	17	16	15	14	0
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13

2. Complete the magic square.

Sum: 34

1	14		4
	7	6	9
		10	
13	2		

→ 34

34 34 34

STORY PROBLEMS

The total number of people in Zambia is about 3,600,000. The numbers of people in Zambia's four largest towns are:

Lusaka	118,000	Ndola	88,600
Kitwe	114,500	Livingston	33,900

1. About how many of the people of Zambia do *not* live in one of the four largest towns?

2. *Estimate:* The total number of people in all of Zambia is about _____ times the number who live in the four largest towns.

The railroad in Kenya goes from Mombasa to the highlands and on to Lake Victoria. Mombasa is at sea level. At one place in the highlands the railroad is 8322 feet above sea level. Lake Victoria is 3726 feet above sea level.

3. A train moves from the highland to Lake Victoria. How many feet lower is it now?

4. Is this more than one mile? (One mile is 5280 feet.)

5. Is a train on this railroad ever a mile above sea level?

Tesfu lives in Addis Ababa in Ethiopia. It has about 443,700 people. Until last year he lived in Dire Dawa, a town of about 40,000 people.

6. How many more people live in Addis Ababa than in Dire Dawa?

7. *Estimate:* The number of people in Addis Ababa is about _____ times the number of people in Dire Dawa.

George took an airplane from Entebbe in Uganda to Lusaka in Zambia (1106 miles). Then he flew from Lusaka to Blantyre in Malawi (538 miles). His sister, Mwera, took an airplane from Nairobi in Kenya, to Lusaka (1154 miles), then another from Lusaka to Blantyre (538 miles).

8. How far did George travel?
9. How far did Mwera travel?
10. Who travelled farther?
11. How much farther?

STORY PROBLEMS

1. Nalinga's father has four men who work for him. Two of the men each get 220 shillings a month and the other two each get 200 shillings a month. Nalinga's father cashed a cheque at the bank for 50 pounds. He paid each man his month's wages. How much money does he have left? _____ (1 pound is 20 shillings).

2. A town's water tank holds 25,000 gallons of water. It now has 15,350 gallons of water in it.
   Is it now over half-full or under half-full?
   How many gallons must be added to fill the tank?

3. A team of men can lay 720 feet of pipeline in one day. The team worked six days.

   How many feet of pipeline did they lay?

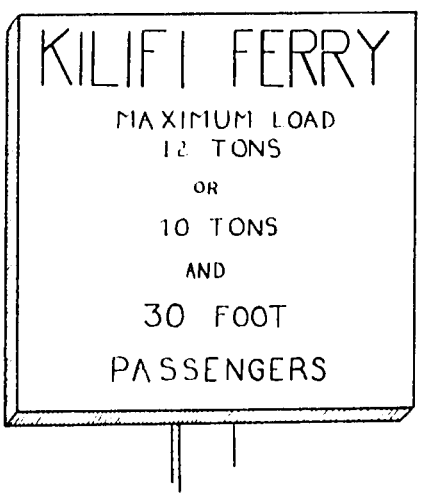
   Did they lay more than 1 mile of pipeline?
   (One mile is 5280 feet.)

   How many yards of feet did they lay?
   (Three feet is one yard.)

4. The football stadium holds 12,318 people. For a match, 2,116 people came from one town, 3,590 came from another town, 1,760 people came from another, 2,340 from another, and 3,210 came from several villages.
   How many people came to the match?
   Were there enough seats for everyone?
   How many people did not have a seat?

5. This sign is at the Kilifi ferry. It says that the ferry can carry just 12 tons. But if it takes cars and people, it can take 10 tons and 30 people. One day 10 tons of cars and 20 people whose total weight is 2600 pounds came to the ferry. (One ton is 2240 pounds.)

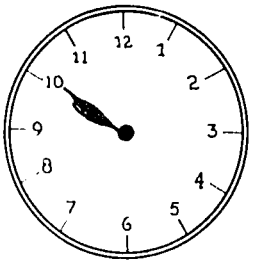
   Is the total weight more or less than 12 tons?
   Can the ferry carry all the load?



STORY PROBLEMS

1. Haji lives near the seashore. At lowest tide he gets shells and starfish from the water. Today the tide is highest at 10 o'clock in the morning. About 6 hours later the tide will be lowest. At what time will the tide be lowest?

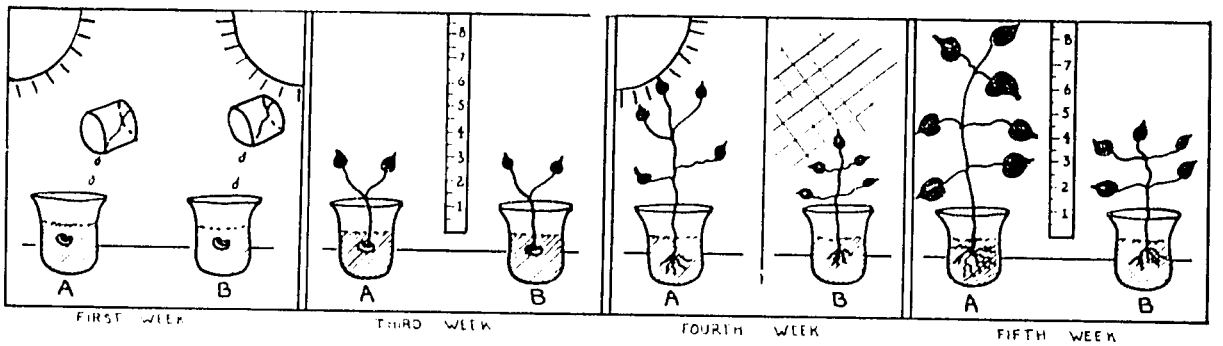
2. It takes Haji about $\frac{1}{2}$ hour to walk to the beach. On the way, he spends $\frac{1}{2}$ hour at the house of a friend. To get to the beach at the time of lowest tide, what time must he leave home?



If he spends 1 hour at the beach and takes $\frac{1}{2}$ hour to walk home, what time will he get home?

3. When the moon is closest to the earth it is 221,463 miles away. When the moon is farthest from the earth it is 252,710 miles away. What is the difference in its distance from farthest to closest?

4.



CLASS FOUR PROJECT

First Week: Plant seeds. Give plants water and sun.

Third Week: Measure growth.

Fourth Week: Give A water and sun. Give B *less* water and sun.

Fifth Week: Measure growth.

a) Between third and fifth weeks, how much did the plants grow?
A. _____ inches
B. _____ inches

b) After the third week, A grows about _____ times as much as B.

c) The height of A the fifth week is about _____ times that of B?

ADDITION AND SUBTRACTION

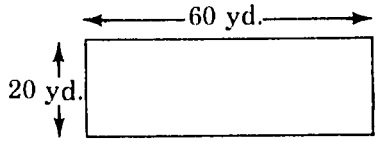
Use properties of addition to find n.

1. $(400 + 96) + 300 = 700 + n$
2. $2251 + 49 = 100 + n$
3. $860 + n = 400 + 460$

4. Two trucks carry bags of coffee to ships. The farmer wants to put the same weight in each truck. The first truck has 1200 pounds in it. Then 75 pounds are added. The second truck has 275 pounds in it. How many pounds must be added to the second truck to make the weight in both trucks equal?

5. Daniel wants to put a fence around his rectangular garden. He measured the length and the width.

   It was 60 yards long and 20 yards wide.



   How many yards of fence are needed?
   How many feet of fence are needed?
   (Three feet is one yard.)

   Daniel buys 500 feet of fence. He builds a fence around his garden.

   How much fence does he have left?

6. One day Obi's lorry carried 401 passengers. The next day it carried 299. The third day it carried 290. How many passengers did the lorry carry in the three days?

7. In Tanganyika in 1963, 49234 tons of sugar were grown. One company grew 12000 tons of this. How much was grown by others?

   Estimate: The total is about_____times the amount grown by the one company?

8. The area of the island of Pemba is 380 square miles. The area of the island of Zanzibar is 640 square miles.

   Which island is larger?
   How much larger?
   What is the total area of the two islands?

EVEN AND ODD NUMBERS

Complete the charts.

A. ADD

Odd	Odd	Sum
5	3	
7	11	
1	9	
13	25	
33	47	
89	31	
15	19	

B. ADD

Even	Even	Sum
4	6	
0	24	
16	48	
56	36	
42	24	
28	22	
14	8	

C. ADD

Odd	Even	Sum
5	12	
11	20	
27	34	
31	6	
55	42	
43	28	
19	8	

Complete these sentences with "even" or "odd".

1. The sum of two even numbers is an _____ number.
2. The sum of two odd numbers is an _____ number.
3. The sum of an odd number and an even number is an _____ number.
4. The sum of an even number and 1 is an _____ number.
5. The sum of an odd number and 1 is an _____ number.
6. No _____ whole number is less than 1.
7. Every _____ whole number is greater than 0.
8. There are two _____ whole numbers less than 3.
9. There is only one _____ whole number less than 3.
10. The sum of 0 and an odd number is an _____ number.
11. The sum of three even numbers is an _____ number.
12. The sum of three odd numbers is an _____ number.

MULTIPLES

Write in the missing multiples of 2, 5, or 10.

1. _____, 5, 10, _____, _____, _____, _____, _____
2. _____, _____, 20, 30, _____, _____, _____, _____
3. _____, _____, _____, 6, 8, _____, _____, _____
4. 15, 20, 25, _____, _____, _____, _____, _____, 55, _____
5. _____, _____, 40, 50, _____, _____, _____, _____, 100
6. _____, 30, _____, 40, _____, _____, _____, 60, _____

Find the missing numbers.

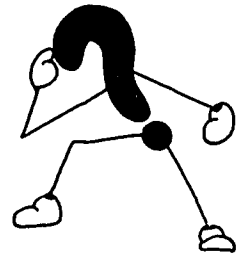
7. 65 is a multiple of 5; its numeral has a _____ in the ones' place.
8. Since "70" has a zero in the ones' place, 70 is a multiple of _____ and a multiple of _____.
9. The numeral for any multiple of both 5 and 10 has a _____ in the ones' place.
10. Since 80 = 10 × 8, 80 is a multiple of _____ and _____.
11. Since 56 = 2 × 28, 56 is a multiple of _____ and _____.

Complete the following sentences, using *is* or *is not*.

12. Since 60 = 5 × 12, 60 _____ a multiple of 5.
13. Since "80" has a zero in the ones' place, 80 _____ a multiple of 5.
14. Since 73 = (5 × 14) + 3, 73 _____ a multiple of 5.
15. Since "90" has a zero in the ones' place, 90 _____ a multiple of 10.
16. Since 66 _____ a multiple of 5, 66 _____ divisible by 5.

MULTIPLES

Find the missing numbers.



1. Since $6 \times 7 = 42$, _____ is a multiple of _____ and of _____.
2. Since $56 \div 8 = 7$, 56 is a multiple of _____ and of _____.
3. Since $12 \times 5 = 60$, 60 is a multiple of _____ and of _____.
4. Since $8 \times$ _____ $= 40$, _____ is a multiple of _____ and of _____
5. Since $8 \times 6 = 48$, _____ is a multiple of _____ and of _____.
6. Since $7 \times$ _____ $= 56$, _____ is a multiple of _____ and of _____.
7. Since 6 and 4 are factors of 24, _____ is a multiple of _____ and of _____.
8. Since 7 and 8 are factors of 56, _____ is a multiple of _____ and of _____.
9. Since 63 is the product of 7 and 9, _____ is a multiple of _____ and of _____.
10. Since 72 is the product of 8 and 9, _____ is a multiple of _____ and of _____.
11. Since $96 \div$ _____ $= 12$, _____ is a multiple of _____ and of _____.
12. Since $48 \div 4 =$ _____, _____ is a multiple of _____ and of _____.

SETS OF MULTIPLES

1. What is the set of numbers between 0 and 40 that are even and are multiples of three?

2. What is the set of multiples of five between 6 and 76?

3. What is the set of numbers between 11 and 85 that are multiples of ten?

4. What is the set of multiples of ten that are greater than 6 and less than 76?

5. What is the set of numbers between 6 and 56 that are multiples of five and are multiples of ten?

6. What is the set of numbers between 3 and 62 that are multiples of four and are multiples of six?

7. What is the set of numbers between 0 and 80 that are both multiples of seven and of eight?

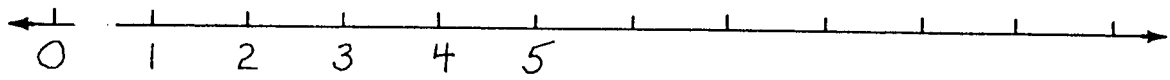
8. What is the set of numbers between 0 and 90 that are even, are multiples of three, and are multiples of nine?

9. What is the set of whole numbers less than 100 that are multiples of four and are multiples of ten?

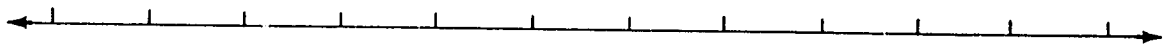
10. What is the set of counting numbers less than 100 that are odd, are multiples of three, and are multiples of nine?

SUBSETS OF THE WHOLE NUMBERS

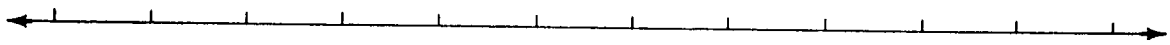
Show subsets of the whole numbers.

1. 

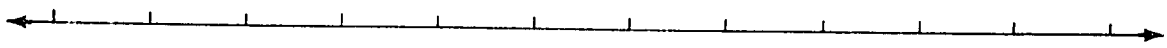
The whole numbers less than 6.

2. 

The whole numbers less than 8.

3. 

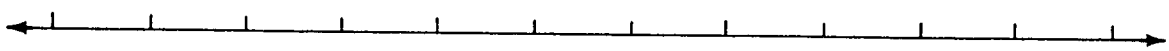
The whole numbers greater than 10 and less than 16.

4. 

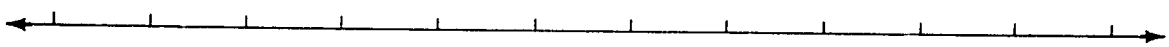
The whole numbers greater than 22 and less than 30.

5.

The whole numbers less than 6 + 5.

6. 

The whole numbers less than 3 × 3.

7. 

The whole numbers greater than 6 × 6 and less than 6 × 7.

SUBSETS OF WHOLE NUMBERS

Sentence	Truth set of whole numbers
1. $n < 10$	1. {0,1,2,3,4,5,6,7,8,9}
2. $n < 3$	2.
3. $n < 12$	3.
4. $5 < n$ and $n < 10$	4.
5. $18 < n$ and $n < 20$	5.
6. $42 < n$ and $n < 48$	6.
7. $97 < n$ and $n < 103$	7.
8. $123 < n$ and $n < 125$	8.
9. $n < 9 + 1$	9.
10. $n < 15 - 9$	10.
11. $n < 3 \times 2$	11.
12. $n < 12 \div 2$	12.
13. $2 + 2 < n$ and $n < 6$	13.
14. $3 \times 3 < n$ and $n < 5 \times 3$	14.
15. $6 \div 2 < n$ and $n < 4 \times 2$	15.

WHAT IS THE OPERATION?

1. $(250, 25) \longrightarrow 10$

2. $(70, 0) \longrightarrow 0$

3. $(413, 279) \longrightarrow 692$

4. $(615, 209) \longrightarrow 406$

5. $(33, 11) \longrightarrow 3$

6. $(33, 11) \longrightarrow 22$

7. $(4, 30) \longrightarrow 120$

8. $(1, 1010) \longrightarrow 1010$

9. $(640, 2) \longrightarrow 320$

10. $(12, 12) \longrightarrow 0$

11. $(11, 12) \longrightarrow 132$

12. $(12, 12) \longrightarrow 144$

13. $(12, 12) \longrightarrow 1$

14. $(603, 3) \longrightarrow 201$

15. $(514, 499) \longrightarrow 15$

16. $(6724, 1111) \longrightarrow 7835$

17. $(14, 2) \longrightarrow 28$

18. $(111, 7) \longrightarrow 777$

19. $(2, 2) \longrightarrow 4$

20. $(42, 30) \longrightarrow 1260$

21. $(6, 3)$
$\downarrow$
$(2, 5) \longrightarrow 10$

22. $(810, 210)$
$\downarrow$
$(1020, 919) \longrightarrow 101$

23. $(670, 230)$
$\downarrow$
$(900, 670) \longrightarrow 230$

24. $(15, 2)$
$\downarrow$
$(30, 15) \longrightarrow 15$

PROPERTIES OF OPERATIONS

What properties are used?

1. $(320 + 16) + 10 = 320 + (16 + 10)$
2. $5 \times (9 + 2) = (5 \times 9) + (5 \times 2)$
3. $450 \times 80 = 80 \times 450$
4. $(30 \times 20) \times 10 = 30 \times (20 \times 10)$
5. $61 + (20 + 8) = (61 + 20) + 8$
6. $10 \times 40 = (10 \times 20) + (10 \times 20)$
7. $469 + 382 = 382 + 469$
8. $368 \times 9 = 9 \times 368$
9. $(10 \times 2) + (10 \times 5) = 10 \times (2 + 5)$
10. $5 \times 21 = (5 \times 10) + (5 \times 11)$
11. $820 + 0 = 820$
12. $962 \times 1 = 962$

*13. $(8, 8) \xrightarrow{-} (n, m) \xrightarrow{+}$ _____

*14. $(7, 6) \xrightarrow{-} (a, b) \xrightarrow{\times}$ _____

Use properties to solve the sentences.

15. $9257 + n = 10943 + 9257$

    n is _____

16. $n \times 876 = 876 \times 434$

    n is _____

17. $43670 \times n = 43{,}670$

    n is _____

18. $2215 + 4300 = n + 2000 + 4300$

    n is _____

19. $6 \times 17 = (n \times 10) + (n \times 7)$

    n is _____

20. $(86 \times 4) + (86 \times 6) = n$

    n is _____

PROPERTIES OF OPERATIONS

Which are names for whole numbers?

1. $6 + 3$ 2. $8 - 3$ 3. $6 \div 3$ 4. $3 - 5$ 5. $8 - 0$

6. $2 \div 3$ 7. $3 \div 5$ 8. $4 + 6$ 9. $4 - 6$ 10. $9 \div 3$

WARNING: THESE MACHINES ONLY GIVE WHOLE NUMBERS

Complete the chart.

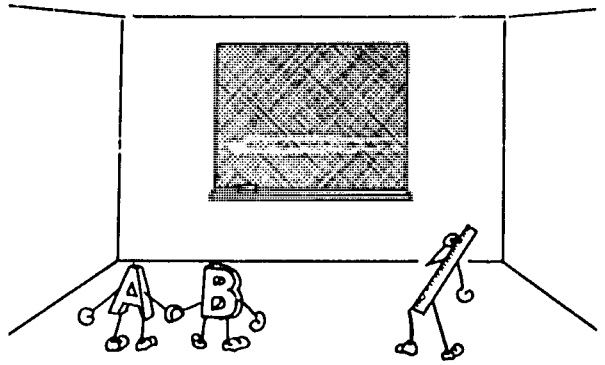
	+	−	×	÷
11. (6, 2) →	8	4	12	3
12. (3, 4) →				
13. (8, 6) →				
14. (4, 2) →				
15. (2, 4) →				
16. (7, 1) →				
17. (10, 5) →				

Is the set of whole numbers closed under these operations?

18. Addition 19. Subtraction

20. Multiplication 21. Division

POINTS AND LINES



1. (a) Find a position in your classroom 1 foot from the bottom of the blackboard and 8 inches from the right edge.

   (b) Mark this position with a dot.

   (c) What figure does the dot show?

2. (a) Put a dot in the position 1 foot from the right edge of the blackboard and 9 inches from the bottom edge.

   (b) Does this show a point?

3. (a) Mark some points each 15 inches from the bottom edge of the blackboard.

   (b) Are these points on a straight line?

4. (a) Mark two points A and B on the blackboard.

   (b) Draw a line segment with A and B as endpoints.

   (c) Mark some other points on $\overline{AB}$.

   (d) How many points can you mark on $\overline{AB}$?

   (e) Mark some points not on $\overline{AB}$.

   (f) How many points can you mark that are *not on* $\overline{AB}$?

POINTS and LINES continued

5. (a) Mark two points D and E on the blackboard.

   (b) Draw $\overrightarrow{DE}$ on the blackboard.

   (c) What is this figure called?

6. (a) Mark two points M and P on the blackboard.

   (b) Draw $\overleftrightarrow{MP}$ on the blackboard.

   (c) What is this figure called?

7. How do you show in a drawing that a figure is a ray?

8. How do you show in a drawing that a figure is a line?

9. (a) Draw line segment $\overline{FG}$ on the blackboard.

   (b) Draw ray $\overrightarrow{FG}$.

   (c) Draw line $\overleftrightarrow{FG}$.

   (d) Mark a point T that is on $\overline{FG}$, on $\overrightarrow{FG}$, and on $\overleftrightarrow{FG}$.

   (e) Can you mark a point that is on $\overrightarrow{FG}$ and not on $\overline{FG}$?

   (f) Can you mark a point that is on $\overleftrightarrow{FG}$ and not on $\overline{FG}$?

   (g) Can you mark a point that is on $\overrightarrow{FG}$ and not on $\overleftrightarrow{FG}$?

INTERSECTING LINES

1. (a) Draw on the blackboard two line segments $\overline{AB}$ and $\overline{CD}$ that *do not* intersect.

   (b) Is there a point on $\overline{AB}$ that is also a point on $\overline{CD}$?

2. (a) Draw two line segments $\overline{EF}$ and $\overline{GH}$ that *do* intersect.

   (b) Is there a point on $\overline{EF}$ that is also a point on $\overline{GH}$?

3. (a) Do line segments $\overline{AB}$ and $\overline{CD}$ intersect?

   (b) Do line segments $\overline{EF}$ and $\overline{GH}$ intersect?

4. (a) Try to draw two line segments that intersect in two points. Can you?

   (b) In how many points can two line segments intersect?

5. (a) Mark a point M.

   (b) Draw a line through M.

   (c) Try to draw another line through M. Can you?

   (d) How many lines can you draw through M?

6. (a) Mark on the blackboard two points P and Q?

   (b) Draw a line through the points P and Q.

   (c) Try to draw another line through points P and Q. Can you?

   (d) How many lines can you draw through P and Q?

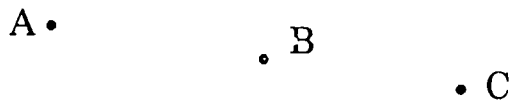
7. (a) How many lines can you draw through one point?

   (b) How many lines can you draw through two points?

   (c) Can you always draw one line through two points?

LINES THROUGH POINTS

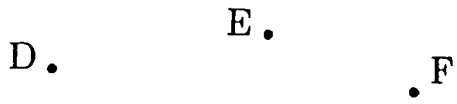
1. Here are three points A, B, and C.



   (a) Copy the points.

   (b) Try to draw one line through the three points. Did you draw one line?

2. Here are three points D, E, and F.



   (a) Copy the points.

   (b) Try to draw one line through the three points. Did you draw one line?

3. (a) Can you sometimes draw a line through three points?

   (b) Show three points you can draw one line through. Name them M, N, and P.

   (c) Draw one line through M and N and P.

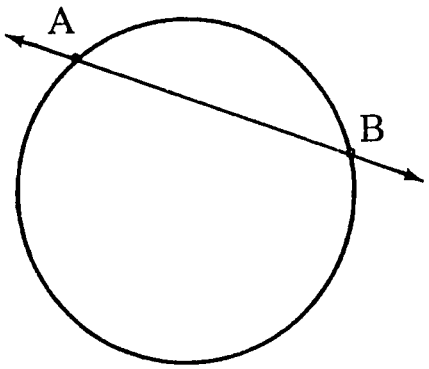
4. (a) Can you always draw a line through three given points?

   (b) Show three points you can not draw one line through. Name the points Q, R, and S.

   (c) Show by drawing lines that no one line goes through points Q and R and S.

INTERSECTIONS

(1)



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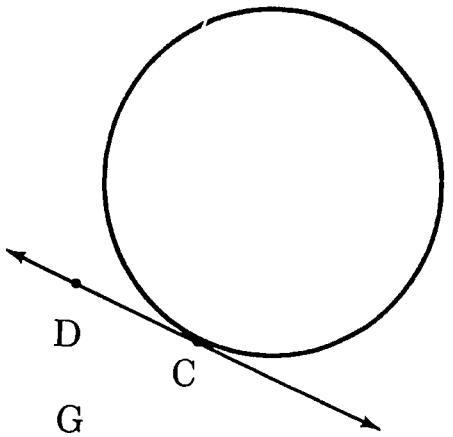

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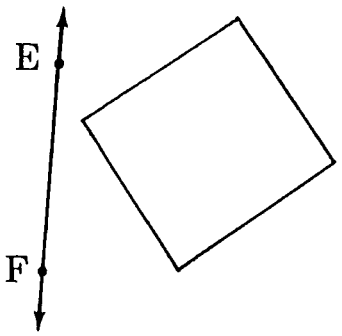

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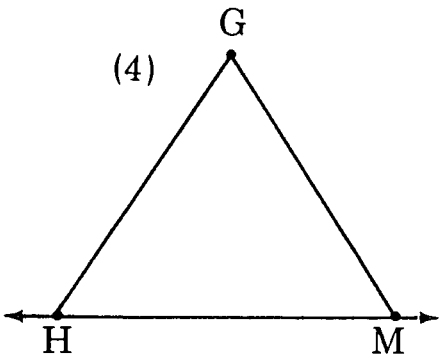

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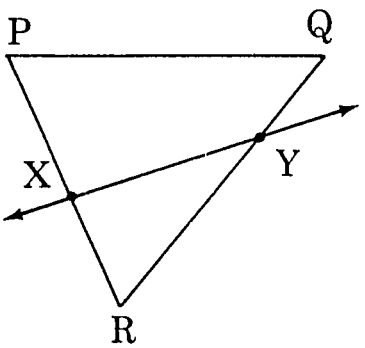

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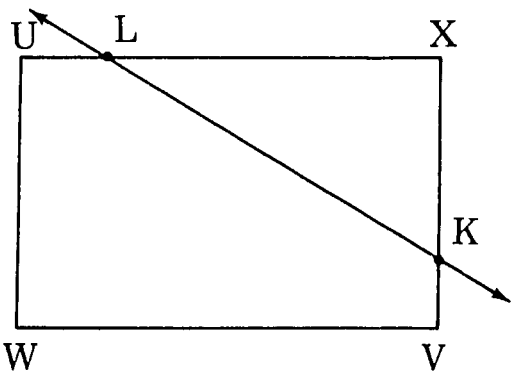


(1) The line $\overleftrightarrow{AB}$ intersects the circle in _____ points.

(2) The line $\overleftrightarrow{CD}$ intersects the circle in _____ point.

(3) The line $\overleftrightarrow{EF}$ does not intersect the _____.

(4) The line $\overleftrightarrow{HM}$ intersects the triangle HMG in _____.

(5) $\overleftrightarrow{XY}$ intersects _____ at X and at Y.

(6) $\overleftrightarrow{LK}$ intersects the rectangle in _____ points.

INTERSECTIONS

1. Draw a line that intersects a triangle in one point.

2. Draw a line that intersects a triangle in two points.

3. Draw a line that intersects a triangle at no point.

4. Draw a line that intersects a triangle in more than two points. Name the intersection.

5. Can you draw a line that intersects a triangle in exactly three points?

6. Draw a line that intersects a rectangle in one point.

7. Draw a line that intersects a rectangle in two points.

8. Draw a line that intersects a rectangle at no point.

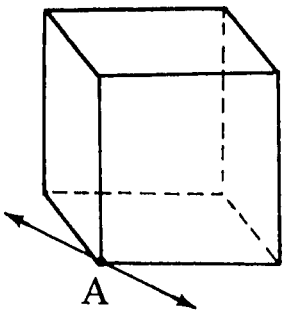
9. Draw a line that intersects a rectangle in more than two points. Name the intersection.

10. Can you draw a line which intersects a rectangle in exactly three points?

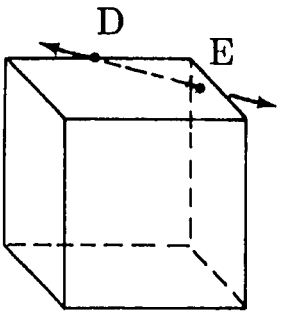
LINE INTERSECTING A BOX

What is the intersection of each line with each box?

(1)



(2)



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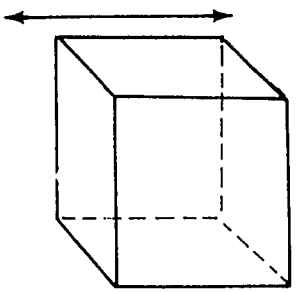

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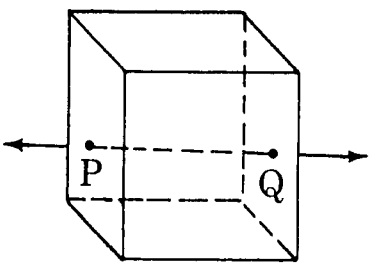

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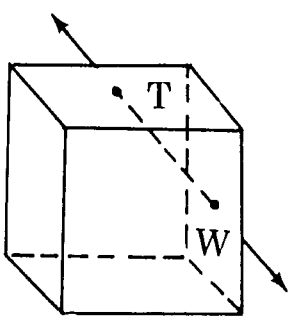

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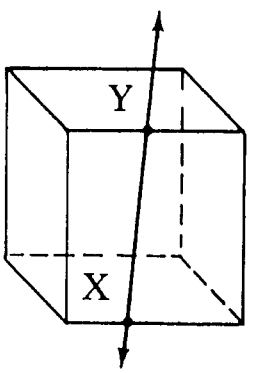


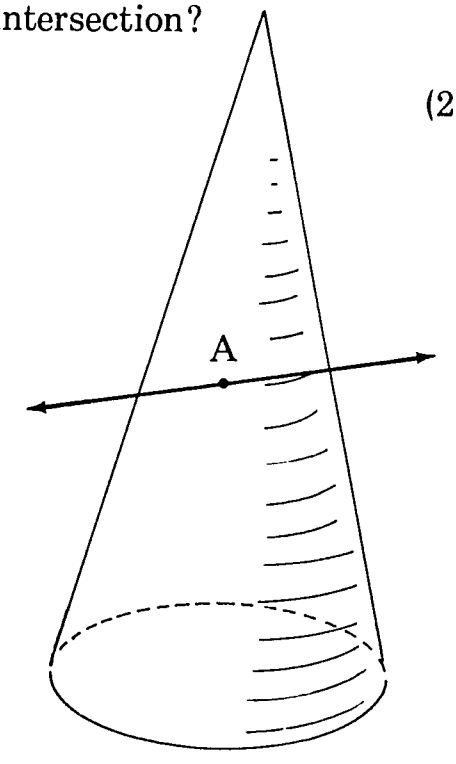
INTERSECTIONS

Each drawing shows a line intersecting a solid figure.

What is the intersection?

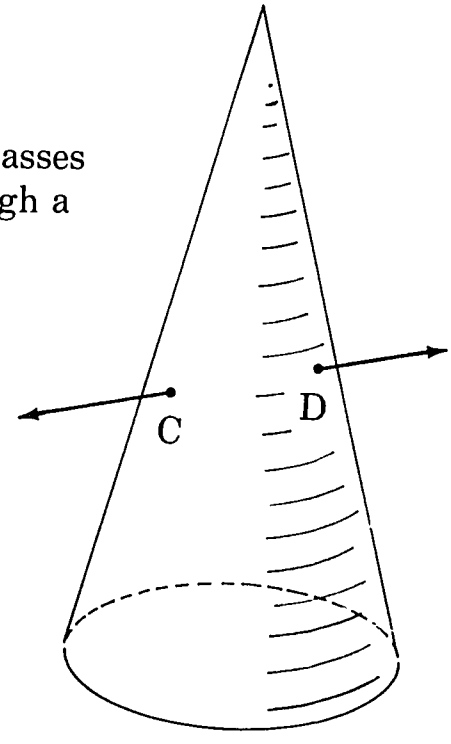
(1)

line touches the cone

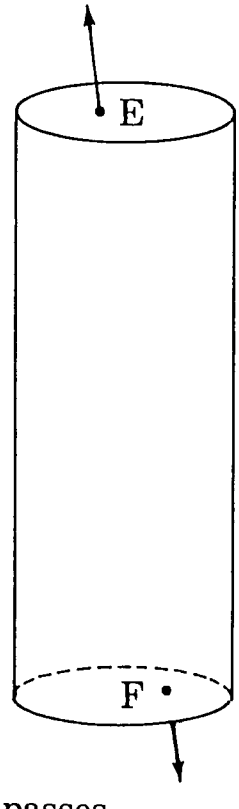


(2)

line passes through a cone

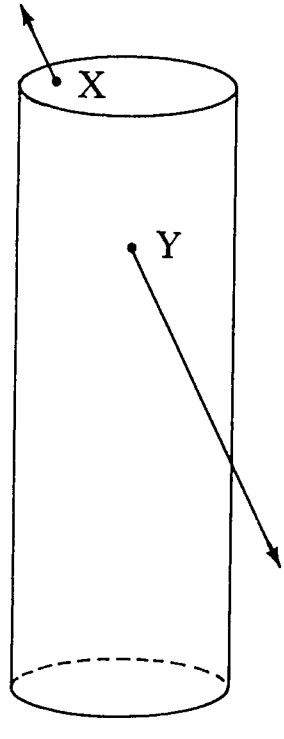


(3)



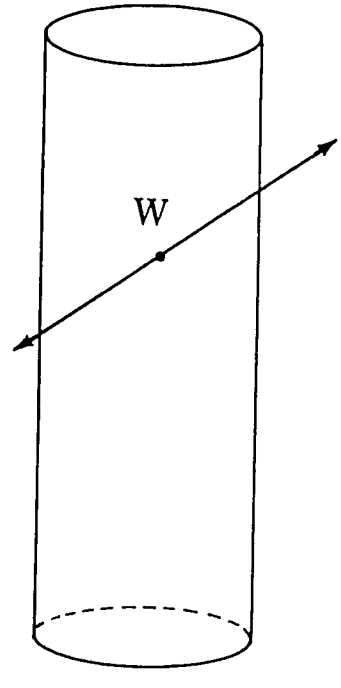
line passes through a cylinder

(4)



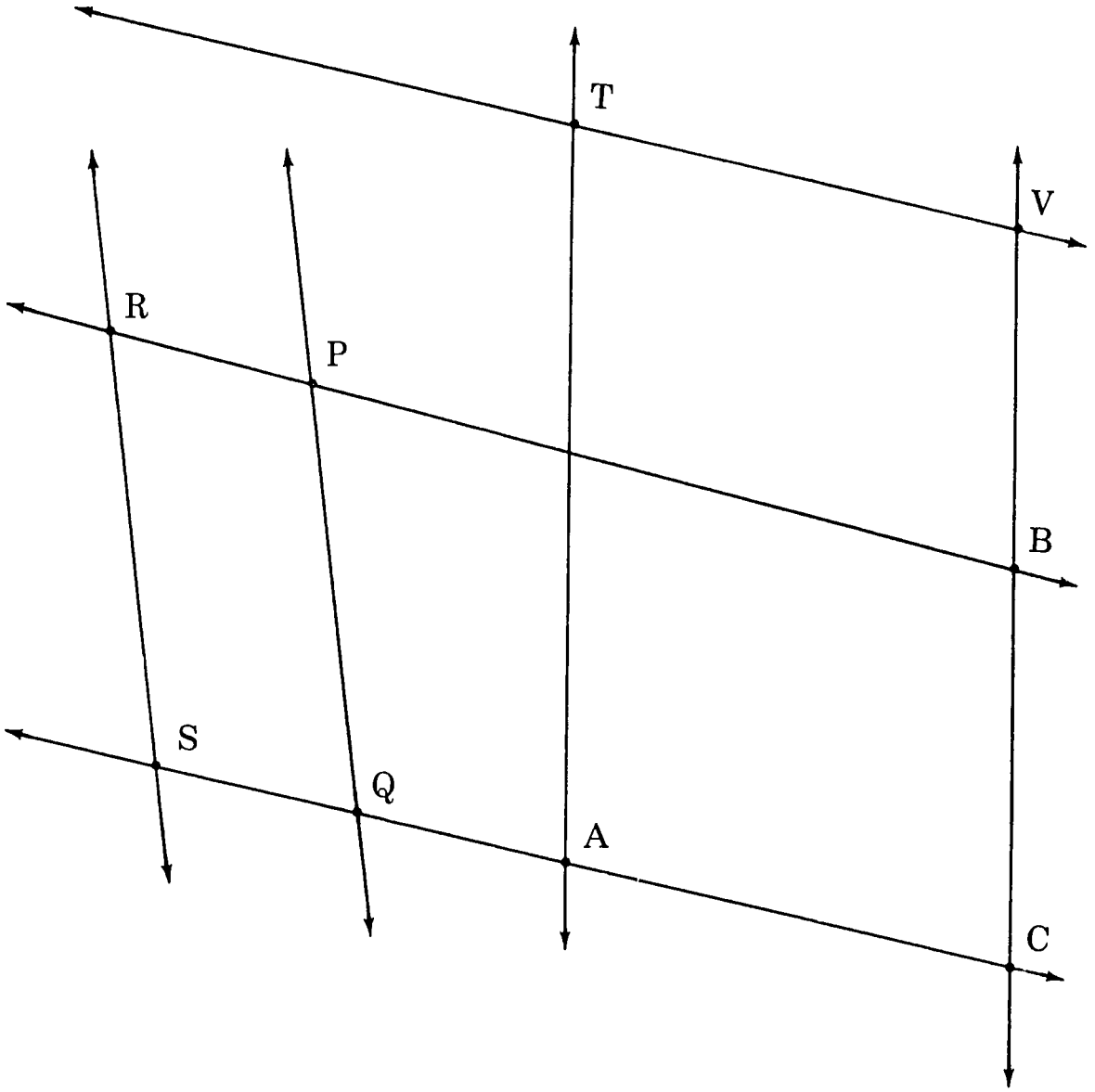
line passes through a cylinder

(5)



line touches a cylinder

PARALLEL LINES



(1) Are lines $\overleftrightarrow{PQ}$ and $\overleftrightarrow{TA}$ parallel?

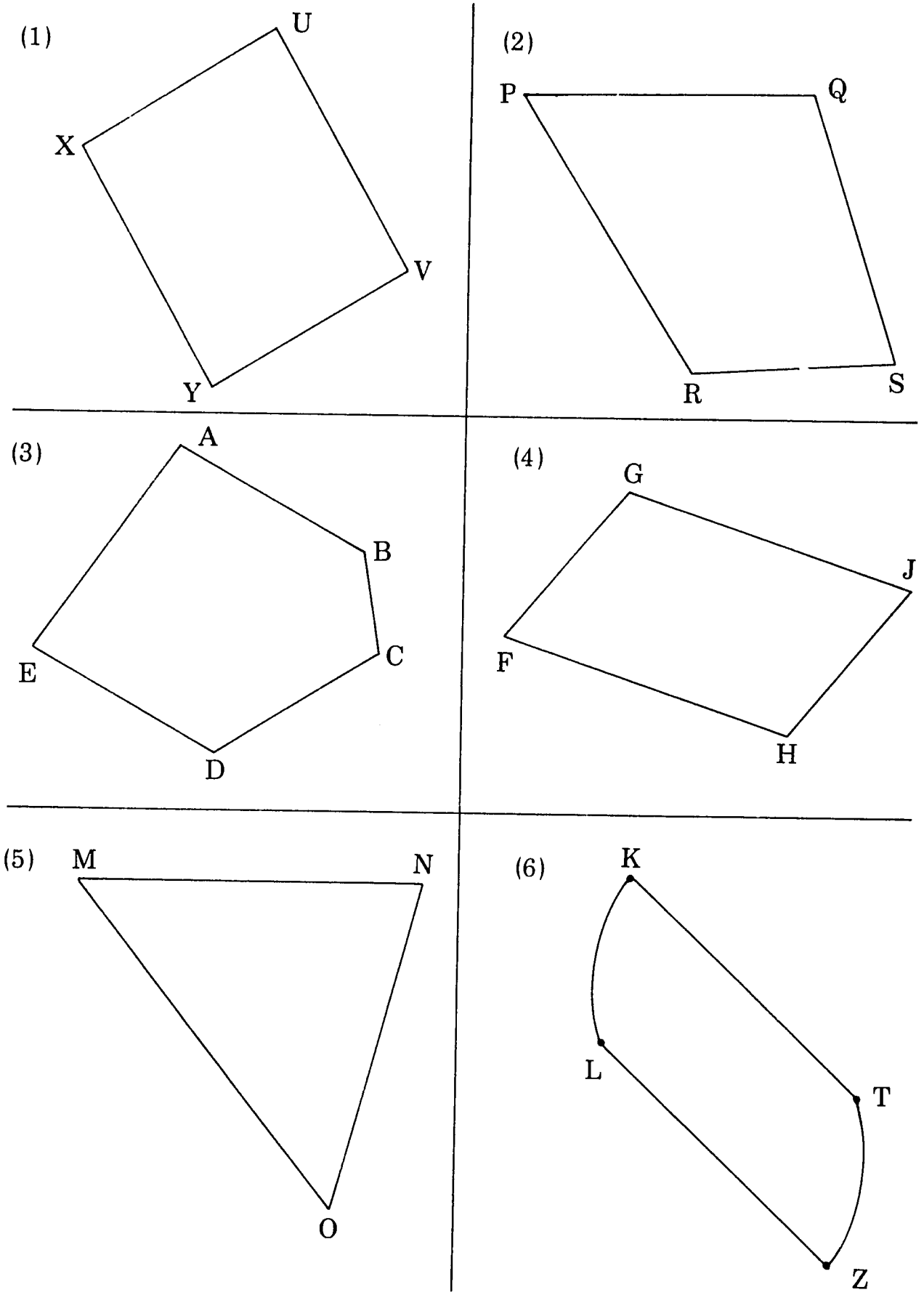
(2) Lines _____ and _____ are parallel.

(3) Lines _____ and _____ are parallel.

(4) Lines _____ and _____ are parallel.

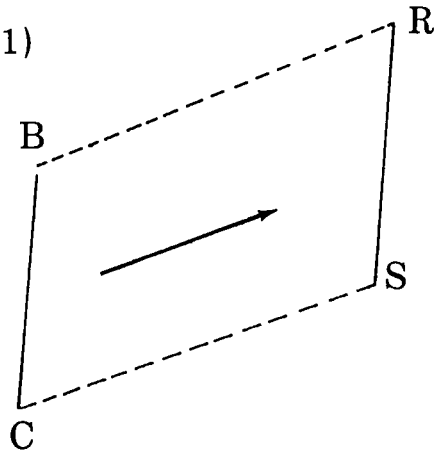
(5) Are lines $\overleftrightarrow{TV}$ and $\overleftrightarrow{PQ}$ parallel?

PARALLEL MOVEMENTS

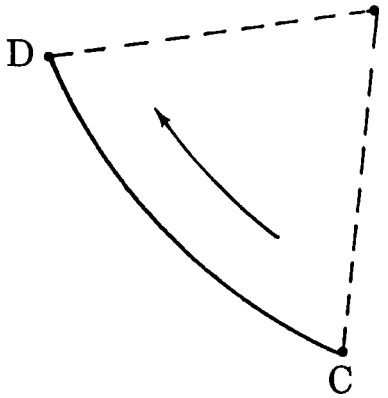


MOVEMENTS

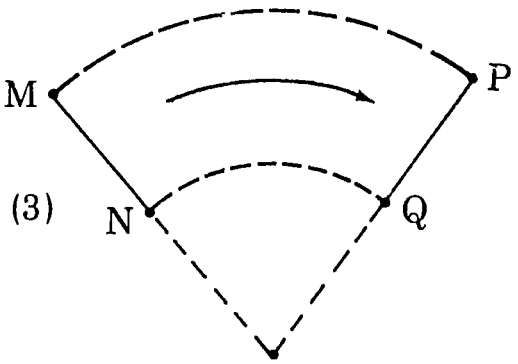
(1)



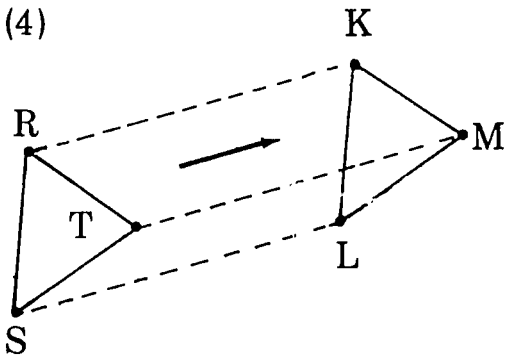
(2)



(3)



(4)



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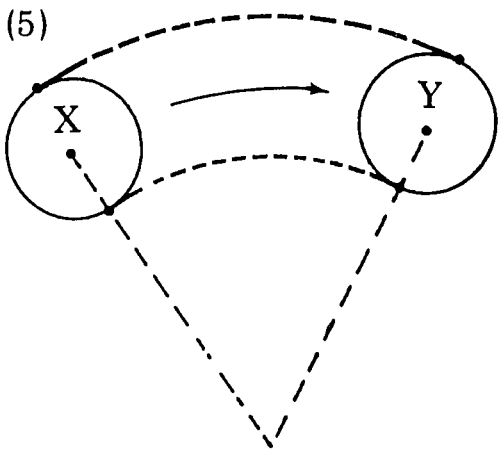
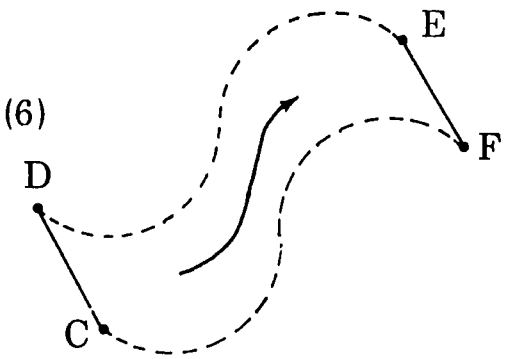


(6)



(1) _____ is moved with a parallel movement.
(2) Point C is moved with a _____ movement.
(3) _____ is moved to $\overline{QP}$ with a _____ movement.
(4) $\triangle$ RST is moved with a _____ movement.
(5) Circle X is moved with a _____ movement.
(6) What movement is used to move $\overline{DC}$?

FIND THE PRODUCTS

1. $a = 24 \times 10$
2. $10 \times 39 = b$
3. $97 \times 10 = c$
4. $d = 350 \times 40$
5. $e = 460 \times 30$
6. $60 \times 60 = f$
7. $673 \times 100 = g$
8. $876 \times 100 = j$
9. $k = 830 \times 100$
10. $m = 600 \times 24$
11. $300 \times 87 = n$
12. $96 \times 800 = p$
13. $q = 965 \times 20$
14. $136 \times 300 = r$
15. $400 \times 46 = s$
16. $t = 70 \times 635$
17. $u = 100 \times 246$
18. $80 \times 715 = v$
19. $819 \times 500 = w$
20. $z = 113 \times 70$

FIND THE PRODUCTS

1. 95
9

2. 87
4

3. 113
5

4. 69
11

5. 97
25

6. 46
58

7. 108
32

8. 127
73

9. 412
76

10. 305
82

11. 519
123

12. 246
437

13. 807
96

14. 342
68

15. 546
162

INEQUALITIES

Use >, or =, or < to make the sentences true.

1. 86×30 ___ 72×40

2. 400×60 ___ 40×600

3. $70 \times (18 - 8)$ ___ $(70 \times 18) - (70 \times 8)$

4. $17 \times (10 + 40)$ ___ 50×17

5. 86×27 ___ 80×30

6. 430×60 ___ 300×11

7. 758 ___ $(7 \times 1000) + (5 \times 10) + (8 \times 1)$

8. $(5 \times 200) \times 463$ ___ $5 \times (200 + 463)$

9. $786 \times (800 + 30 + 7)$ ___ $(786 \times 800) + (786 \times 30) + (786 \times 7)$

10. $246 + (315 \times 189)$ ___ $(246 + 315) \times (246 + 189)$

11. 43×71 ___ 92×28

12. 513×700 ___ 628×600

13. $(616 \times 85) - (140 \times 85)$ ___ 476×85

14. 435×652 ___ 635×452

FIND THE PRODUCTS

1.	1234	2.	3246	3.	2107	4.	4029
	8		7		6		11
5.	348	6.	403	7.	2243	8.	4032
	176		291		42		78
9.	3768	10.	6011	11.	604	12.	1420
	53		346		507		421
13.	486	14.	719	15.	834	16.	539
	379		648		576		708
17.	4632	18.	3041	19.	2379	20.	1123
	521		628		408		734

21.	927	22.	7008
	729		865

MULTIPLICATION

What number makes the sentence true?

1. $a = 4163 \times 10$
2. $206 \times 100 = b$
3. $f = 475 \times 700$
4. $60 \times 270 = g$

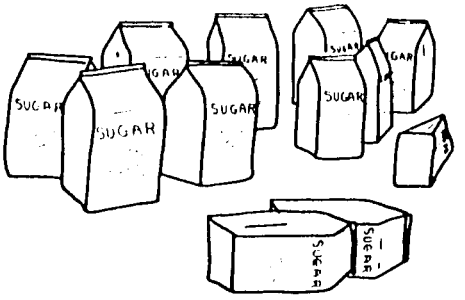
Multiply.

5. $\begin{array}{r} 517 \\ \underline{68} \end{array}$
6. $\begin{array}{r} 872 \\ \underline{245} \end{array}$
7. $\begin{array}{r} 1830 \\ \underline{32} \end{array}$
8. $\begin{array}{r} 4382 \\ \underline{725} \end{array}$

---

9. Mr Ojo sells 10 tins of palm oil each week. If there are 20 bottles of oil in each tin, how many bottles of oil does Ojo's father sell each week?

10. Fatu's mother bought 12 bags of sugar. Each bag of sugar costs 80 shillings. What is the cost of the 12 bags?



11. A grocer sells apples at 25 cents per pound. How many cents do 30 pounds of apples cost?

12. An aeroplane flies 550 miles each hour. How far does it fly in 11 hours?

STORY PROBLEMS

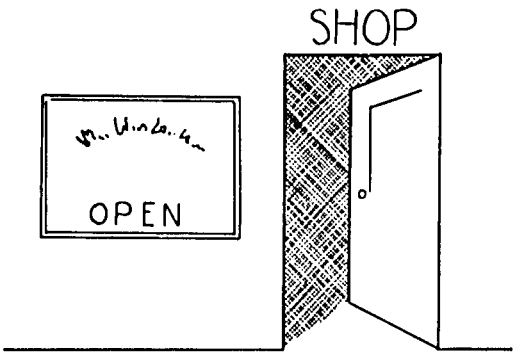
1. In Azza's garden there are 20 rows of cabbages. If there are 24 cabbages in each row, how many cabbages are there in all?

2. In one year Bade sold 85 tons of cocoa at 200 pounds a ton. In the next year he sold 90 tons at 150 pounds a ton. How many pounds did he receive from selling cocoa in these two years?

3. In a story book there are about 100 words on each page. If there are 38 pages in the book, about how many words are there in the book?

4. Haile's car does 25 miles to a gallon of petrol. On a certain journey he used 12 gallons of petrol. How far did he travel? The journey costs him 45 cents per mile. What was the total cost of the journey?

5. Every week a shop is opened for 72 hours. For how many hours is the shop opened in 4 years if there are 52 weeks in a year?



Find the products.

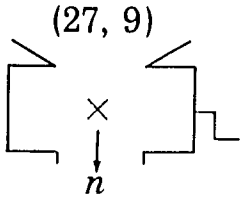
6. $\begin{array}{r} 711 \\ \underline{608} \end{array}$

7. $\begin{array}{r} 6248 \\ \underline{438} \end{array}$

8. $\begin{array}{r} 7109 \\ \underline{25} \end{array}$

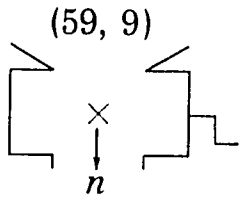
ESTIMATE THE PRODUCT

1.



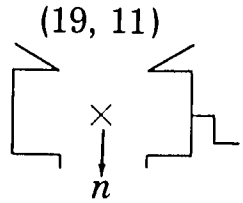
n is about_____.

2.



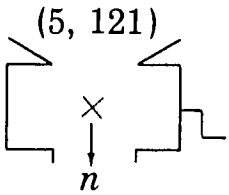
n is about_____.

3.



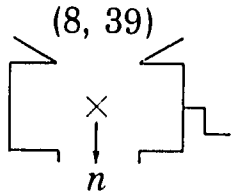
n is about_____.

4.



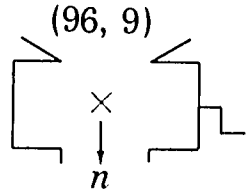
n is about_____.

5.



n is about_____.

6.



n is about_____.

7. $112 \times 7 = n$, n is about_____.

8. $11 \times 38 = n$, n is about_____.

9. $98 \times 8 = n$, n is about_____.

10. $29 \times 7 = n$, n is about_____.

11. $(19, 19) \xrightarrow{\times} n$
n is about_____.

12. $(42, 8) \xrightarrow{\times} n$
n is about_____.

13. $(7, 99) \xrightarrow{\times} n$
n is about_____.

14. $(6, 13) \xrightarrow{\times} n$
n is about_____.

ESTIMATE THE MISSING FACTOR

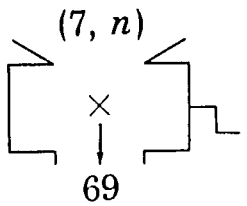
1. $n \times 6 = 53$, n is about _____.

2. $n \times 9 = 43$, n is about _____.

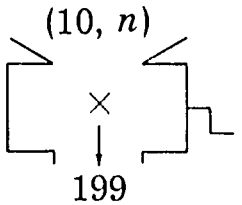
3. $12 \times n = 118$, n is about _____.

4. $7 \times n = 44$, n is about _____.

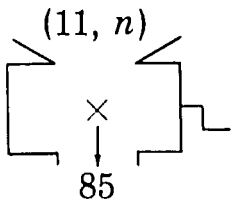
5. $8 \times n = 26$, n is about _____.

6. 

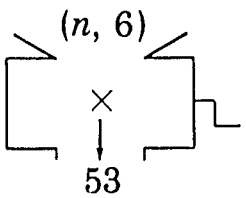
n is about _____.

7. 

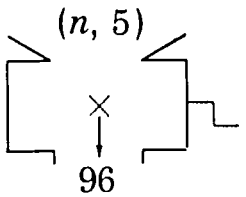
n is about _____.

8. 

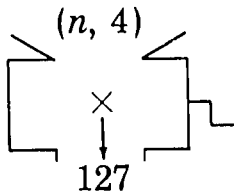
n is about _____.

9. 

n is about _____.

10. 

n is about _____.

11. 

n is about _____.

12. $(21, n) \xrightarrow{\times} 180$
n is about _____.

13. $(9, n) \xrightarrow{\times} 280$
n is about _____.

14. $(n, 7) \xrightarrow{\times} 500$
n is about _____.

15. $(n, 5) \xrightarrow{\times} 59$
n is about _____.

ESTIMATE THE ANSWERS

1. The Rufiji River in Tanzania is 450 miles long. The River Nile which begins in Uganda and ends at the sea in Egypt is 4400 miles long. The River Nile is about _____ times as long as the Rufiji River.

2. In 1952 about 12,518 tons of fish were caught in the country which is now Zambia. Ten years later, the total was almost 2 times that number. In 1962, there were about _____ tons of fish caught.

3. Nakku lives in Entebbe, Uganda. One day her family drove to Masaka. They drove first from Entebbe to Kampala (21 miles). Then they drove from Kampala to Masaka (81 miles). How far did they drive altogether from Entebbe to Masaka?
The distance from Kampala to Masaka is about _____ times the distance from Entebbe to Kampala.

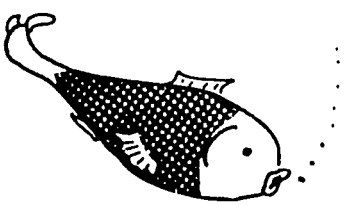
$$21 \times n = 81$$

4. Nakku's family drives about 50 miles in one hour. About how long did it take them to go from Entebbe to Masaka?

$$50 \times n = 21 + 81$$

5. In December of one year, Ghana shipped about 4911 hundredweights of kolanuts to Nigeria. The total shipped for the whole year was about 8 times that much. About how many hundredweights of kolanuts were shipped that year?

6. Fatu's father is a fisherman on a large trawler in Sierra Leone. In 1961 there were 9 trawlers fishing off Sierra Leone. But in 1965 there were 19 trawlers. The number of trawlers in 1965 was about _____ times the number in 1961.

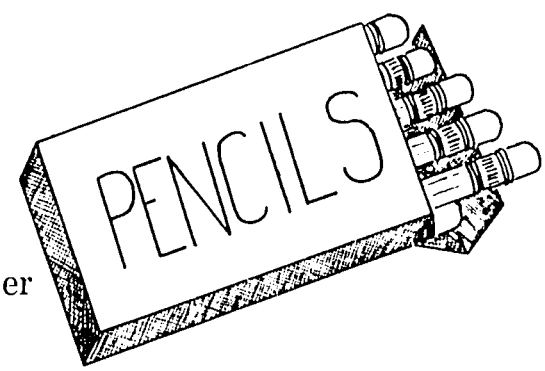


HIGH AND LOW ESTIMATES

Sentence	Low Estimate	High Estimate	___ $< n$; $n <$ ___
1. $32 \times 9 = n$			;
2. $12 \times 25 = n$			;
3. $27 \times 4 = n$			;
4. $85 \times 11 = n$			;
5. $23 \times 8 = n$			;
6. $46 \times 8 = n$			;
7. $5 \times n = 103$			;
8. $11 \times n = 101$			;
9. $10 \times n = 254$			;
10. $6 \times n = 49$			;
11. $8 \times n = 62$			;
12. $3 \times n = 35$			;

13. From one school, 239 children are going to sports day in buses. Each bus holds 50 children. About how many buses are needed? Are four buses enough? Are five buses enough?

14. A school has 46 children in one class. The teacher wants to give a pencil to each child. The pencils come in boxes of 10. How many boxes must the teacher open to give every child a pencil?



FACTS AND FIGURES ABOUT AFRICA

1. Lake Albert and Lake Edward are lakes in western Uganda. The area of Lake Edward is 830 square miles. The area of Lake Albert is 2064 square miles. Complete the following sentences:

   (a) The area of Lake Albert is about _____ times the area of Lake Edward.

   $$2064 = n \times 830$$

   (b) The area of Lake Albert is more than _____ times that of Lake Edward.

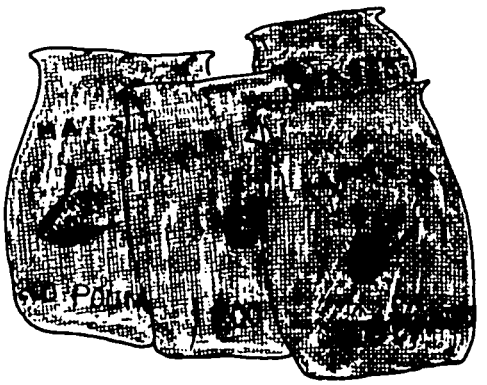
   (c) The area of Lake Albert is less than _____ times that of Lake Edward.

2. In 1960 the Port of Mombasa handled about 2,600,000 tons of freight. In 1964 the Port of Mombasa handled about 4,000,000 tons of freight. Which of the sentences below is true?

   The total for 1964 was more than 2 times the total for 1960.

   The total for 1964 was less than 2 times the total for 1960.

3. During one year about $1\frac{1}{2}$ million bags of maize grown in Zambia were sold. Each bag holds 200 pounds. The total maize sold was more than _____ million pounds but less than _____ million pounds.



4. In the part of Zambia south of Lusaka, the amount of rain a year is usually between 20 and 30 inches. In the north of Zambia, the amount of rain is about 2 times as much. Give a low and a high estimate for the amount of rain in a year in northern Zambia.

   It is between _____ inches and _____ inches.

   _____ $< n$; $n <$ _____

DIVISION

Use the Distributive Property.

1. $65 \div 5 = n$
   $(50 + 15) \div 5 = n$

2. $a = 84 \div 7$
   $a = (49 + 35) \div 7$

3. $112 \div 8 = e$
   $(64 + 48) \div 8 = e$

4. $192 \div 12 = p$

5. $b = 396 \div 11$

6. $539 \div 7 = n$

7. $20\overline{)700}$ r

8. $4\overline{)384}$ c

9. $30\overline{)2160}$ h

10. $60\overline{)1440}$ t

11. $910 \div 70 = d$

12. $2496 \div 8 = a$

13. A man worked 9 hours in a day. It took him 306 hours to finish his work. How many days did he work?

14. How many dozen eggs are 228 eggs?

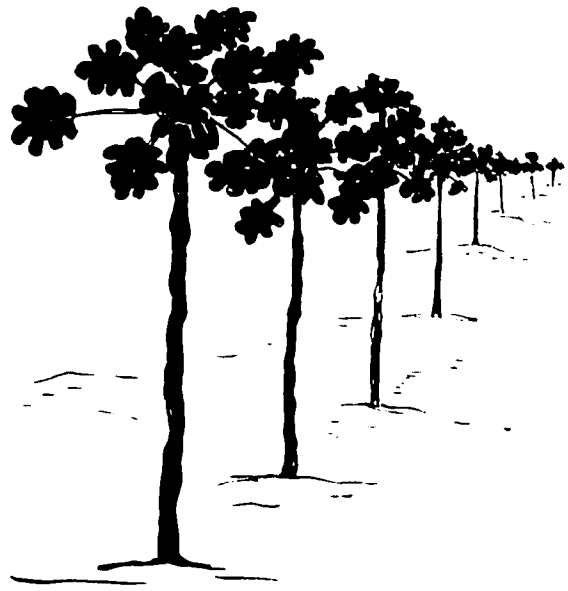
15. How many yards are 5280 feet?

16. Each workman was paid 6 shillings daily. A total of 696 shillings was paid each day to the workmen. How many workmen were there?

DIVISION

Use the Distributive Property to find n.

1. $2420 \div 20 = n$
2. $396 \div 6 = n$
3. $n = 4683 \div 7$
4. $5661 \div 9 = n$
5. $n = 832 \div 7$
6. $5304 \div 8 = n$
7. $n = 1036 \div 7$
8. $2403 \div 9 = n$
9. $2656 \div 8 = n$
10. $12\overline{)1512}$ n
11. $6\overline{)2340}$ n
12. $7\overline{)1837}$ n
13. How many yards is the same as 2640 feet?
14. A tank holds 2360 gallons of water. How many 40-gallon drums can be filled from the tank?
15. There are 3510 lines in a book. If there are 30 lines on each page, how many pages has the book?
16. A fruit garden has 333 trees. The trees are planted in 9 rows, each row with the same number of trees. How many trees are in each row?



DIVISION

1. $3\overline{)29}$
   $29 = (9 \times 3) + 2$

2. $6\overline{)135}$
   $135 = (___ \times 6) + ___$

3. $8\overline{)174}$
   $174 = (___ \times 8) + ___$

4. $7\overline{)242}$
   $242 = (___ \times 7) + ___$

5. $9\overline{)323}$
   $323 = (___ \times 9) + ___$

6. $7\overline{)975}$
   $975 = (___ \times 7) + ___$

7. $11\overline{)713}$
   $713 = (___ \times 11) + ___$

8. $11\overline{)1461}$
   $1461 = (___ \times 11) + ___$

9. $12\overline{)564}$
   $564 = (___ \times 12) + ___$

10. $12\overline{)2573}$
    $2573 = (___ \times 12) + ___$

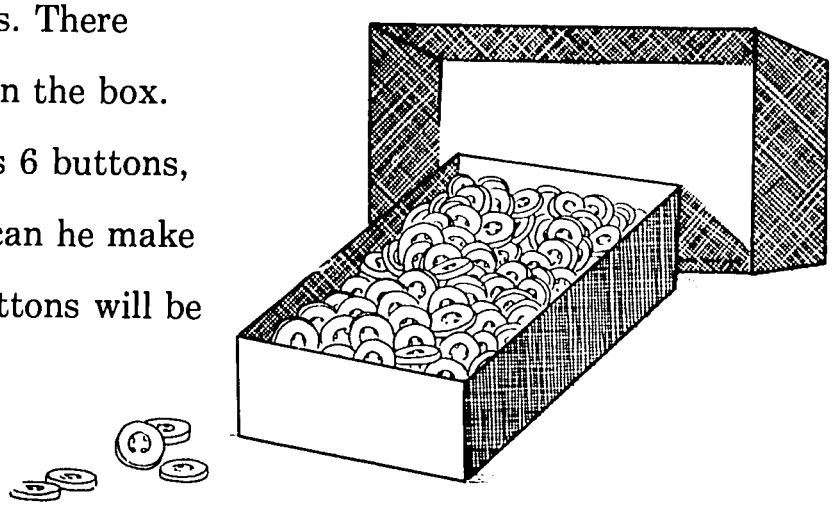
11. Tommy went on a trip with his father. They were away from their home 137 days. How many weeks were they away?

12. In Nigeria the people use shillings and pence. It takes 12 pence to make 1 shilling. Idowu has 47 pence. How many shillings does he have?

13. In Uganda, there is a mountain peak called Muhavura. It is 13,547 feet high. How many yards high is it?

DIVISION

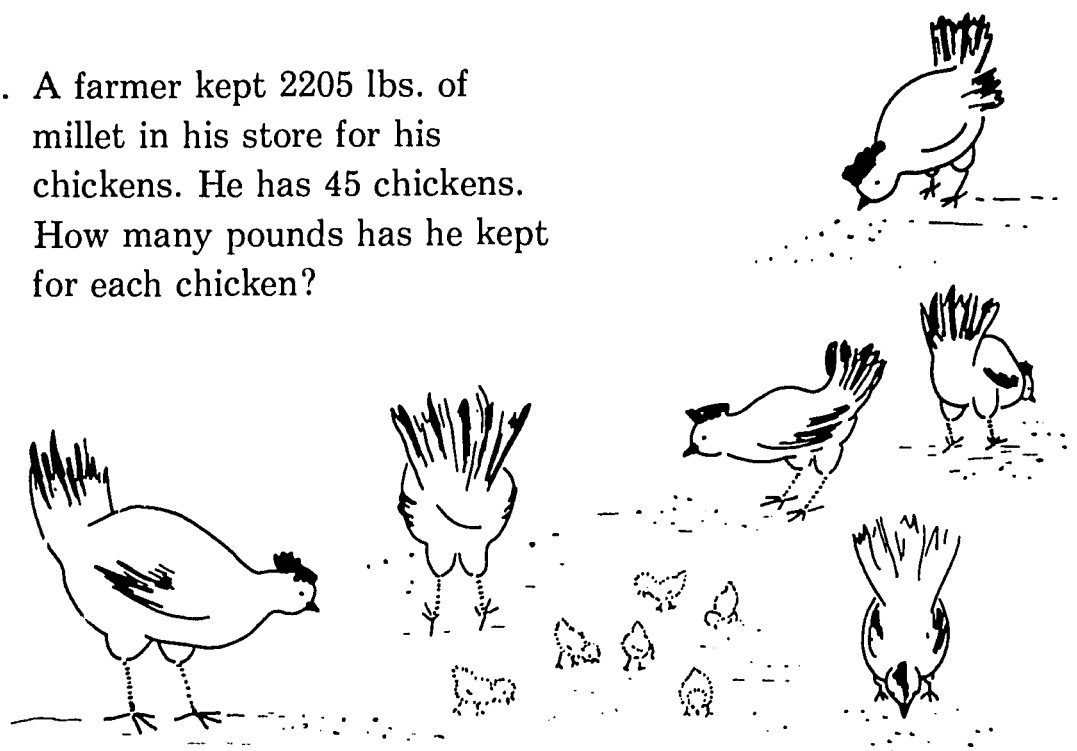
1. $11\overline{)121}$
2. $11\overline{)341}$
3. $11\overline{)902}$
4. $6\overline{)91}$
5. $8\overline{)122}$
6. $12\overline{)184}$
7. $11\overline{)561}$
8. $9\overline{)138}$
9. $7\overline{)563}$
10. $7\overline{)66}$
11. $7\overline{)143}$
12. $7\overline{)878}$
13. $9\overline{)1027}$
14. $12\overline{)3462}$
15. $8\overline{)1291}$
16. A tailor who makes shirts for a school uniform has a box full of buttons. There are 1654 buttons in the box. If each shirt needs 6 buttons, how many shirts can he make and how many buttons will be left over?



DIVISION

1. $15\overline{)480}$
2. $13\overline{)338}$
3. $25\overline{)1225}$
4. $24\overline{)384}$
5. $45\overline{)4590}$
6. $26\overline{)624}$
7. $15\overline{)1875}$
8. $22\overline{)3806}$
9. $13\overline{)1261}$
10. $75\overline{)1125}$
11. $14\overline{)1512}$
12. $18\overline{)504}$
13. $22\overline{)5522}$
14. $35\overline{)3885}$
15. $65\overline{)1495}$

16. A farmer kept 2205 lbs. of millet in his store for his chickens. He has 45 chickens. How many pounds has he kept for each chicken?



DIVISION

1. $13\overline{)46}$

   46 = (3 × 13) + 7

2. $15\overline{)639}$

   639 = (___ × 15) + ___

3. $25\overline{)1479}$

   1479 = (___ × 25) + ___

4. $14\overline{)2135}$

   2135 = (___ × 14) + ___

5. $18\overline{)984}$

   984 = (___ × 18) + ___

6. $22\overline{)960}$

   960 = (___ × 22) + ___

7. $15\overline{)3147}$

   3147 = (___ × 15) + ___

8. $75\overline{)3400}$

   3400 = (___ × 75) + ___

9. $35\overline{)711}$

   711 = (___ × 35) + ___

10. $13\overline{)932}$

    932 = (___ × 13) + ___

11. $12\overline{)2500}$

    2500 = (___ × 12) + ___

12. $25\overline{)9463}$

    9463 = (___ × 25) + ___

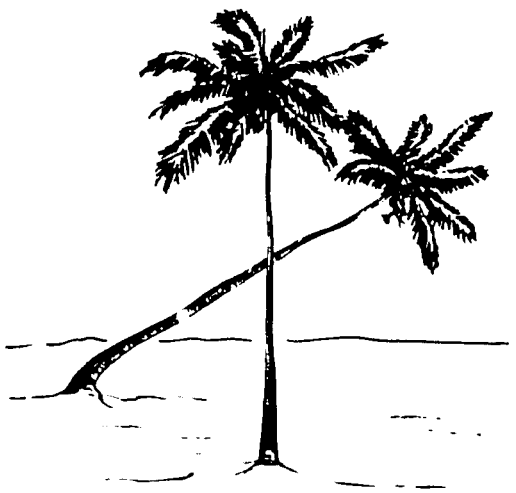
STORY PROBLEMS

1. A group of 13 boys collected 278 bananas. The bananas were divided equally among the boys. How many bananas did each boy receive? Were there any bananas left over?

2. One yard is the same as _____ inches. The distance between two poles is 900 inches. What is the distance in yards?

3. It takes 24 bottles of soda to fill one crate. How many crates of soda can be filled with 816 bottles?

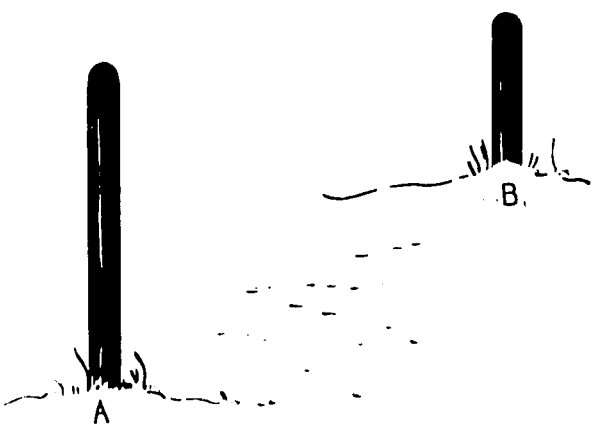
4. The distance between two palm trees is 150 feet. What is the distance in inches? Jide uses a stick to mark off the distance. The distance is 60 stick lengths. How many inches long is Jide's stick?



5. A fortnight is 14 days long. How many fortnights are there in 238 days?

6. Can 734 people be separated into 18 groups of the same number? If not, how many groups of 18 can be formed? How many people are left over?

7. Two teams of 15 boys run a relay race. Each boy runs from A to B and back. The total distance run by a team is 1890 yards. What is the distance in yards from A to B?



STORY PROBLEMS

1. A Ministry of Agriculture wants people to grow cotton for the first time. A total of 330 acres is given to 25 farmers. The acres which are left over are used by the Ministry. Each farmer gets the same number of acres. How many does each farmer get and how many acres does the Ministry use?

2. A lorry carries 45 bags of kaffir corn. The total weight of the bags is 9000 lbs. What is the weight of each bag?

3. Anyango spent part of her school holidays in the country. She was in the country for 588 hours. How many days and hours is this?

4. A government had money to build 1,456 houses in one year. They used the money to build houses in 13 towns. The same number was built in each town. How many houses were built in each town?

5. A man's salary for 1 year is 4,160 shillings. What is his weekly salary? (One year is 52 weeks.)

*6. Thirty-six traders bought 8,652 shirts. Each of the traders bought the same number of shirts except one. He bought 12 more than the others did. How many shirts did he buy?

ADDITION

What number makes the sentence true?

1. $\frac{5}{9} + \frac{6}{9} = n$
2. $\frac{18}{60} + \frac{28}{60} = m$
3. $\frac{6}{10} + \frac{2}{10} = p$
4. $\frac{30}{60} + \frac{22}{60} = t$
5. $\cdot 5 + \cdot 3 = a$
6. $10\% + 79\% = h$
7. $\cdot 03 + \cdot 04 = k$
8. $\cdot 07 + \cdot 75 = b$
9. $\frac{5}{7} + \frac{3}{7} = t$
10. $50\% + 29\% = p$
11. $25\% + 17\% = q$
12. $\frac{25}{50} + \frac{19}{50} = d$
13. $\frac{13}{15} + \frac{14}{15} = a$
14. $\cdot 14 + \cdot 28 = j$
15. $\frac{21}{60} + \frac{19}{60} = f$
16. $\frac{19}{40} + \frac{29}{40} = g$
17. $75\% + 43\% = d$
18. $29\% + 17\% = b$
19. $\cdot 75 + \cdot 43 = t$
20. $50\% + 150\% = m$

FRACTIONS

What number makes the sentence true?

1. $\frac{7}{9} = \frac{4}{9} + n$

   $\frac{7}{9} - \frac{4}{9} = n$

2. $100\% = 75\% + p$

   $100\% - 75\% = p$

3. $\cdot 9 = \cdot 4 + t$

4. $\cdot 98 - \cdot 42 = q$

5. $\cdot 08 - \cdot 02 = a$

6. $\frac{49}{50} = \frac{27}{50} + b$

7. $75\% = 22\% + d$

8. $\frac{68}{80} = \frac{29}{80} + f$

9. $\frac{8}{20} - \frac{3}{20} = g$

10. $\frac{10}{10} = \frac{2}{10} + h$

11. $\frac{17}{30} - \frac{4}{30} = m$

12. $\cdot 16 - \cdot 8 = p$

13. $80\% = 25\% + r$

14. $\cdot 75 - \cdot 69 = t$

15. $\cdot 75 = \cdot 25 + a$

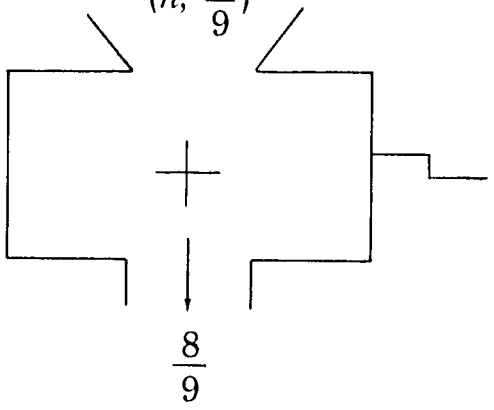
16. $89\% = 29\% + b$

17. $\frac{25}{100} - \frac{13}{100} = r$

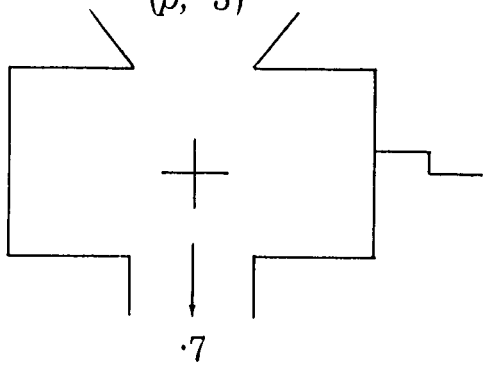
18. $95\% - 79\% = d$

FIND THE MISSING NUMBERS

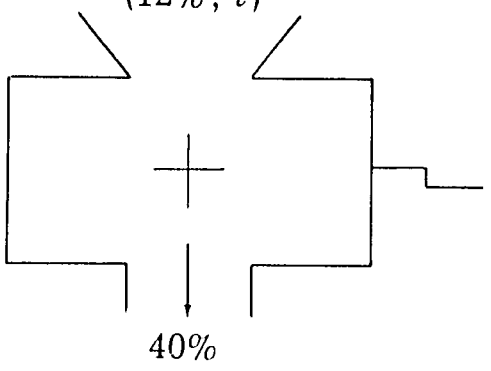
1. $(n, \frac{3}{9})$



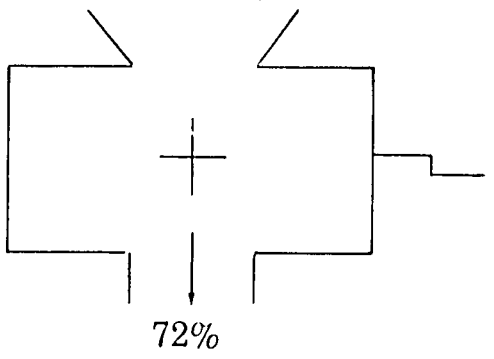
2. $(p, \cdot 3)$



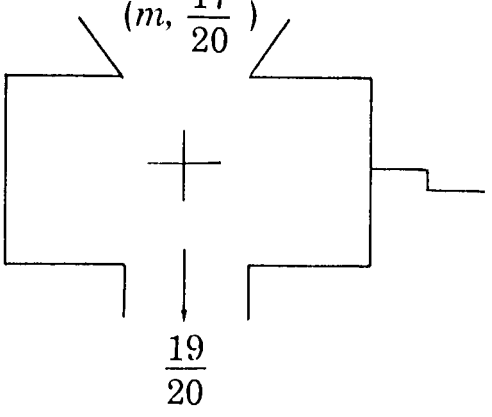
3. $(12\%, t)$



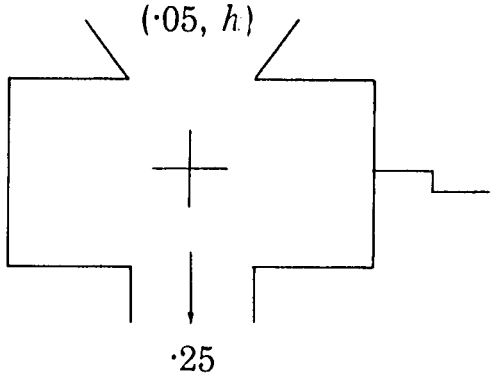
4. $(b, 27\%)$



5. $(m, \frac{17}{20})$



6. $(\cdot 05, h)$



FRACTIONS

Write three common names for each fraction.

1. $\frac{5}{4}$
2. $\frac{7}{8}$
3. $\frac{3}{7}$
4. $\frac{3}{8}$
5. $\frac{3}{5}$
6. $\frac{4}{5}$
7. $\frac{4}{7}$
8. $\frac{2}{5}$
9. ·4
10. $\frac{2}{9}$
11. $\frac{1}{6}$
12. ·5
13. $\frac{2}{7}$
14. $\frac{3}{4}$
15. $\frac{5}{6}$
16. ·2
17. $\frac{6}{7}$
18. $\frac{1}{7}$
19. ·3
20. $\frac{1}{4}$

Rename each pair so that they have the same denominator.

21. $\frac{3}{5}, \frac{1}{2}$
22. $\frac{3}{8}, \frac{3}{2}$
23. $\frac{3}{9}, \frac{2}{3}$
24. $\frac{2}{5}, \frac{4}{3}$
25. $\frac{4}{5}, \frac{3}{4}$
26. $\frac{4}{7}, \frac{1}{2}$
27. $\frac{3}{10}, \frac{5}{5}$
28. $\frac{5}{12}, \frac{4}{6}$
29. $\frac{3}{4}, \frac{7}{8}$
30. $\frac{3}{8}, \frac{1}{2}$
31. $\frac{3}{7}, \frac{2}{3}$
32. $\frac{4}{6}, \frac{1}{4}$

COMPARING FRACTIONS

Which of the two fractions is greater?

1. $\frac{3}{4}, \frac{2}{5}$
2. $\frac{2}{3}, \frac{4}{5}$
3. $\frac{1}{4}, \frac{1}{5}$
4. $\frac{1}{2}, \frac{3}{5}$
5. $\frac{4}{5}, \frac{5}{6}$
6. $\frac{3}{5}, \cdot 7$

Copy each of the following in your exercise book.

Write <, >, or = to make each a true sentence.

7. $\frac{3}{5}$ ___ $\frac{2}{3}$
8. $\frac{1}{2}$ ___ $\frac{2}{5}$
9. $\frac{7}{8}$ ___ $\frac{3}{4}$
10. $\frac{3}{4}$ ___ $\frac{3}{5}$
11. $\frac{3}{2}$ ___ $\frac{7}{6}$
12. $\frac{10}{15}$ ___ $\frac{8}{12}$
13. $\frac{2}{3}$ ___ $\frac{6}{9}$
14. $\frac{9}{12}$ ___ $\frac{6}{8}$
15. $\frac{4}{5}$ ___ $\frac{7}{8}$
16. $\frac{3}{7}$ ___ $\cdot 4$
17. $\frac{2}{5}$ ___ $\frac{3}{7}$
18. $\frac{2}{3}$ ___ $\frac{4}{9}$
19. $\frac{3}{12}$ ___ $\frac{4}{6}$
20. $\frac{6}{8}$ ___ $\frac{3}{4}$

FRACTIONS

Rename each pair so that they have the same denominator.

1. $\frac{3}{5}, \frac{3}{2}$
2. $\frac{1}{4}, \frac{1}{5}$
3. $\frac{1}{6}, \frac{3}{10}$
4. $\frac{1}{3}, \frac{2}{5}$
5. $\frac{2}{3}, \frac{4}{6}$
6. $\frac{3}{4}, \frac{5}{3}$

Solve the sentences.

7. $\frac{1}{2} + \frac{5}{6} = m$
8. $\frac{2}{5} + \frac{3}{4} = m$
9. $\frac{2}{3} + \frac{2}{5} = m$
10. $\frac{7}{3} + \frac{6}{4} = m$
11. $\frac{1}{3} + \frac{3}{4} = m$
12. $\frac{1}{4} + \frac{2}{5} = m$
13. $\frac{2}{5} + \frac{3}{2} = m$
14. $\frac{4}{6} + \frac{2}{3} = m$

Use the number line to show each of the following sentences.
Then find the missing numbers.

15. $\frac{3}{2} + \frac{1}{4} = n$
16. $\frac{2}{5} + \frac{1}{3} = m$
17. $\frac{1}{6} + \frac{3}{4} = x$
18. $\frac{1}{4} + \frac{1}{3} = y$
19. $\frac{1}{2} + \frac{3}{5} = m$
20. $\frac{1}{8} + \frac{3}{4} = n$
21. $\frac{1}{12} + \frac{2}{3} = y$
22. $\frac{3}{8} + \frac{1}{4} = x$

SUBTRACTION

Find the missing addend in each of the following.

1. $\frac{1}{6} + m = \frac{2}{3}$
2. $\frac{5}{8} + t = \frac{3}{4}$
3. $\frac{3}{4} + n = \frac{7}{8}$
4. $\frac{3}{8} + y = \frac{1}{2}$
5. $p + \frac{3}{8} = \frac{3}{4}$
6. $b + \frac{1}{3} = \frac{4}{9}$
7. $\frac{3}{2} = \frac{4}{5} + h$
8. $\cdot 6 = d + \cdot 2$

Find the common name for n so that the mathematical sentence will be true.

9. $\frac{3}{4} - \frac{1}{8} = n$
10. $\frac{3}{8} - \frac{1}{4} = n$
11. $\frac{7}{9} - \frac{2}{3} = n$
12. $\frac{3}{2} - \frac{2}{5} = n$
13. $\frac{4}{5} - \frac{2}{3} = n$
14. $\frac{3}{4} - \frac{1}{6} = n$

Use the number line to show each of the following sentences.
Then find the number that makes the sentence true.

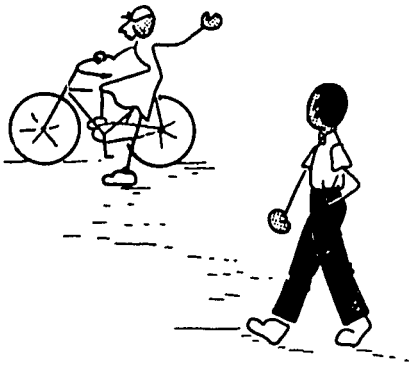
15. $\frac{5}{9} - \frac{1}{3} = y$
16. $\frac{3}{5} - \frac{1}{4} = p$
17. $\frac{10}{12} - \frac{2}{3} = m$
18. $\cdot 9 - \cdot 3 = d$
19. $\frac{7}{8} - \frac{3}{4} = n$
20. $\frac{7}{9} - \frac{2}{3} = h$
21. $\cdot 7 - \cdot 3 = a$
22. $\cdot 8 - \cdot 3 = b$

STORY PROBLEMS

1. Okeke went fishing. He caught two fish. One weighed $\frac{5}{8}$ pound and the other $\frac{3}{4}$ pound. How many pounds did his two fish weigh together?

2. Ngozi spent $\frac{2}{3}$ hour on Monday helping her mother to cook. She spent $\frac{3}{5}$ hour on the same day helping her mother to clean. How much time did she spend helping her mother on Monday?

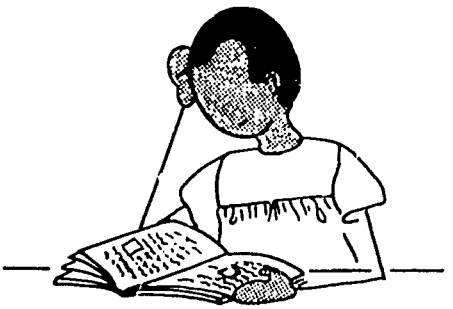
3. Every month a father gives his wife $\frac{1}{3}$ of his monthly salary for food. He spends $\frac{1}{5}$ of his salary every month on school fees for his children. What fraction of his monthly salary does he spend on food and school fees?



4. Obi and his sister Ada went to see a football match. Ada went on bicycle and it took her $\frac{1}{3}$ hour to get there. Obi walked and it took him $\frac{3}{4}$ hour to get there. How much longer did it take Obi to get to the match than Ada?

5. On Tuesday, Mary's mother used $\frac{2}{3}$ cup of flour in baking. On Friday, she used $\frac{1}{6}$ cup of flour in baking. How many cups of flour did she use in baking for the two days?

6. Ada spent $\frac{7}{8}$ hour doing her homework. Tom spent $\frac{2}{3}$ hour doing his homework. How much longer than Tom did Ada spend on her homework?



FRACTIONS

Find the number that makes the sentence true.

1. $\frac{3}{4} + \frac{1}{2} = \frac{1}{2} + n$
2. $\frac{2}{3} + 0 = k + \frac{2}{3}$
3. $80\% + m = 20\% + 80\%$
4. $\frac{3}{7} + t = 0 + \frac{3}{7}$
5. $y + \frac{5}{6} = \frac{5}{6} + \frac{1}{6}$
6. $n + \cdot 7 = \cdot 7 + \cdot 5$

Complete the sentence to show that the order of adding two fractions may be changed without changing the sum.

7. $\frac{1}{2} + \frac{1}{4} =$ _____
8. $17\% + 20\% =$ _____
9. $2 + \frac{1}{3} =$ _____
10. _____ $= \frac{2}{11} + \frac{3}{11}$
11. _____ $= \frac{5}{9} + 0$
12. _____ $= \cdot 8 + \cdot 6$

Is it true or is it false?

13. $\frac{1}{4} + \frac{1}{4} < \frac{1}{4} + \frac{1}{4}$
14. $\frac{1}{3} + \frac{1}{2} = \frac{1}{2} + \frac{1}{3}$
15. $5 - 2 = 2 - 5$
16. $\frac{1}{2} - \frac{1}{4} = \frac{1}{4} - \frac{1}{2}$
17. $23\% + 16\% = 16\% + 23\%$
18. $\frac{2}{3} + \frac{5}{9} < \frac{5}{9} + \frac{2}{4}$
19. $\cdot 3 + \cdot 5 = \cdot 5 + \cdot 3$
20. $\frac{4}{5} - 0 = 0 - \frac{4}{5}$

Use a symbol (<, or >, or =) to make the sentence true.

21. $\frac{1}{2} + \frac{1}{4}$ _____ $\frac{1}{2} + \frac{1}{2}$
22. $\cdot 6 + \cdot 3$ _____ $\cdot 3 + \cdot 6$
23. $\frac{1}{3} + \frac{1}{2}$ _____ $1 + \frac{1}{3}$
24. $\frac{3}{7} + \frac{5}{6}$ _____ $\frac{5}{6} + \frac{1}{7}$
25. $\frac{1}{4} + \frac{1}{3}$ _____ $\frac{1}{5} + \frac{1}{4}$
26. $\frac{4}{9} + \frac{1}{10}$ _____ $\frac{1}{5} + \frac{4}{9}$
27. $\frac{2}{4} + \frac{1}{4}$ _____ $\frac{1}{4} + \frac{1}{2}$
28. 100% _____ $10\% + 10\%$

FRACTIONS

What number makes the sentence true?

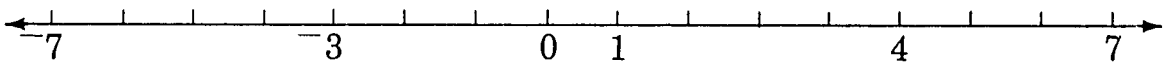
1. $(1 + \frac{1}{2}) + \frac{1}{4} = 1 + (\frac{1}{2} + n)$
2. $(\frac{2}{3} + \frac{1}{3}) + 2 = \frac{2}{3} + (k + 2)$
3. $(y + 75\%) + 25\% = 10\% + (75\% + 25\%)$
4. $\frac{1}{2} + (0 + \frac{1}{2}) = (\frac{1}{2} + 0) + y$
5. $(\frac{2}{5} + t) + \frac{1}{5} = \frac{2}{5} + (\frac{4}{5} + \frac{1}{5})$
6. $\frac{2}{3} + (\frac{2}{6} + \frac{2}{6}) = (m + \frac{2}{6}) + \frac{2}{6}$
7. $(\frac{7}{8} + \frac{4}{9}) + \frac{3}{11} = n + (\frac{4}{9} + \frac{3}{11})$
8. $\cdot 5 + (\cdot 5 + \cdot 9) = (\cdot 5 + t) + \cdot 9$

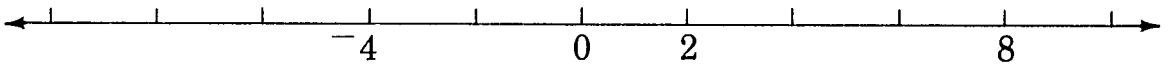
Is it true or is it false?

9. $(\frac{2}{8} + \frac{1}{8}) + \frac{4}{8} = \frac{2}{8} + (\frac{1}{8} + \frac{5}{8})$
10. $(40\% + 30\%) + 20\% = 40\% + (30\% + 20\%)$
11. $(5 - 3) - 1 = 5 - (3 - 1)$
12. $(1 - \frac{1}{2}) - \frac{1}{4} = 1 - (\frac{1}{2} - \frac{1}{4})$
13. $\frac{2}{3} + (0 + \frac{1}{4}) = (\frac{2}{3} + 0) + \frac{1}{4}$
14. $(\frac{5}{7} + \frac{4}{9}) + \frac{2}{11} = \frac{5}{7} + (\frac{4}{9} + \frac{2}{10})$
15. $\frac{2}{3} + (\frac{1}{3} + \frac{3}{5}) = (\frac{2}{3} + \frac{1}{3}) + \frac{3}{5}$
16. $(\cdot 2 + \cdot 3) + \cdot 4 = \cdot 2 + (\cdot 3 + \cdot 4)$

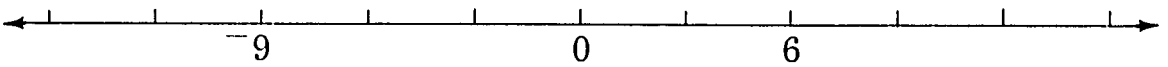
THE NUMBER LINE

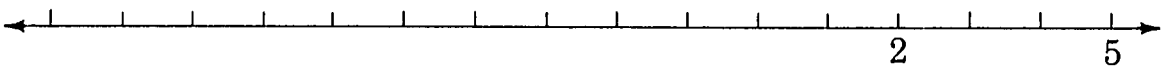
Name the points marked on the number line.

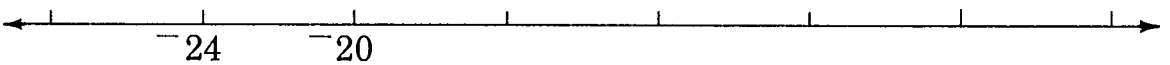
1. 

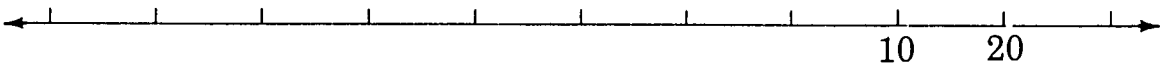
2. 

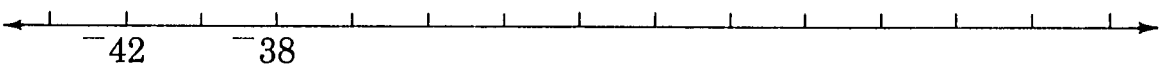
3.

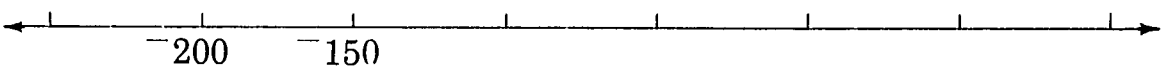
4. 

5. 

6. 

7. 

8. 

9. 

10.

NAMING INTEGERS

Name the integer for the point that is:

1. 1 unit to the right of the point for 3;
2. 3 units to the left of the point for $^{-}2$;
3. 6 units to the right of the point for $^{-}9$;
4. 5 units to the left of the point for 4;
5. 17 units to the left of the point for $^{-}3$;
6. 22 units to the right of the point for $^{-}28$;
7. 5 units to the left of the point for 5;
8. 15 units to the right of the point for $^{-}8$;
9. 16 units to the left of the point for $^{-}4$;
10. 9 units to the right of the point for $^{-}9$.

What number can we use to tell about:

11. A loss of 7 shillings;
12. 30 feet below sea level;
13. A gain of 5 shillings;
14. 3 floors below ground level;
15. 12 floors above ground level;
16. 15 miles south of the equator;
17. A profit of 17 leones;
18. 7 miles north of the equator;
19. A debt of 16 leones;
20. 105 feet above sea level.

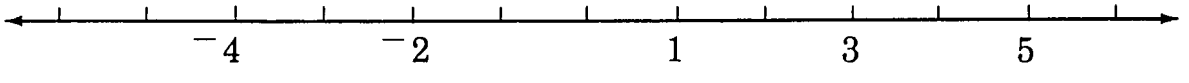
OPPOSITES OF INTEGERS

1. The opposite of 5 is _____.
2. The opposite of $^{-}3$ is _____.
3. The opposite of _____ is 7.
4. The opposite of _____ is 0.
5. The opposite of _____ is $^{-}4$.
6. The opposite of $^{-}8$ is _____.
7. The opposite of 728 is _____.
8. The opposite of _____ is 826.
9. The opposite of $^{-}43$ is _____.
10. The opposite of _____ is $^{-}825$.

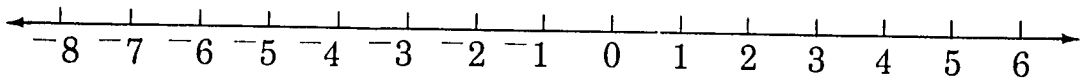
Find the opposite of:

11. A gain of 13 shillings;
12. 300 feet above sea level;
13. 10 miles north of the equator;
14. 3 floors below ground level;
15. A loss of 15 shillings;
16. A profit of 60 leones;
17. 110 feet below sea level;
18. 2 floors above ground level.

19. Copy this number line. Draw an arrow from each named point to its opposite. Name the opposites.



NAMING INTEGERS



1. ⁻6 is a *negative* integer; 1 is a *positive* integer.

2. 7 is a_____integer; ⁻6 is a_____integer.

3. The numbers for the points on the number line to the left of 0 are the_____ integers.

4. The numbers for the points on the number line to the right of 0 are the_____ integers.

5. The counting numbers are called the_____integers.

6. The opposites of the counting numbers are called the_____integers.

7. The set of integers has as its members the_____ integers, zero and the_____ integers.

8. Every point for a negative integer is to the_____of every point for a positive integer.

9. Every point for a positive integer is to the_____of every point for a_____integer.

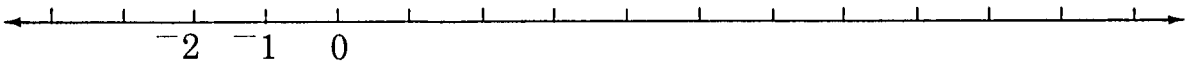
10. Is 0 a positive integer?

11. Is 0 a negative integer?

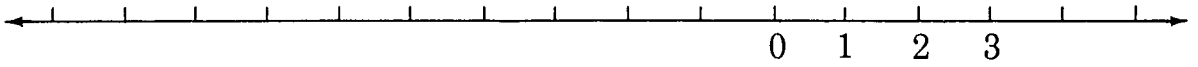
12. Are all integers either positive or negative?

EVEN AND ODD INTEGERS

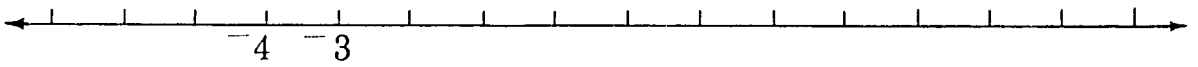
1. Write the missing numerals at points for even positive integers.

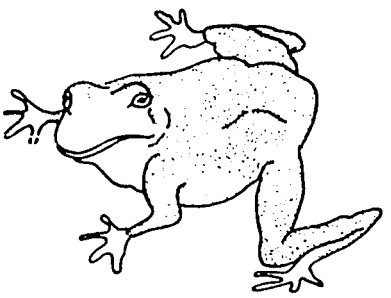


2. Write the missing numerals at points for odd negative integers.



3. Write the missing numerals at points for even integers.





This frog can jump to the right and to the left on the number line. He jumps two spaces each time.

4. If he starts at 6 and keeps jumping to the right, will he land on even integers or on odd integers?

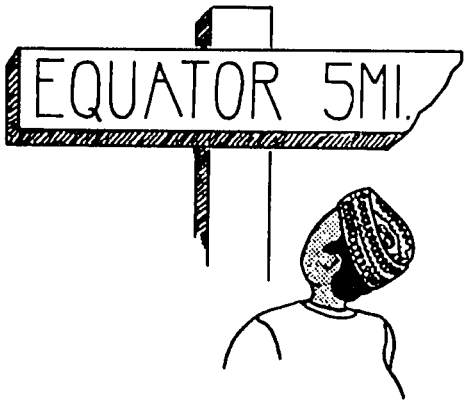
5. If he starts at ⁻5 and jumps two times to the right, will he land on an even integer or on an odd integer? Will the integer be negative or positive?

6. If he starts at 4 and jumps either left or right, will he land on even or odd integers?

7. If he starts at ⁻15 and keeps jumping to the left, will he land on even integers or on odd integers? Will the integers be negative or positive?

STORY PROBLEMS

1. Ike owes 9 shillings to his brother. He paid his brother 6 shillings. Does he still owe his brother? How many shillings does he owe?

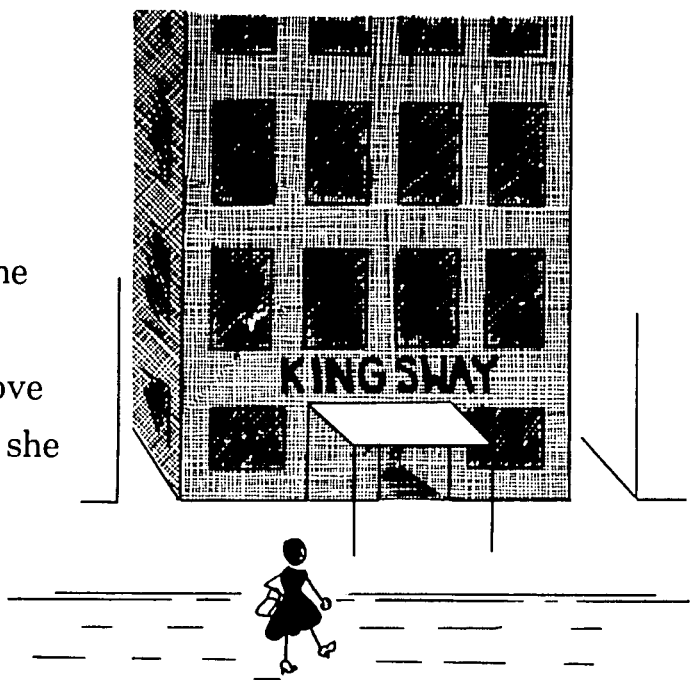


2. Nume started from the equator and walked 5 miles south. After he rested, he walked 8 miles north. When he finished walking, was he south of the equator or north of the equator? How far south or north was he?

3. Fatu's father made two business deals. In the first he made a profit of 18 leones. In the second he lost 22 leones. Did he have a profit or a loss in the two deals? How much profit or how much loss?

4. Makulu owes 6 shillings to Zambe and he owes 8 shillings to Chintu. How many shillings does he owe to both men?

5. Ada visited a big building in Lagos. She walked up 4 floors above ground level. Then she walked down 6 floors. When she finished walking, was she on a floor below ground level or above ground level? Which floor was she on?



A GAME

Some boys played a game two times. Find each boy's score at the end of two games.

1. Tete won 7 points the first game and lost 4 points the second game.

2. Odum lost 5 points the first game and lost 3 points the second game.

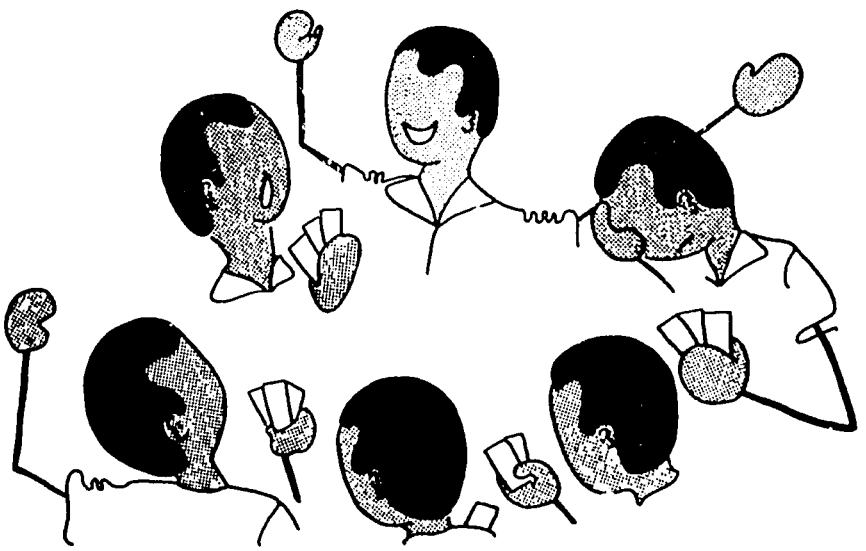
3. Kwami lost 4 points the first game and won 10 points the second game.

4. Apia won 7 points the first game and won 5 points the second game.

5. John lost 5 points the first game and won no points the second game.

6. Robert won 8 points the first game and lost 8 points the second game.

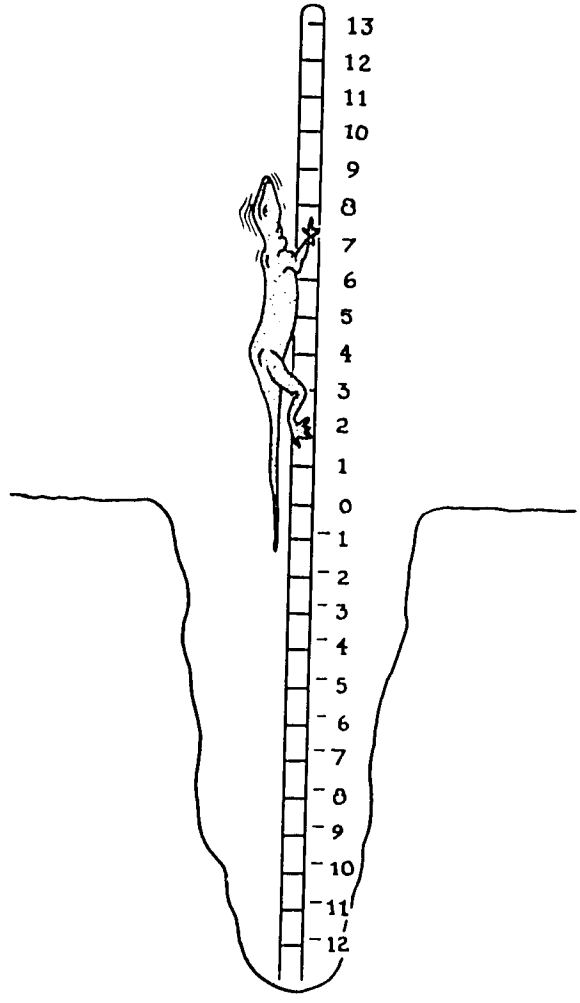
7. Which boy had the most points?
   Which boy had the lowest score?



WHERE IS THE GECKO?

Where is the gecko, if he starts at 0 and goes:

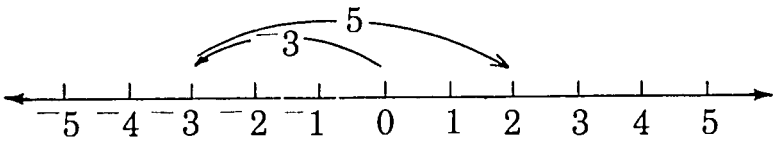
1. up 3 spaces and then down 5 spaces;
2. down 5 spaces and then down 8 spaces;
3. up 4 spaces and then up 3 spaces;
4. up 10 spaces and then down 8 spaces;
5. down 11 spaces and then up 6 spaces;
6. down 10 spaces and then up 10 spaces;
7. down 12 spaces and then up 20 spaces;
8. up 11 spaces and then down 11 spaces;



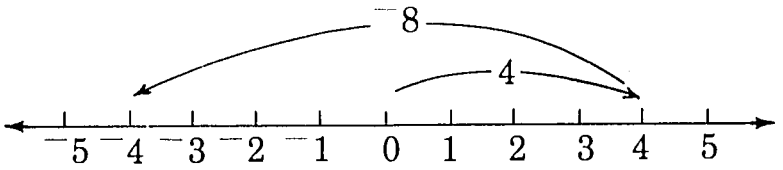
9. up 10 spaces, then down 18 spaces, and then up 9 spaces;
10. down 7 spaces, then up 4 spaces and then down 3 spaces;
11. up 2 spaces, then down 0 spaces, and then down 9 spaces;
12. down 1 space, then up 11 spaces, and then down 10 spaces.

INTEGERS

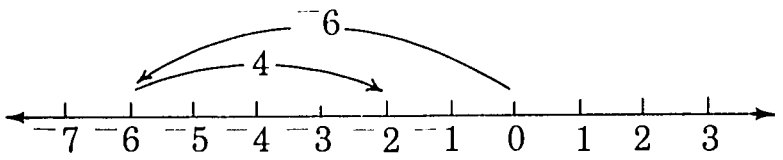
What is the sum shown on the number line?

1. 

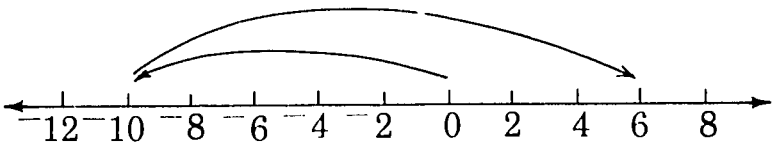
$^{-}3 + 5 = 2$

2. 

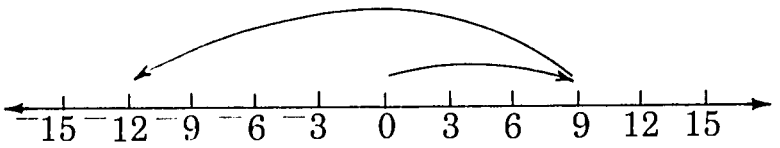
$4 + {}^{-}8 =$ ___

3. 

$^{-}6 +$ ___ $=$ ___

4. 

___ + ___ = ___

5. 

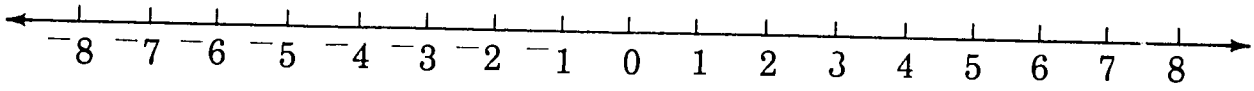
___ + ___ = ___

Use the number line to show the sum.

6. $6 + {}^{-}5$	7. $2 + {}^{-}4$	8. ${}^{-}4 + {}^{-}2$
9. $6 + 3$	10. $5 + {}^{-}5$	11. ${}^{-}6 + 10$
12. ${}^{-}9 + 7$	13. ${}^{-}9 + 11$	14. $8 + {}^{-}11$
15. ${}^{-}4 + 4$		

INTEGERS

Find the sum of the integers (you may use the number line).



1. $2 + {}^{-}4$
2. ${}^{-}9 + {}^{-}11$
3. $16 + {}^{-}6$
4. ${}^{-}3 + {}^{-}2$
5. $8 + 23$
6. ${}^{-}8 + 23$
7. $0 + {}^{-}4$
8. $8 + {}^{-}23$
9. ${}^{-}8 + {}^{-}23$
10. $6 + {}^{-}6$
11. $28 + {}^{-}37$
12. ${}^{-}14 + {}^{-}31$
13. $17 + {}^{-}12$
14. ${}^{-}36 + 27$
15. ${}^{-}18 + 0$
16. ${}^{-}8 + 5$
17. ${}^{-}45 + 48$
18. $75 + {}^{-}75$
19. ${}^{-}62 + 32$
20. ${}^{-}40 + 41$
21. $40 + {}^{-}41$
22. ${}^{-}82 + 82$
23. ${}^{-}63 + 43$
24. ${}^{-}43 + 63$
25. $63 + {}^{-}43$
26. ${}^{-}43 + 63$
27. $163 + {}^{-}182$
28. $(14 + {}^{-}7) + 7$
29. $14 + ({}^{-}7 + 7)$
30. $(23 + {}^{-}24) + 25$

INTEGERS

What integer makes the sentence true?

1. $^{-}4 + 6 = n$ — n is _____
2. $3 + a = {}^{-}4$ — a is _____
3. $5 + b = 0$ — b is _____
4. $^{-}7 + {}^{-}12 = c$ — c is _____
5. $d + {}^{-}5 = {}^{-}8$ — d is _____
6. $m + {}^{-}7 = 0$ — m is _____
7. $5 + q = {}^{-}7$ — q is _____
8. $^{-}5 + y = {}^{-}4 + {}^{-}5$ — y is _____
9. $({}^{-}7 + 5) + {}^{-}5 = s$ — s is _____
10. $^{-}7 + (5 + {}^{-}5) = t$ — t is _____

Write a sentence for the story.

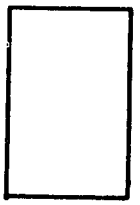
11. A boy is 7 shillings in debt. How many shillings must he earn so that he will have 7 shillings saved?
12. A hiker is 30 miles north of the equator. How far must he walk and in which direction so that he will be 20 miles south of the equator?

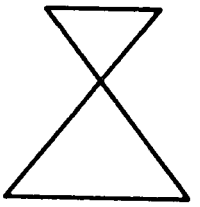
13. A boy is on the third floor below ground level. How many floors must he go and in which direction so that he is on the fourth floor below ground level?
14. A man has 85 pounds saved. How many pounds must he spend before he is 72 pounds in debt?

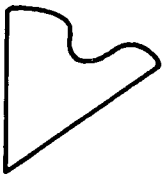
SIMPLE CLOSED CURVES

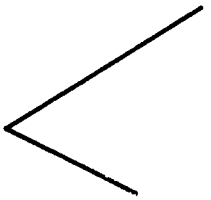
Tell which pictures show simple closed curves.

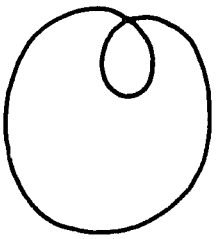
1.

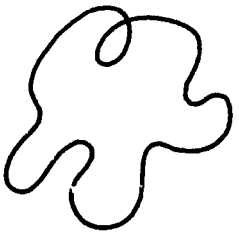
2. 

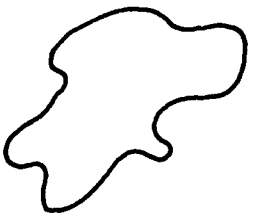
3. 

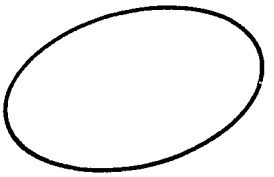
4. 

5. 

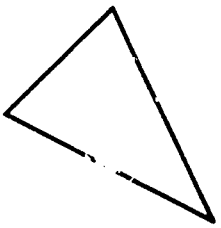
6. 

7. 

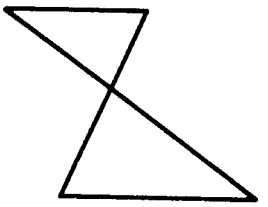
8. 

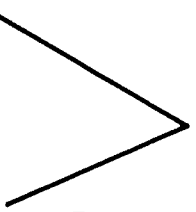
9. 

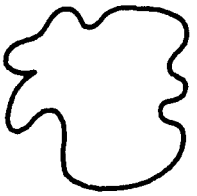
Tell which pictures do not show simple closed curves.

10. 

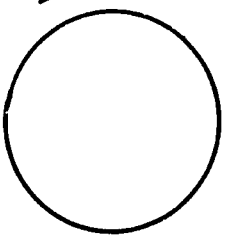
11.

12. 

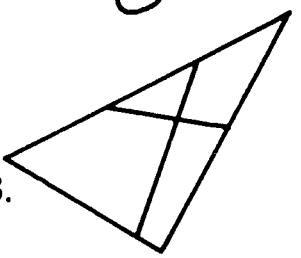
13. 

14. 

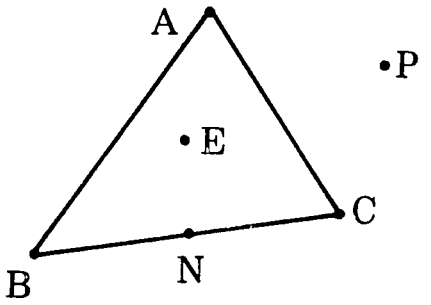
15.

16. 

17.

18. 

POINTS AND REGIONS

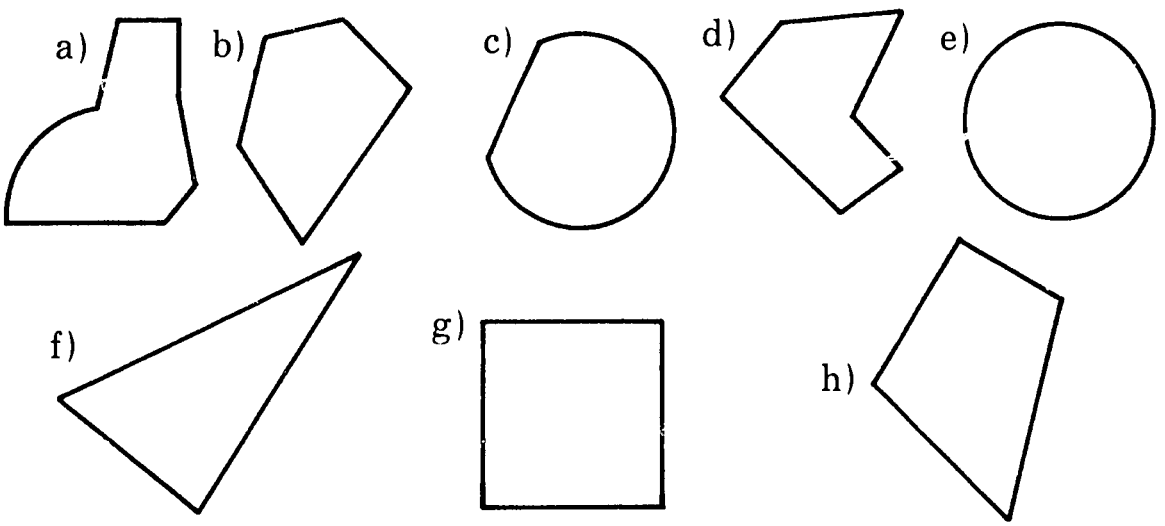


Are these points inside, on, or outside the triangle?

(1) E (2) N (3) P (4) C

---

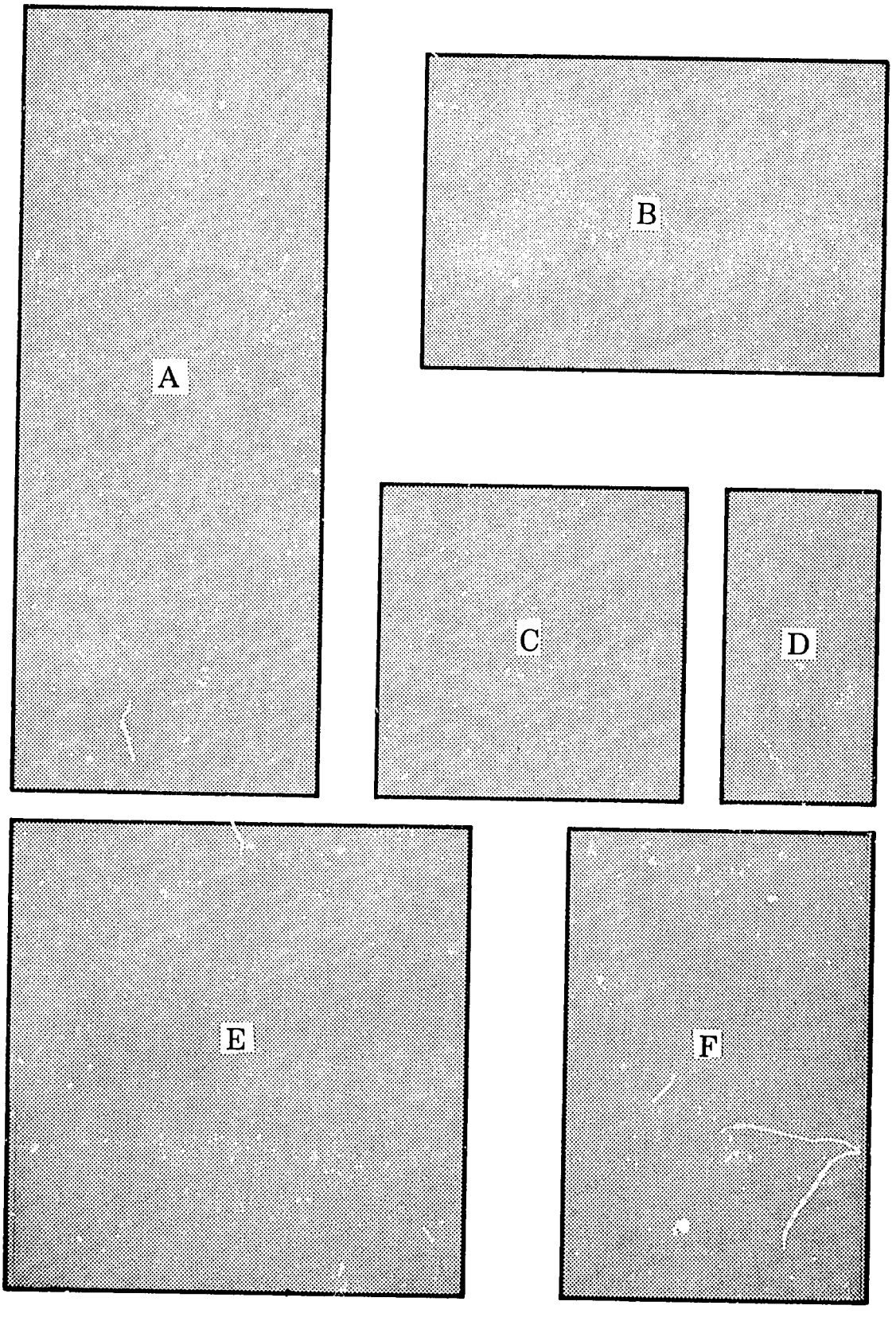
2. Trace out these simple closed curves. Shade their regions.



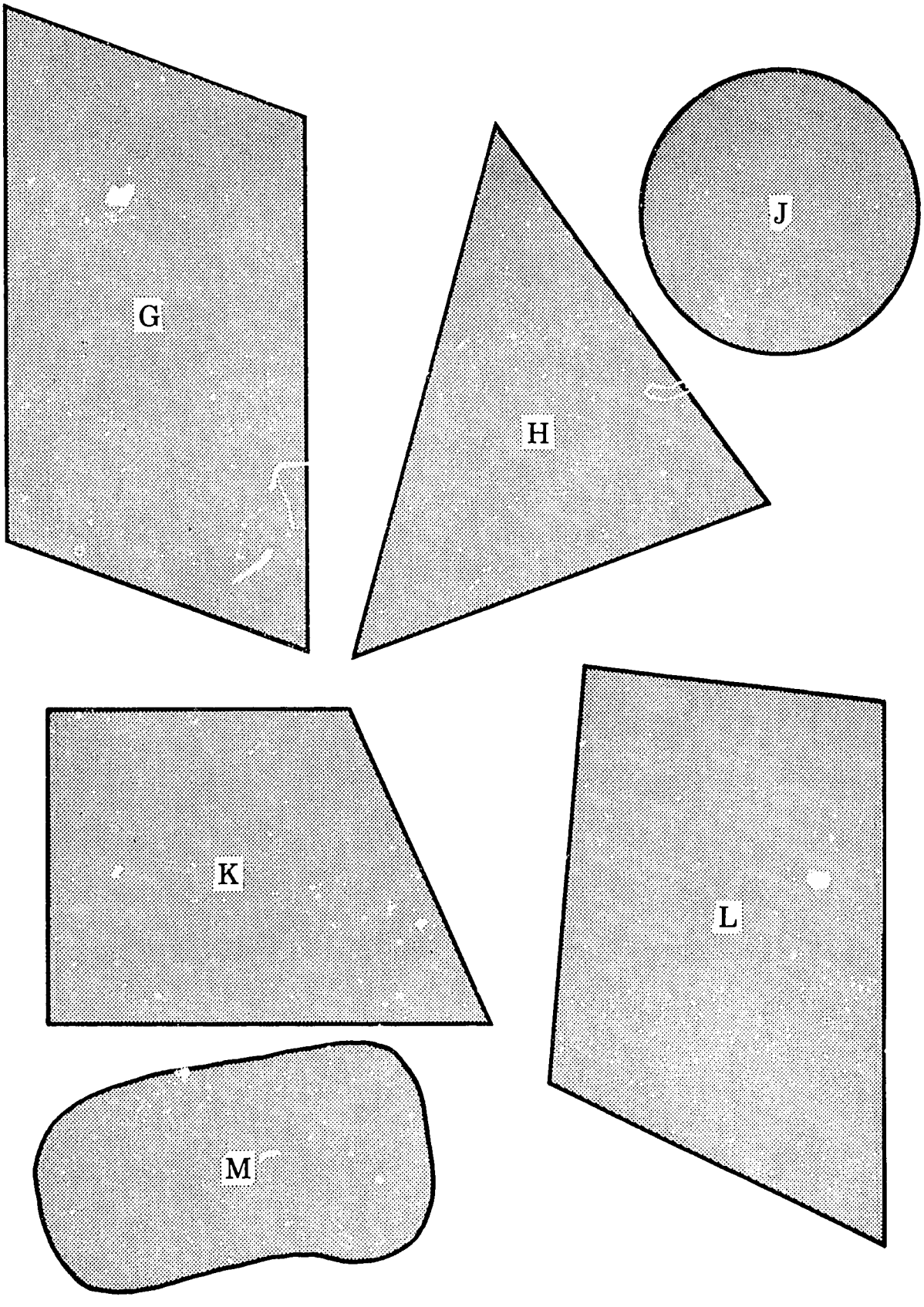
3. Locate a point inside each figure, a point outside each figure, and a point on each figure.
4. Which figure shows a circular region?
5. Which figure shows a square region?
6. Which figure shows a triangular region?
7. Which figure shows a rectangular region?

REGIONS

What is the size of each region?

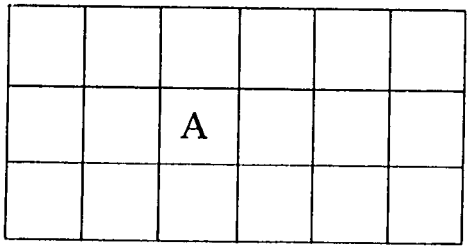


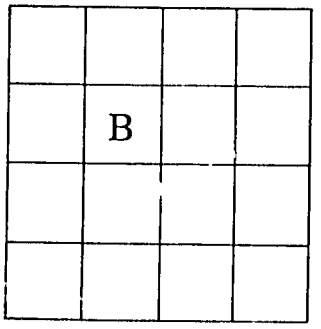
REGIONS



AREA OF REGIONS

Find the area in square centimetres.

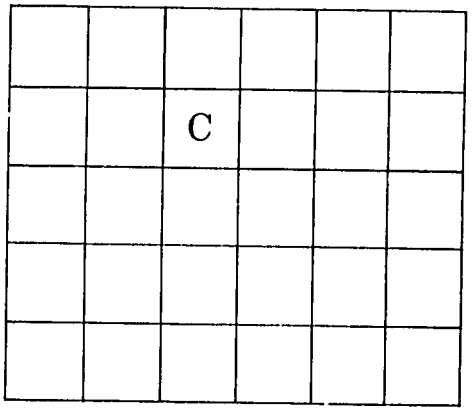


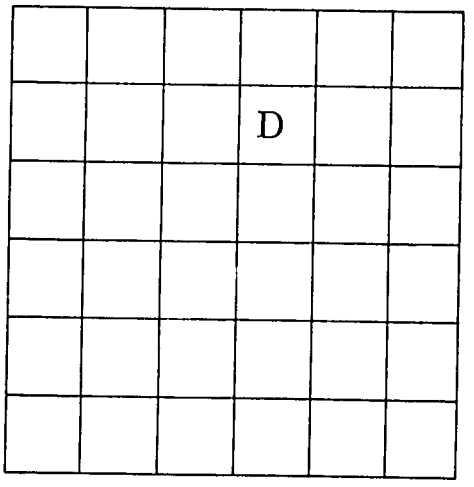


1. The area of A is_____ square centimetres.

2. The area of B is_____ square centimetres.

3. Which region is larger: A or B?_____





4. The area of C is greater than _____ square centimetres.

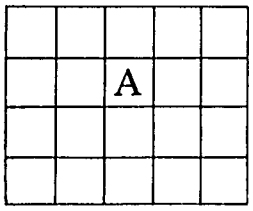
5. The area of C is less than _____ square centimetres.

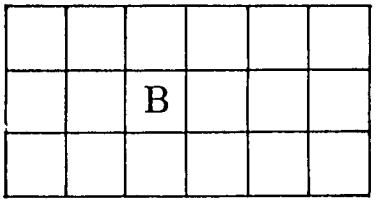
6. The area of D is greater than _____ square centimetres.

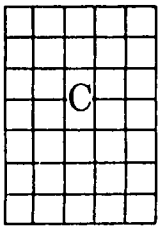
7. The area of D is less than _____ square centimetres.

8. Which region is larger: C or D?_____

AREA OF REGIONS







□ unit

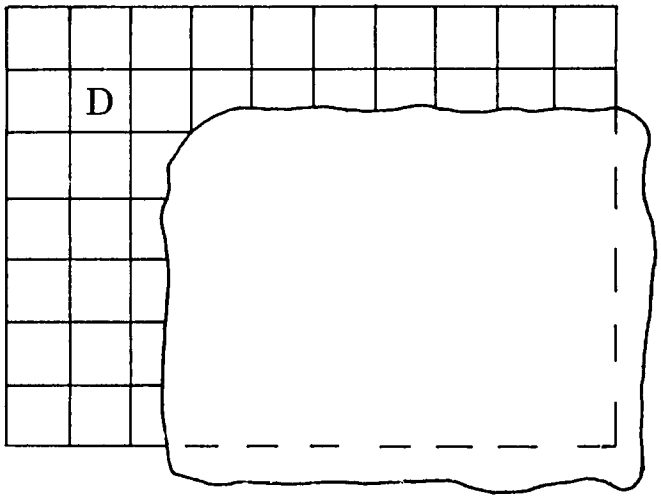
1. The area of A is _____ units.

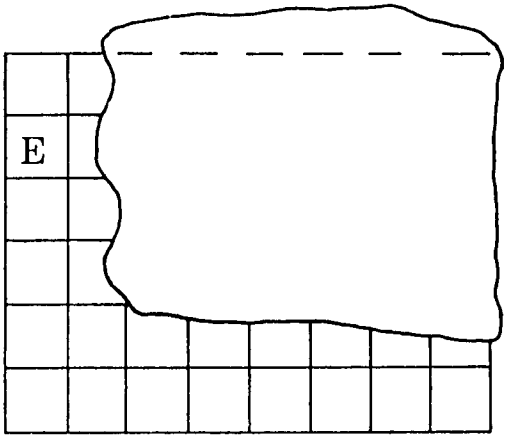
□ unit

2. The area of B is _____ units.

□ unit

3. The area of C is _____ units.



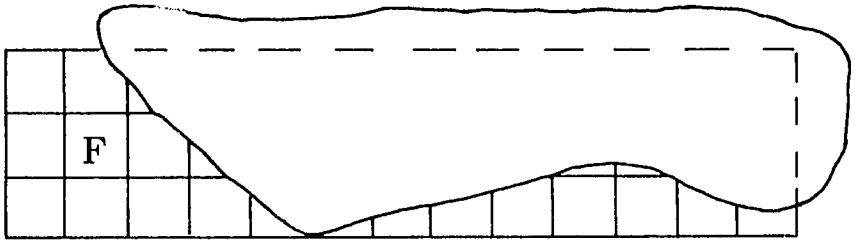


□ unit

4. The area of D is _____ units.

□ unit

5. The area of E is _____ units.

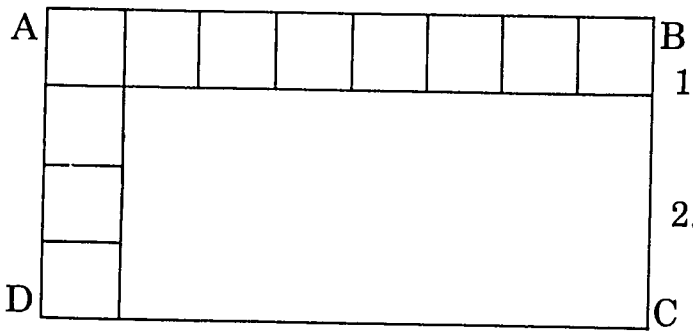


□ unit

6. The area is _____ units.

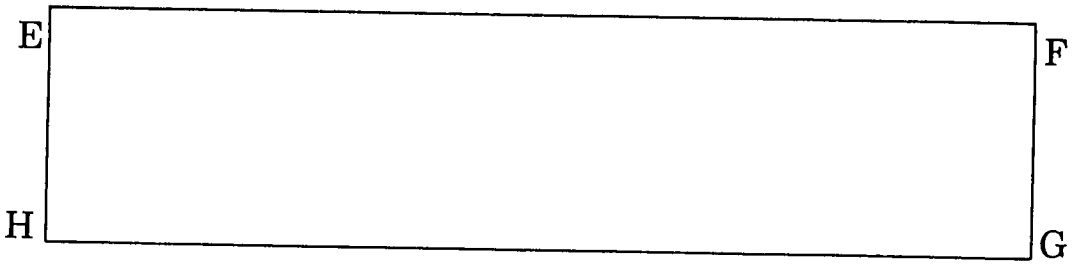
AREA OF RECTANGLES

Find the area of rectangle ABCD.



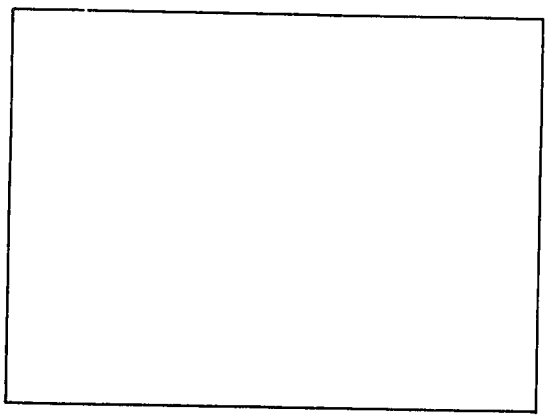
1. $\overline{AD}$ is _____ cm. long. There are _____ rows of sq. cm.
2. $\overline{AB}$ is _____ cm. long. There are _____ sq. cm. in each row.
3. The number of sq. cm. in the area is _____ × _____ = _____

Find the area of rectangle EFGH.

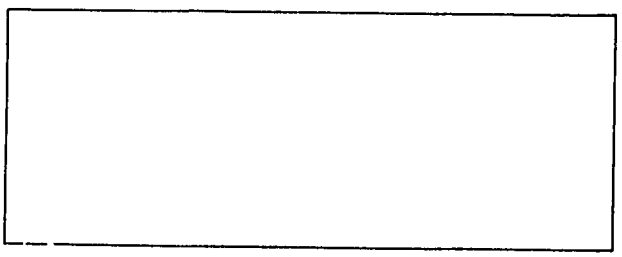


4. $\overline{EH}$ is _____ cm. long. There are _____ rows of sq. cm.
5. $\overline{EF}$ is _____ cm. long. There are _____ sq. cm. in each row.
6. The number of sq. cm. in the area is _____ × _____ = _____

Find the number of sq. cm. in the areas.



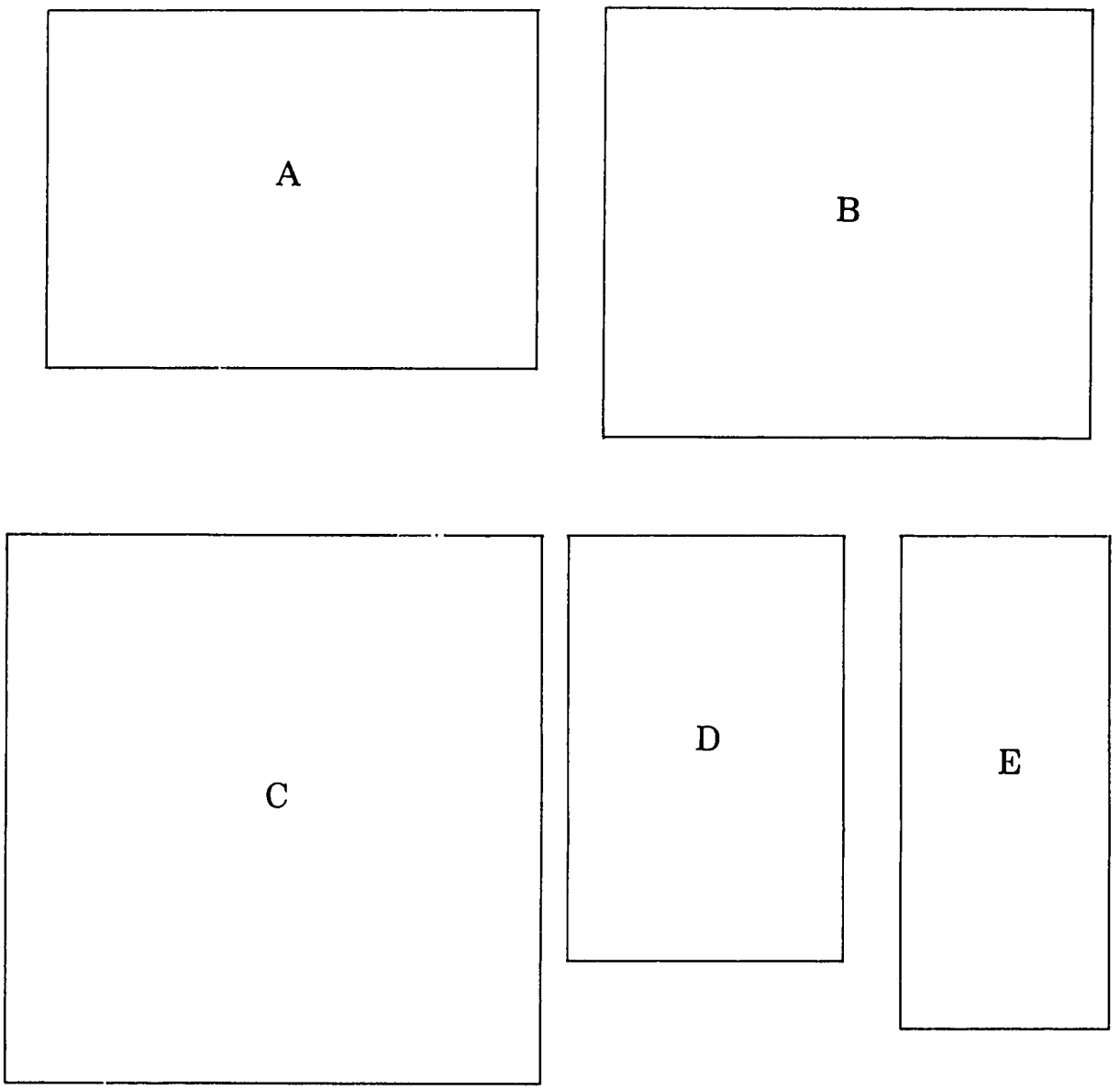
7. _____ × _____ = _____



8. _____ × _____ = _____

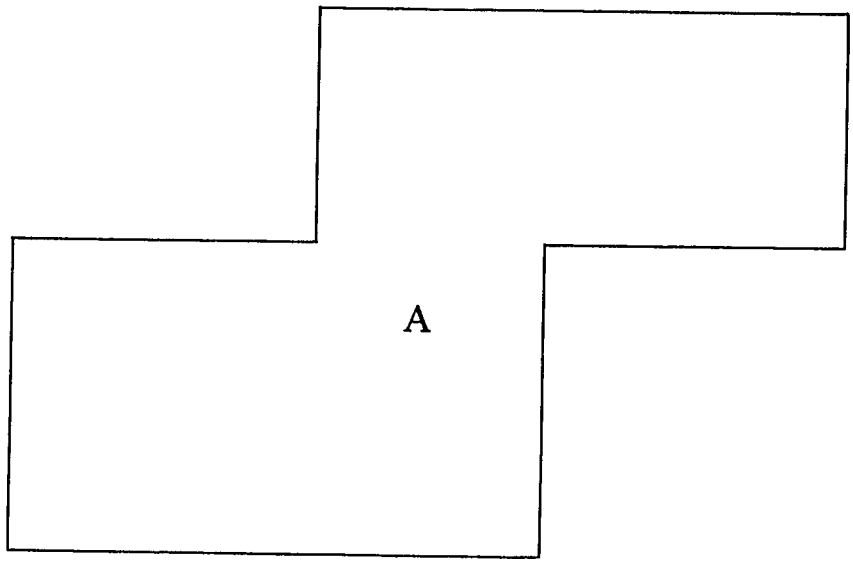
AREA OF RECTANGLES

Using the sentence $l \times w = A$.



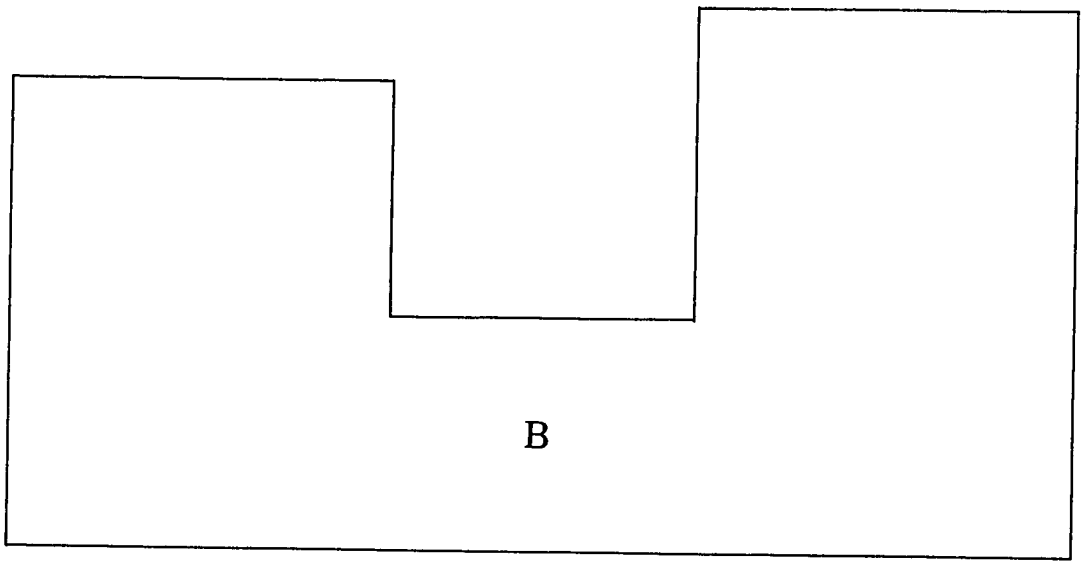
	Rectangle	*Unit*	*l*	*w*	*A*	*Area*
1.	A	cm.				
2.	B	cm.				
3.	C	in.				
4.	D	cm.				
5.	E	cm.				

AREA OF REGIONS



1. What is the area of A in square centimetres?

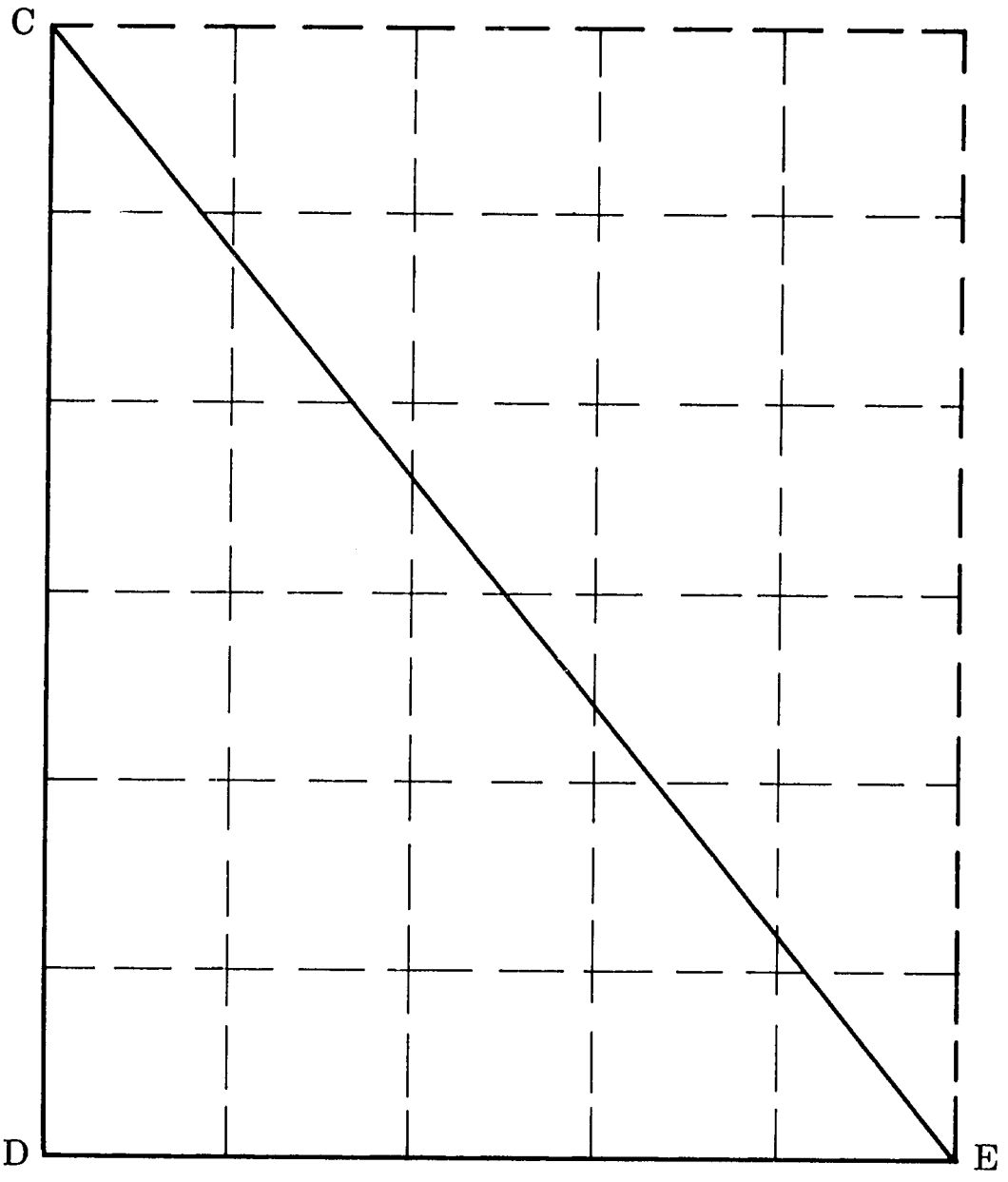
(____ × ____) + (____ × ____) = _____



2. What is the area of B in square centimetres?

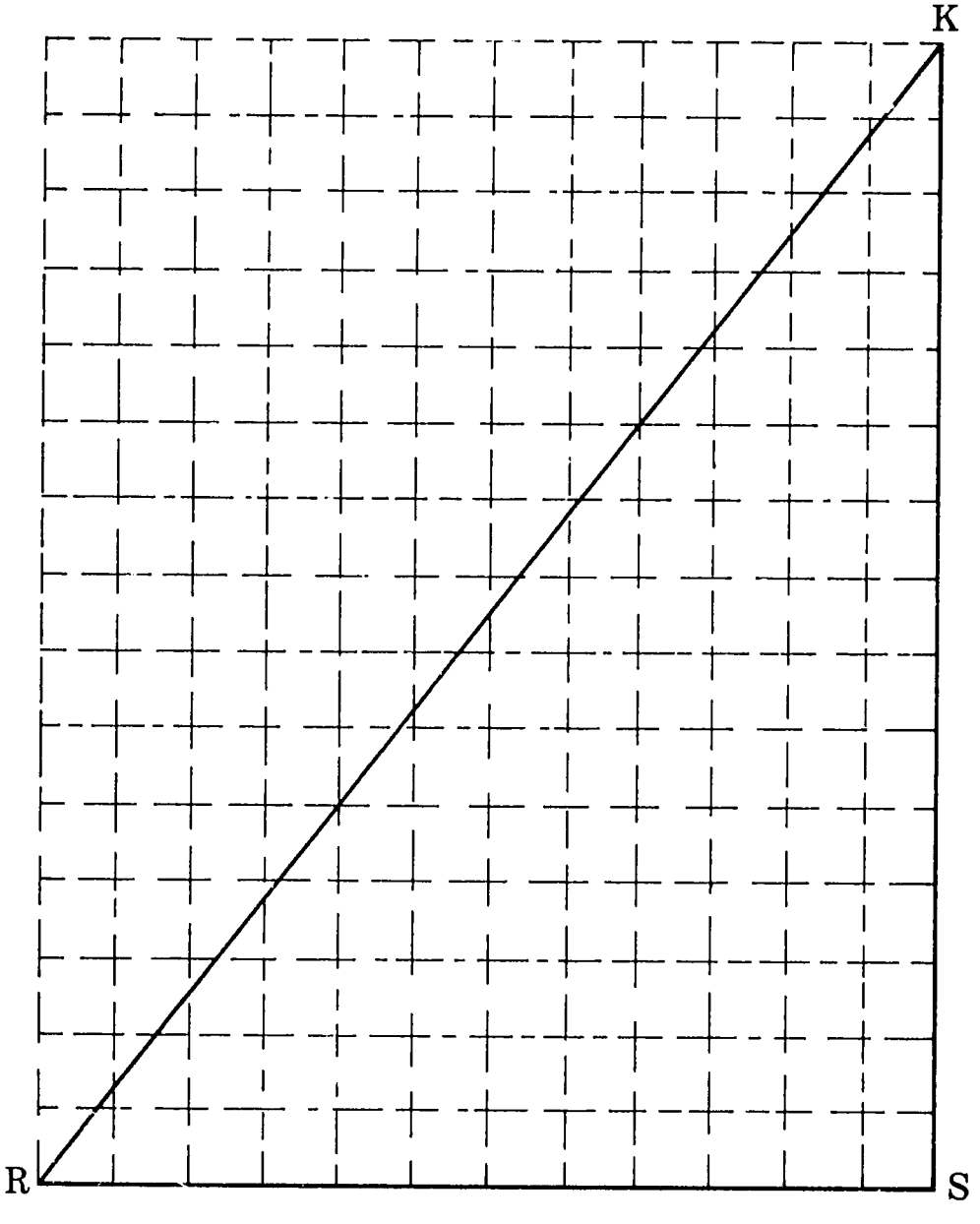
(____ × ____) + (____ × ____) + (____ × ____) = _____

AREA OF A RIGHT-ANGLED TRIANGLE



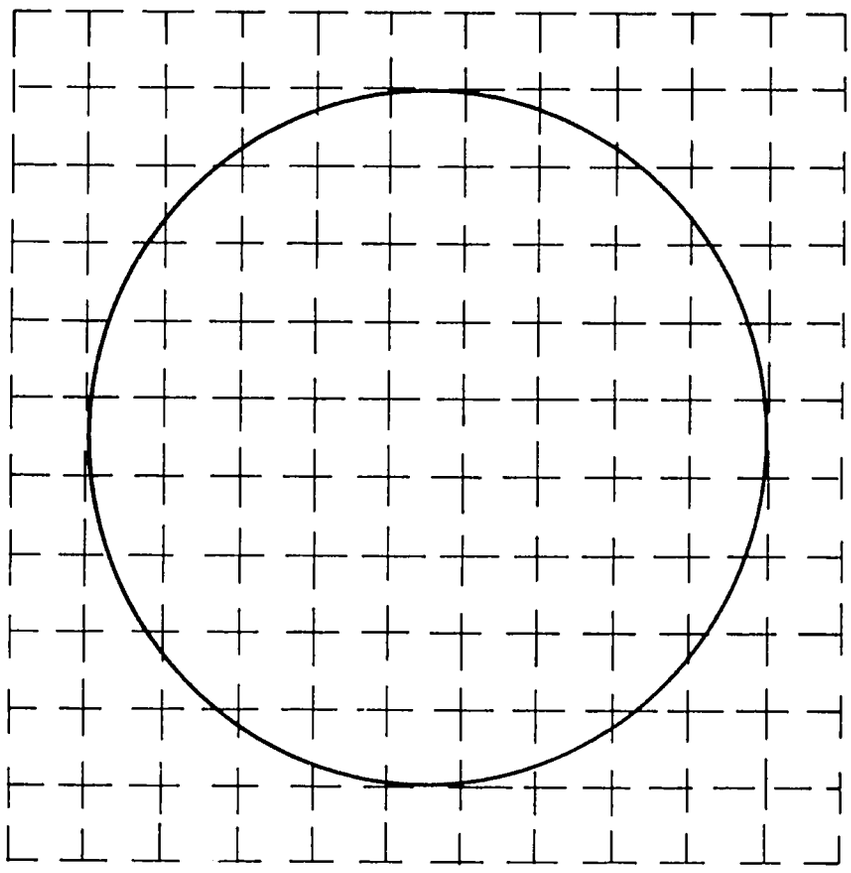
The area of the right angled triangle CDE is between _____ square inches and _____ square inches.

AREA OF A RIGHT-ANGLED TRIANGLE



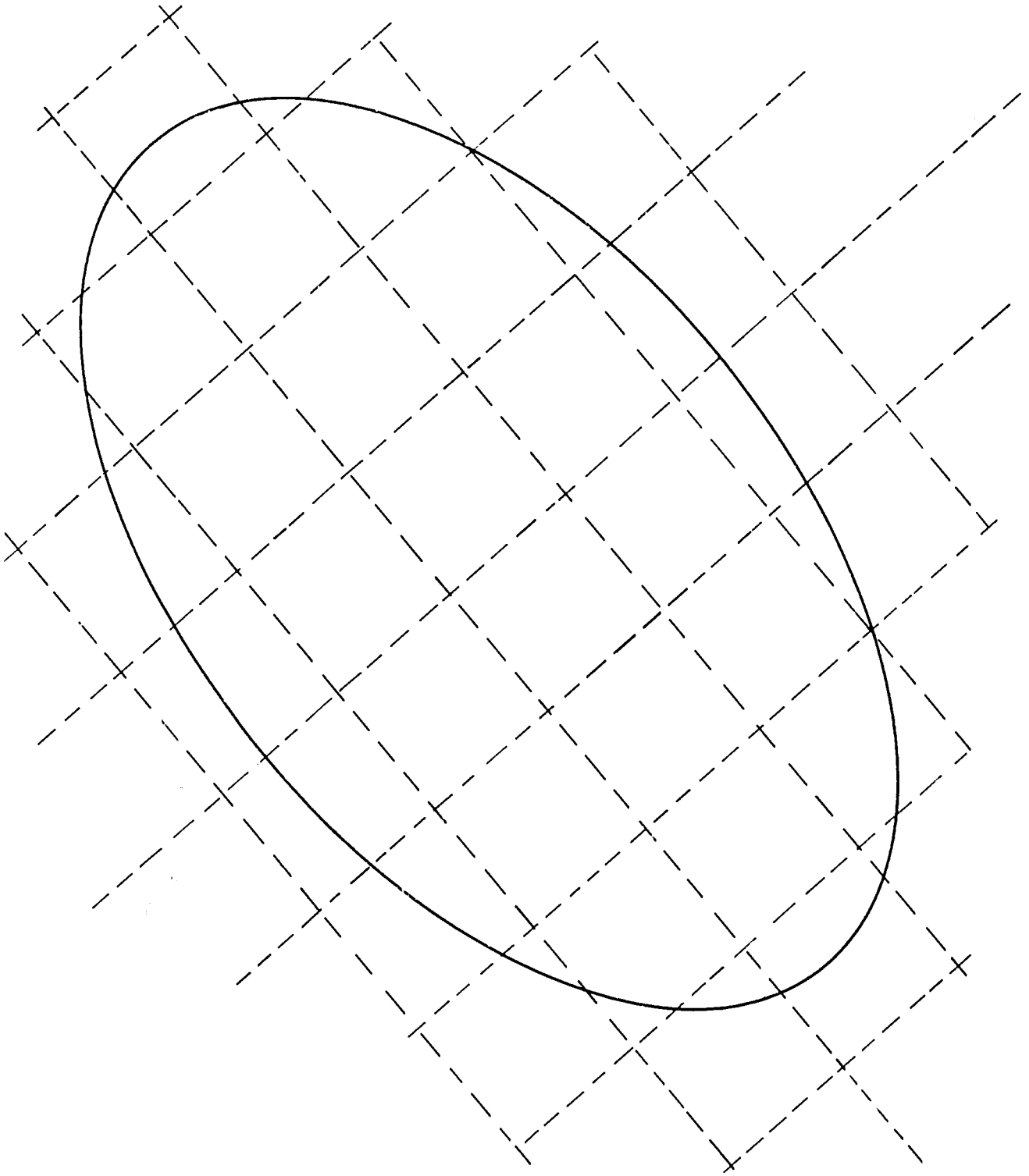
The area of the right-angled triangle KRS is between _____ square centimetres and _____ square centimetres.

AREA OF A CIRCULAR REGION



The area of the circular region is between _____ square centimetres and _____ square centimetres.

AREA OF REGIONS

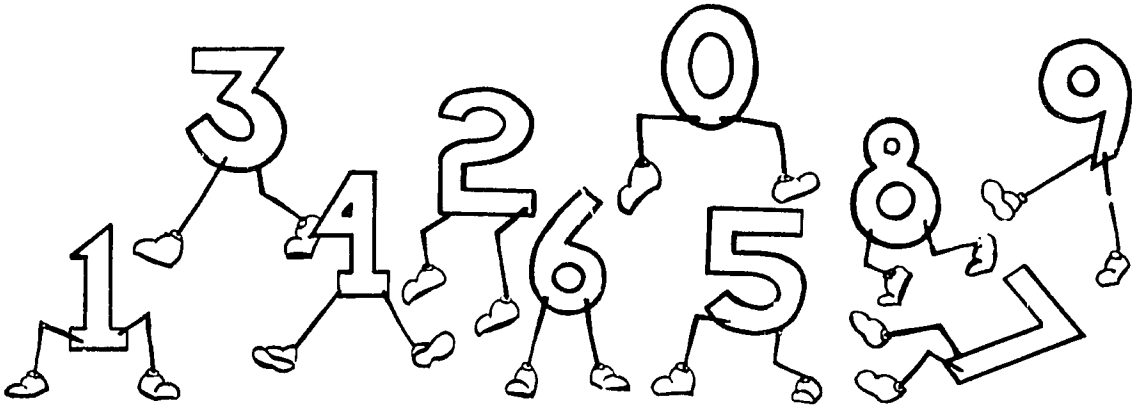


The area of the region inside the above figure is between _____ square inches and _____ square inches.

FACTORS AND MULTIPLES

1. Find the missing numbers.
   (a) Since $3 \times 5 = 15$, _____ and _____ are factors of 15.
   (b) Since $3 \times 5 = 15$, 15 is a multiple of _____ and of _____.
   (c) Since the product of 3 and 6 is _____, 3 and 6 are factors of _____.
2. Write all the factors of each of these numbers:

   24, 14, 10, 20, 16.
3. Write all the factors of 15 which are also factors of 9.
4. What is the set of numbers less than 50 which are multiples of 12?
5. What is the set of numbers less than 50 which are multiples of 4?
6. What is the set of numbers less than 50 which have 8 as a factor?
7. What are the factors of 18 which are also factors of 12?
8. What are the factors of 24 which are also multiples of 3?
9. What is the set of counting numbers less than 50 which are not multiples of 2?
10. What are the factors of 18 which are even numbers?
11. What are the factors of 24 which are odd numbers?



PRIME NUMBERS

1. A prime number has exactly_____factors.

2. The number 1 has exactly_____factor(s).

3. The number 17 is a prime number because the only factors of 17 are _____ and_____.

4. The factors of a prime number are the number itself and_____.

5. What are the prime numbers between 20 and 40?

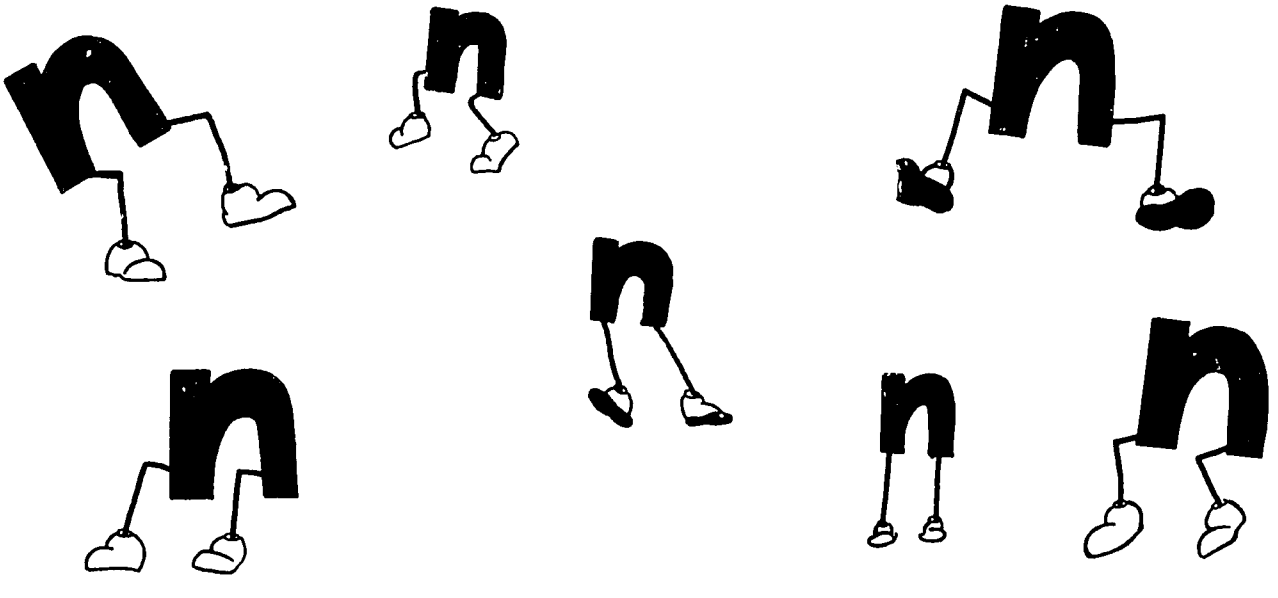
6. What are the even numbers less than 40 which are prime?

7. What are the prime numbers less than 20 which are factors of 12?

8. What are the numbers between 40 and 50 which are not prime numbers?

9. What are the whole numbers less than 20 which are odd numbers and which are not prime numbers?

10. What are the even numbers between 11 and 25 which are not prime numbers?



PRIME FACTORS

1. Express 26 as the product of its prime factors.

2. Express 18 as the product of its prime factors.

3. Express 36 as the product of its prime factors.

4. What are the prime factors of 30 which are also factors of 42?

5. What are the prime numbers less than 20 which are factors of 50?

6. Express 48 as the product of its prime factors.

7. What is the sum of all the prime numbers less than 20?

8. Does the sentence $54 = 2 \times 3 \times 9$ express 54 as a product of prime factors? Why?

9. Does the sentence $51 = 3 \times 17$ express 51 as a product of prime factors? Why?

*10. The sum of two prime numbers is 10, and their product is 21. What are the numbers?

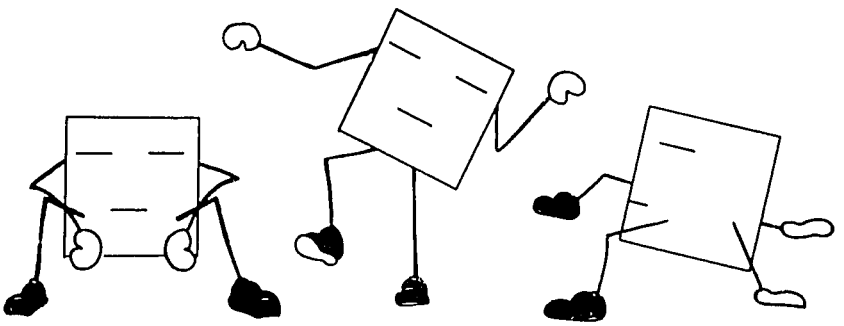
*11. The difference between two prime numbers is 2; their sum is 12. What are the numbers?

*12. The sum of two prime numbers is 20; their difference is 6. What are the numbers?

SQUARES OF NUMBERS

What number makes the sentence true?

1. $3 \times 3 = n$
2. $a \times a = 1$
3. $4 = b \times b$
4. $m \times m = 16$
5. $9 = t \times t$
6. $y = 2 \times 2$
7. $a = 5 \times 5$
8. $1 \times 1 = d$
9. $25 = b \times b$
10. $n \times n = 49$
11. $c \times c = 36$
12. $m = 4 \times 4$
13. $a = 6 \times 6$
14. $100 = d \times d$
15. $10 \times 10 = t$
16. $c = 7 \times 7$
17. $64 = a \times a$
18. $b \times b = 81$
19. $11 \times 11 = c$
20. $121 = n \times n$
21. $b \times b = 0$
22. $0 = t \times t$
23. $m = 8 \times 8$
24. $9 \times 9 = y$
25. $12 \times 12 = b$
26. $c \times c = 144$



SQUARES OF NUMBERS

Supply the missing numerals.

	A	B	C
1.		3×3	3^2
2.	4		2^2
3.		10×10	10^2
4.	25	5×5	
5.		1×1	1^2
6.		0×0	0^2
7.	16		4^2
8.		8×8	
9.	36		
10.		9×9	
11.	49		
12.		11×11	
13.			12^2

MATHEMATICAL SENTENCES

Find the number that makes the sentence true.

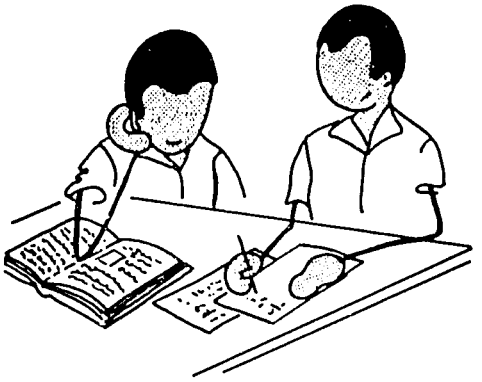
1. $2^2 = n$	2. $3 \times 1 = c$
3. $t = 4 \times 2$	4. $3^2 = b$
5. $n = 1^2$	6. $2 \times 0 = d$
7. $6^2 = m$	8. $k = 5 \times 7$
9. $4^2 = a$	10. $5 \times 3 = y$
11. $c = 10^2$	12. $11 \times 9 = n$
13. $7^2 = t$	14. $8 \times 6 = b$
15. $9^2 = y$	16. $c = 8 \times 10$
17. $13 \times 11 = k$	18. $12^2 = d$
19. $5^2 = m$	20. $6 \times 7 = t$
21. $12 \times 10 = a$	22. $11^2 = a$
23. $b = 8^2$	24. $9 \times 7 = r$

DIVISION

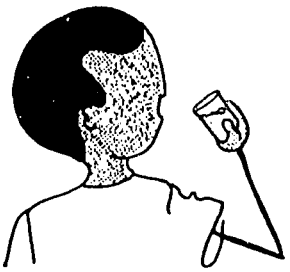
1. $128 \div 4$
2. $516 \div 11$
3. $336 \div 6$
4. $5628 \div 7$
5. $7320 \div 60$
6. $1148 \div 14$
7. $2077 \div 22$
8. $333 \div 5$
9. $259 \div 9$
10. $90\overline{)6857}$
11. $11\overline{)4960}$
12. $10\overline{)570}$
13. $12\overline{)753}$
14. $50\overline{)4600}$
15. $70\overline{)5715}$
16. $8\overline{)774}$
17. $18\overline{)1368}$
18. $13\overline{)754}$
19. $80\overline{)2640}$
20. $25\overline{)888}$
21. $40\overline{)6480}$

STORY PROBLEMS

1. Bade and Jide visited a salt factory one afternoon after school. They saw a big container of salt weighing 1250 pounds. Bade and Jide worked out the number of 50-pound bags of salt that could be filled. How many bags could be filled?



2. Some school boys went by train on a trip. Each boy paid 12 shillings for his ticket. They paid a total of 15 pounds for tickets. How many boys took the trip? (20 shillings equals one pound.)



3. There are 365 days in a year. Remi drinks 1 pint of water every day. Find the total number of gallons and pints she drinks in a year.

4. In one hour, a man building a house can lay 80 concrete blocks. How long does it take him to lay 1280 blocks?

5. A school uses 3540 gallons of water in June. They use about the same amount each day. About how many gallons are used in a day?

6. Eleven people carried a total of 726 pounds of potatoes. Find the number of pounds each man carried if the weights they carried were the same.

DIVISION

1. $17\overline{)697}$
2. $33\overline{)1716}$
3. $23\overline{)897}$
4. $19\overline{)7980}$
5. $29\overline{)1827}$
6. $31\overline{)775}$
7. $57\overline{)1254}$
8. $49\overline{)2499}$
9. $27\overline{)891}$
10. $61\overline{)3721}$
11. $74\overline{)5476}$
12. $97\overline{)2231}$
13. $75\overline{)3225}$
14. $45\overline{)5502}$
15. $35\overline{)3570}$
16. $4125 \div 55$
17. $2125 \div 85$
18. $1927 \div 33$
19. $2424 \div 65$
20. $900 \div 36$
21. $1235 \div 95$

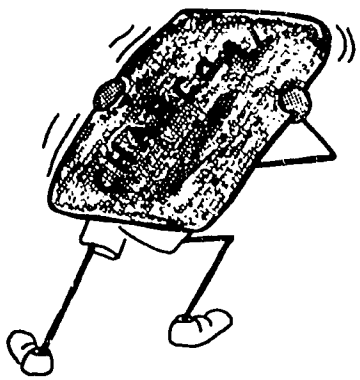
MISSING FACTORS

What number makes the sentence true?

1. $n \times 19 = 3857$
2. $24 \times p = 1776$
3. $35 \times t = 3395$
4. $g \times 37 = 2664$
5. $b \times 63 = 3213$
6. $51 \times m = 2601$
7. $43 \times h = 1935$
8. $39 \times j = 4368$
9. $81 \times a = 6561$
10. $d \times 79 = 6399$
11. $15 \times f = 75 \times 36$
12. $63 \times p = 81 \times 126$
13. $n \times 27 = 81 \times 126$
14. $t \times 24 = 96 \times 120$
15. $35 \times k = 175 \times 74$
16. $b \times 37 = 279 \times 74$
17. $n \times 64 = 192 \times 251$
18. $85 \times g = 51 \times 125$

STORY PROBLEMS

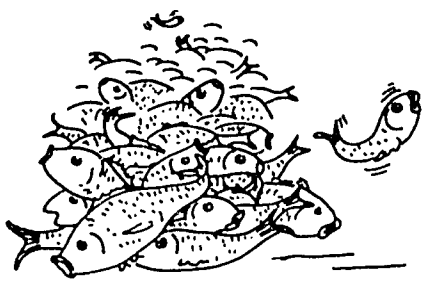
1. In a school there are 18 classes. Each class needs rulers. The headmaster has 42 dozen rulers. He divides the rulers equally among the classes. How many rulers does each class get?



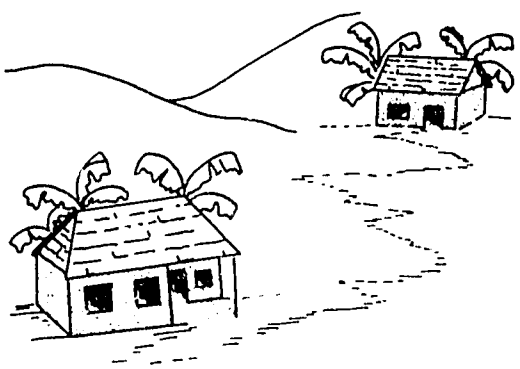
2. One ton equals 2240 pounds. A 5-ton load of charcoal is put in bags. Each bag of charcoal weighs 25 pounds. How many bags of charcoal are there?

3. Bola and her family take a trip in a car. They drive 3570 miles in all. They drive about the same distance every day and take 2 weeks to make the trip. About how many miles do they drive each day?

4. A group of 17 fishermen catch 1350 fish in one week. They share the catch equally. How many fish does each man get? How many fish are left over?



5. A group of 256 boys is separated into teams to play football. It takes 11 boys on each team to play a game. Each team also has 5 boys who are reserves. How many teams are there?



6. George has a stick which is 27 inches long. The distance between two houses is 99 yards. How many stick lengths is it between the two houses? (36 inches equals one yard.)

DIVISION

1. $16\overline{)1990}$
2. $39\overline{)2779}$
3. $43\overline{)3612}$
4. $27\overline{)730}$
5. $47\overline{)2200}$
6. $52\overline{)1400}$
7. $41\overline{)1890}$
8. $61\overline{)3360}$
9. $69\overline{)4750}$
10. $71\overline{)5000}$
11. $67\overline{)4600}$
12. $29\overline{)3390}$
13. $23\overline{)6150}$
14. $29\overline{)2950}$
15. $84\overline{)8150}$
16. $99\overline{)9100}$
17. $62\overline{)3850}$
18. $73\overline{)16000}$
19. $32\overline{)7552}$
20. $49\overline{)7300}$
21. $76\overline{)6400}$
22. $95\overline{)9000}$
23. $87\overline{)9205}$
24. $59\overline{)24154}$
25. $83\overline{)10200}$
26. $98\overline{)19615}$
27. $79\overline{)59350}$

MATHEMATICAL SENTENCES

Fill in the blank spaces. Write mathematical sentences about the operations.

1. (12, 15) $\xrightarrow{+}$ 27
   12 + 15 = 27

2. (40, 8)
   $\downarrow \div$
   (16, 5) $\xrightarrow{\times}$ 80
   16 X (40 ÷ 8) = 80

3. (22, 43)
   $\downarrow +$
   (__, 5) $\xrightarrow{\div}$ _____

4. (37, 49) $\xrightarrow{+}$ _____

5. (5, 7) $\xrightarrow{\times}$ _____

6. (143, 11) $\xrightarrow{\div}$ _____

7. (9, 8)
   $\downarrow -$
   (__, 12) $\xrightarrow{\times}$ _____

8. (60, 20)
   $\downarrow +$
   (__, 5) $\xrightarrow{+}$ _____

9. (192, 217) $\xrightarrow{+}$ _____

10. (107, 39) $\xrightarrow{-}$ _____

11. (76, 38)
    $\downarrow +$
    (5,__) $\xrightarrow{\times}$ _____

12. (30, 15) $\xrightarrow{-}$ _____
    $\downarrow +$
    (__, 30) $\xrightarrow{-}$ _____

13. (25, 12) $\xrightarrow{\times}$ _____

14. (7, 6)
    $\downarrow \times$
    (80,__) $\xrightarrow{-}$ _____

15. (15, 3)
    $\downarrow \times$
    (__, 9) $\xrightarrow{\div}$ _____

16. (352, 11) $\xrightarrow{\div}$ _____

ADD OR SUBTRACT

1. Add: 436
213
142

2. Subtract: 527
304

3. Subtract: 607
343

4. Add: 713
246
339

5. Add: 843
176
289

6. Subtract: 823
468

7. Subtract: 904
568

8. Add: 638
472
569

9. Add: 7234
1612
3176

10. Subtract: 3016
1027

11. Subtract: 7386
4169

12. Add: 1463
2117
4086
7399

13. Add: 4236
1872
2188

14. Subtract: 6832
4166

ADD OR SUBTRACT

Subtract:

1. 4235	2. 8207	3. 6101	4. 8346
1167	6048	4732	3463

Add:

5. 4315	6. 3008	7. 8334	8. 6341
6048	7163	1276	7998
1763	8279	3342	4063
4924	5634	1938	7119

Subtract:

9. 43,126	10. 51,732	11. 573,106	12. 413,217
21,637	42,467	178,246	146,738

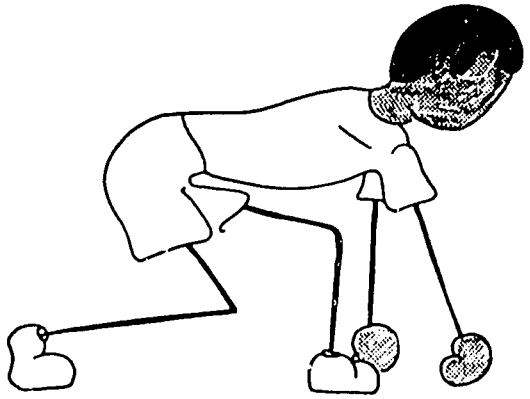
Add:

13. 406,034	14. 4663	15. 1,413,763	16. 101,246
34,763	7800	29,127	13,146
206,197	3049	3,242,708	170,049
832,704	8277	13,100	3,172
76,139	1111		47,339

STORY PROBLEMS

1. Margaret bought a text book for 75 cents, an exercise book for 26 cents, and a pen for 30 cents. How many cents did she spend in all?

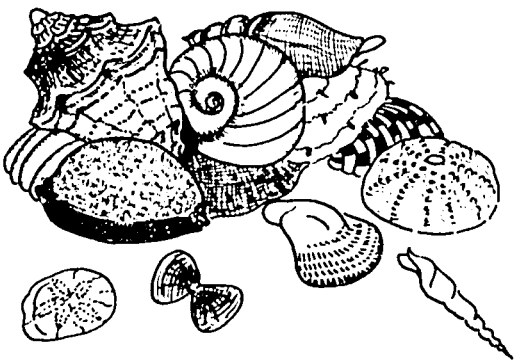
2. Modupe travelled from Freetown to Bo, a distance of 136 miles. He did 47 miles by bus and the rest by lorry. How many miles did Modupe travel by lorry?



3. In an athletics meeting Kwame ran both the 100 yards and 220 yards. Kofi ran the 440 yards. Who ran more yards in all, Kwame or Kofi?

4. These are the weights of five boys: Alemu, 117 pounds; Tete, 109 pounds; Kamau, 114 pounds; Bimbo, 94 pounds; and Tayo, 106 pounds. What is their total weight in pounds?

5. Rosa and Azza together collected 344 shells at the beach. Azza took some of the shells home. There were 195 shells left with Rosa. How many shells did Azza take home?



6. There are 626 working days in two years. Akanji was sick for 45 days and did not work. He had 92 days as holidays. He went to work the other days. How many days did Akanji go to work in these two years?

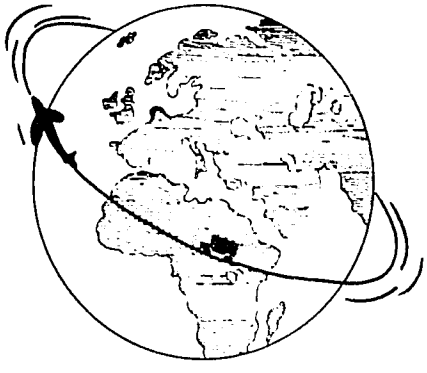
STORY PROBLEMS

1. The water tank in the college compound had 2176 gallons of water in it. On Saturday, 1086 gallons were put in. The next Saturday only 1482 gallons were left in the tank. How many gallons were used that week?

2. A truck full of coconuts weighs 3176 pounds. The coconuts alone weigh 1387 pounds. What is the weight of the truck?

3. Sahr bought three lorries. One cost him 967 pounds, another 1314 pounds, and the third 1788 pounds. After two years he sold the three lorries for a total of 3782 pounds. Did he sell them for more or less than he paid for them? How much more or less?

4. A man spent six weeks travelling around the world. He travelled the following distances by air: 4463 miles, 3462 miles, 832 miles, 1432 miles, 4263 miles, 617 miles, and 5123 miles. He also travelled the following distances by car: 214 miles, 176 miles, 84 miles, 36 miles, and 113 miles. How many miles did he travel by air? How many miles did he travel by car? How many miles did he travel in all?



5. Juma and Mutua spent six years in the primary school. Attendance is marked twice a day. The number of attendances Juma made were: 395, 345, 368, 398, 296, and 388. The number Mutua made were: 400, 376, 243, 298, 315, and 380. Who made more attendances? How many more?

MULTIPLY OR DIVIDE

1. $\begin{array}{r} 307 \\ \underline{6} \end{array}$

2. $\begin{array}{r} 413 \\ \underline{7} \end{array}$

3. $6\overline{)252}$

4. $4\overline{)540}$

5. $\begin{array}{r} 1321 \\ \underline{5} \end{array}$

6. $\begin{array}{r} 4023 \\ \underline{3} \end{array}$

7. $7\overline{)420}$

8. $9\overline{)1890}$

9. $\begin{array}{r} 427 \\ \underline{15} \end{array}$

10. $\begin{array}{r} 642 \\ \underline{25} \end{array}$

11. $12\overline{)888}$

12. $11\overline{)231}$

13. $\begin{array}{r} 713 \\ \underline{38} \end{array}$

14. $\begin{array}{r} 176 \\ \underline{42} \end{array}$

15. $13\overline{)325}$

16. $3\overline{)255}$

17. $\begin{array}{r} 4623 \\ \underline{8} \end{array}$

18. $\begin{array}{r} 3769 \\ \underline{9} \end{array}$

19. $8\overline{)1944}$

20. $11\overline{)1606}$

INEQUALITIES

Use >, or =, or < to make the sentence true.

1. 25×3 ___ $25 + 25 + 25$
2. $64 \div 5$ ___ $64 \div 4$
3. $(48 + 33)$ ___ $(100 - 19)$
4. $(376 + 609)$ ___ $(609 + 376)$
5. 401043 ___ 401403
6. $(263 + 142)$ ___ $(1215 \div 3)$
7. $48 \times (300 + 70 + 9)$ ___ $(48 \times 300) + (48 \times 70) + (48 \times 9)$
8. $(7000 + 600 + 40 + 8)$ ___ $(7 \times 1000) + (6 \times 100) + (4 \times 10) + (8 \times 1)$
9. $(760 \div 40)$ ___ $(700 + 40) + (60 \div 40)$
10. 80×40 ___ $42{,}000 \div 70$

State whether the sentence is true or false.

11. $46 + 8 > 56 - 18$
12. $1927 = 1000 + 900 + 20 + 7$
13. $107007 = 10000 + 700 + 7$
14. $(64 - 46) = (46 - 64)$
15. $(524 \div 24) \div 12 = 524 \div (24 \div 12)$
16. $30 \times 80 > 40 \times 60$
17. $(400 - 35) \div 7 = (400 \div 7) - (35 \div 7)$
18. $365 \times (200 + 6) < (365 \times 200) + (365 \times 16)$
19. $(225 \div 15) \times 15 < 225 \times 1$
20. $216 \times 70 > (1560 \div 40) + 1500$

ESTIMATES

Estimate the product, sum, missing factor, or missing addend.

1. $22 \times 45 = n$

   n is about _____.

2. $n = 34 \times 78$

   n is about _____.

3. $463 + 712 = n$

   n is about _____.

4. $913 = 436 + n$

   n is about _____.

5. $12 \times n = 528$

   n is about _____.

6. $9 \times n = 413$

   n is about _____.

7. $74 \times 123 = n$

   n is about _____.

8. $720 \div 28 = n$

   n is about _____.

9. $15{,}016 - 9863 = n$

   n is about _____.

10. $7032 + 8124 + 3076 = n$

    n is about _____.

Find a low estimate and a high estimate.

11. $24 \times 36 = n$

    _____ $< n$ and $n <$ _____.

12. $344 \times 46 = n$

    _____ $< n$ and $n <$ _____.

13. $8124 + 4006 + 7203 = n$

    _____ $< n$ and $n <$ _____.

14. $26{,}032 - 19{,}473 = n$

    _____ $< n$ and $n <$ _____.

15. $46 \times n = 1850$

    _____ $< n$ and $n <$ _____.

16. $25 \times n = 832$

    _____ $< n$ and $n <$ _____.

MULTIPLY OR DIVIDE

1. $\begin{array}{r} 466 \\ \underline{27} \end{array}$

2. $9\overline{)463}$

   463 = (____ × 9) + ____
   Is 463 a multiple of 9?

3. $12\overline{)743}$

   743 = (____ × 12) + ____

4. $\begin{array}{r} 2016 \\ \underline{63} \end{array}$

5. $\begin{array}{r} 708 \\ \underline{324} \end{array}$

6. $25\overline{)875}$

   875 = (____ × 25) + ____
   Is 25 a factor of 875?

7. $32\overline{)960}$

   960 = (____ × 32) + ____
   Is 960 a multiple of 32?

8. $\begin{array}{r} 2103 \\ \underline{146} \end{array}$

9. $\begin{array}{r} 2397 \\ \underline{526} \end{array}$

10. $15\overline{)525}$

    525 = (____ × 15) + ____
    Is 525 a multiple of 15?

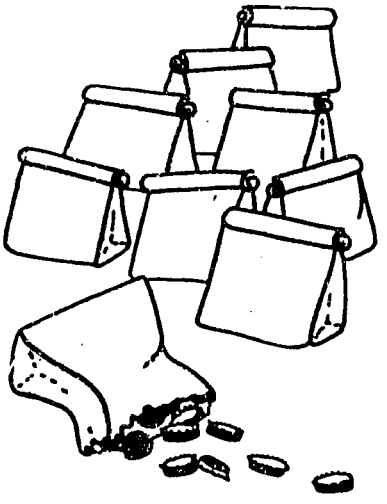
11. $13\overline{)917}$

    917 = (____ × 13) + ____
    Is 13 a factor of 917?

12. $\begin{array}{r} 7324 \\ \underline{436} \end{array}$

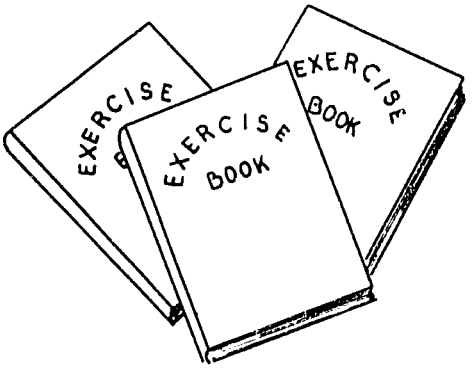
STORY PROBLEMS

1. Bimbola's father has 287 goats. Each goat gives 8 pints of milk every day.
   (a) How many pints of milk does Bimbola's father get every day?
   (b) How many quarts?



2. Jide and Okeke brought packets of bottle tops to school. Jide had 7 packets. Each packet had 24 bottle tops. Okeke had 9 packets. Each packet had 36 bottle tops. How many bottle tops did both Jide and Okeke bring to school? Who brought more, Jide or Okeke?

3. A box containing 24 tins of milk weighs 400 ounces. The box alone weighs 64 ounces. Each tin of milk weighs the same. What is the weight of each tin?

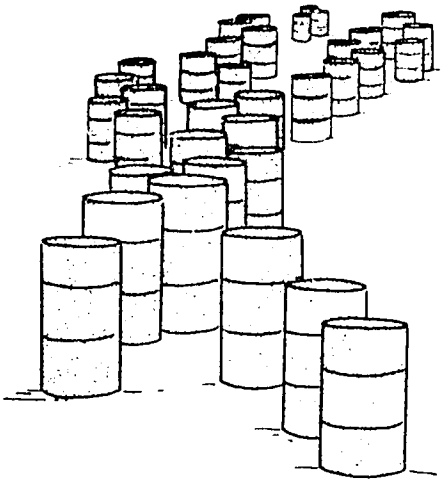


4. A teacher has 24 exercise books. Each book has 48 leaves. He cut the books apart and gave each pupil in his class 8 leaves. How many pupils are in his class?

5. Mary invited 5 friends to her birthday party. She planned to give each of them the following: 1 bottle of ginger ale costing 1 shilling, 1 packet of biscuits costing six pence, 1 bun costing six pence, and a packet of sweets costing 1 shilling and six pence. If the birthday cake costs 12 shillings, about how much will Mary spend to treat her friends?
   (1 shilling = 12 pence)

STORY PROBLEMS

1. The cost of cleaning a bag of rice at the mill is 110 cents. Amadu had 245 bags of rice cleaned for him. What did he pay in cents? If 100 cents equals 1 leone, how many leones did he pay?

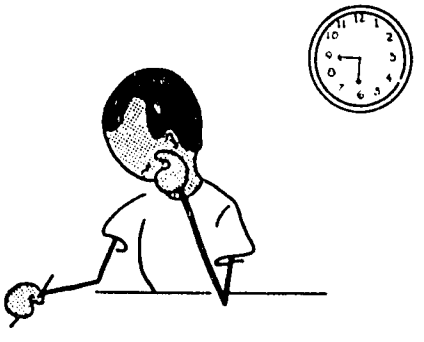


2. A petrol dealer has 35 drums of petrol. Each drum holds 44 gallons. He pours the petrol into 5 large tanks. Each large tank holds the same quantity of petrol. How many gallons does each large tank hold?

3. In Yinka's father's farm there are 30 rows of trees with 25 trees in each row. 12 rows contain orange trees. The rest contain tangerine trees.

   (a) How many trees are there in the farm altogether?
   (b) How many tangerine trees are there?
   (c) Is the number of tangerine trees less than or greater than the number of orange trees?

4. In an examination in mathematics 25 questions are asked. The time of the examination is 90 minutes. About how many minutes are planned for each question?



5. On the first 3 days of a week Bola walked 6146 feet each day. On the other 4 days he walked y feet altogether. He walked 41,510 feet in the 7 days. What is y? He walked the same distance each of these days. How many feet did he walk on each of the 4 days?

ADD, SUBTRACT, MULTIPLY, OR DIVIDE

Add:

1. 4,463,217
   2,317,862
   93,107
   7,086
   832

2. 716,321
   98,003
   234,716
   982
   10,246

Subtract:

3. 421,632
   176,816

4. 3,706,103
   2,183,279

Multiply:

5. 20,634
   76

6. 4876
   409

7. 17,142
   123

8. 8176
   708

Divide:

9. $15\overline{)1875}$

10. $25\overline{)15107}$

11. $38\overline{)22800}$

12. $45\overline{)3423}$

What numerals go in the boxes?

Add:

13. 476,246
    31□,327
    466,2□3
    1,728,92□
    314,276
    4,276,□11
    4,□66,056

Subtract:

14. 479,286
    □8□,4□8
    2□2,□9□

Add:

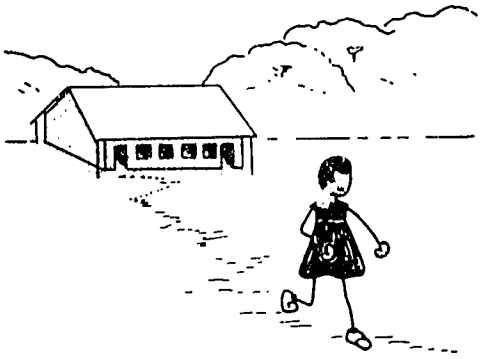
15. 201,37□
    1,2□6,113
    3,462,□79
    13,247
    176,832
    □,046
    □,157,4□6

Subtract:

16. 7,103,207
    4,□6□,□38
    □,1□1,7□□

STORY PROBLEMS

1. A cashier collected 1640 pounds from the bank. From this money he paid 15 men 34 pounds each and 25 men 30 pounds each. How many pounds did he have left?



2. Ngozi arrives in school each day at 8.30 in the morning. She leaves for home at 2.45 in the afternoon. How many hours and minutes does she spend in school? How many minutes is this in all?

3. At the beginning of 1965 a school had 817 pupils on its roll. At the end of the year 97 of these pupils left the school. At the beginning of 1966, 168 more children were admitted. There were then about 33 pupils in each class. About how many classes were there in the school in 1966?

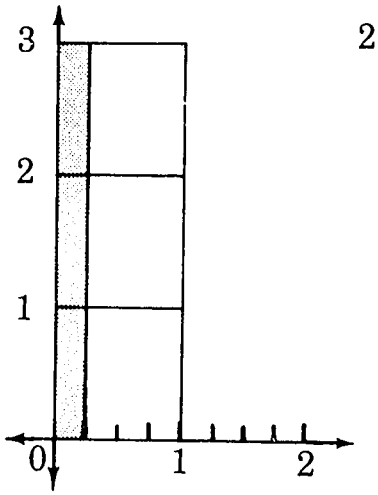
4. A cycle race took place on a circular path which is 440 yards long. Each person in the race went around the path 15 times. 24 persons took part in the race. What is the total distance travelled by the 24 people?

5. A lorry carried 65 cases of tomatoes and 48 cases of apples. The total weight of the cases of tomatoes and apples was 2565 pounds. Each case of tomatoes weighed about 22 pounds. About how many pounds did each case of apples weigh?

FRACTIONS

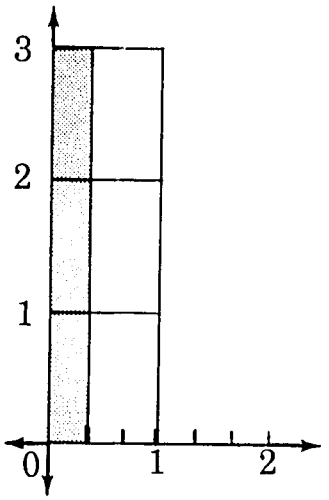
What product is shown?

1.



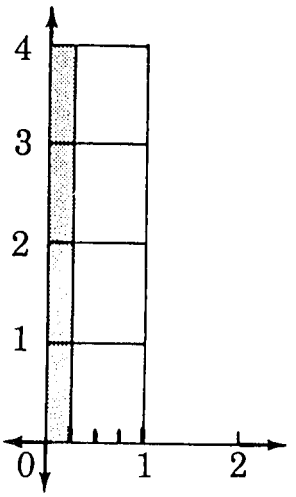
$3 \times$ ____ = ____

2.



____ $\times \frac{1}{3} =$ ____

3.



$4 \times$ ____ = ____

What number makes the sentence true?

4. $3 \times \frac{1}{5} = n$

5. $2 \times \frac{1}{3} = a$

6. $4 \times \frac{1}{2} = m$

7. $4 \times b = 1$

8. $5 \times \frac{1}{3} = c$

9. $5 \times \frac{1}{2} = t$

10. $6 \times y = \frac{6}{5}$

11. $6 \times r = 1$

12. $n \times \frac{1}{4} = \frac{3}{4}$

13. $m \times \frac{1}{5} = \frac{2}{5}$

14. $r \times \frac{1}{5} = 1$

15. $7 \times t = \frac{7}{8}$

16. $s \times \frac{1}{9} = \frac{4}{9}$

17. $c \times \frac{1}{3} = 1$

FRACTIONS

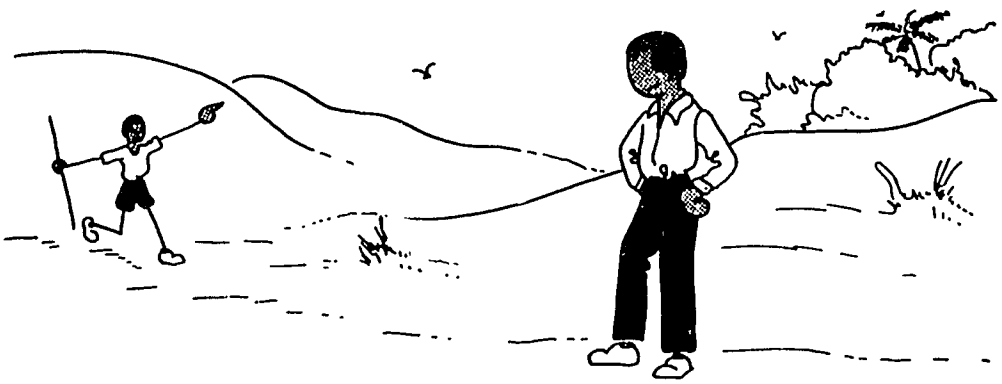
What number makes the sentence true?

1. $2 \times \frac{2}{3} = n$
2. $3 \times \frac{4}{2} = b$
3. $2 \times \cdot 5 = p$
4. $3 \times \frac{6}{5} = q$
5. $t \times \frac{3}{4} = 3$
6. $4 \times \cdot 2 = a$
7. $4 \times g = \frac{8}{3}$
8. $8 \times \frac{3}{4} = f$
9. $9 \times \frac{4}{3} = m$
10. $7 \times d = 1$
11. $h \times \frac{1}{6} = 1$
12. $4 \times 20\% = n$

13. Pamali drinks $\frac{2}{3}$ of a glass of milk each meal. He had 3 meals today. How many glasses of milk did he drink today?

14. A shopkeeper bought butter in $\frac{1}{4}$ pound packages. He bought 21 packages. How many pounds of butter did he buy?

15. A man sent out his 40 goats for grazing. His son told him that $\frac{3}{8}$ of the goats were missing. How many goats were missing?

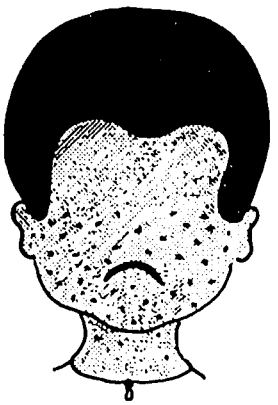


FRACTIONS

What number makes the sentence true?

1. $\frac{1}{3} \times 4 = m$
2. $\frac{1}{4} \times 5 = m$
3. $\frac{2}{3} \times 7 = m$
4. $\frac{3}{4} \times 6 = m$
5. $\frac{4}{5} \times 6 = m$
6. $\frac{2}{4} \times 5 = m$
7. $m \times 5 = 1$
8. $\frac{5}{6} \times 8 = m$
9. $\frac{5}{4} \times 9 = m$
10. $40\% \times 5 = m$
11. $\cdot 6 \times 10 = m$
12. $\frac{7}{8} \times 9 = m$
13. $\frac{7}{8} \times 12 = m$
14. $m \times \cdot 1 = 1$

15. There are 45 children in a class. $\frac{2}{5}$ of the class could not come to school. They were sick with the measles. How many of the children could not come to school?



16. In a school there are 400 children and $\cdot 75$ of them are boys. How many boys are in the school?

17. A class has 50 children. 50% of them paid their school fees. How many of the children paid their school fees?

FRACTIONS

What number makes the sentence true?

1. $5 \times n = 6$
2. $3 \div 5 = n$
3. $2 \div 6 = n$
4. $n \times 5 = 2$
5. $17 \div 3 = n$
6. $7 \times n = 42$
7. $5 \div 16 = n$
8. $13 \times n = 1$
9. $13 \times n = 13$
10. $13 \times n = 0$

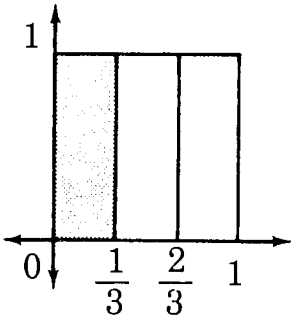
Find a mixed name for n.

11. $32 \div 5 = n$
12. $73 \times n = 4$
13. $79 \div 5 = n$
14. $108 \div 8 = n$
15. $103 \times n = 9$
16. $91 \div 11 = n$
17. $163 \times n = 6$
18. $135 \div 12 = n$
19. $264 \div 23 = n$
20. $412 \times n = 31$

FRACTIONS

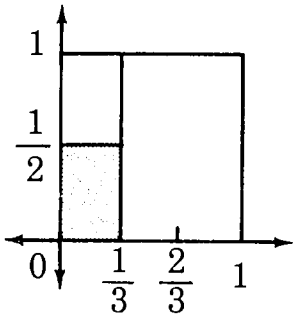
For each of the following exercises, give the missing numbers.

1.



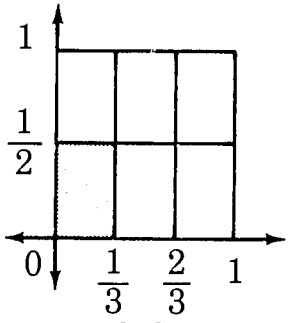
_____ of the unit square is shaded.

2.



_____ of _____ of the unit square is shaded.

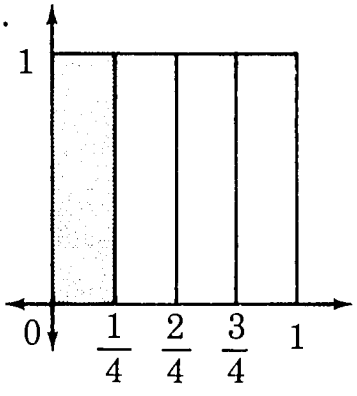
3.



_____ of the unit square is shaded.

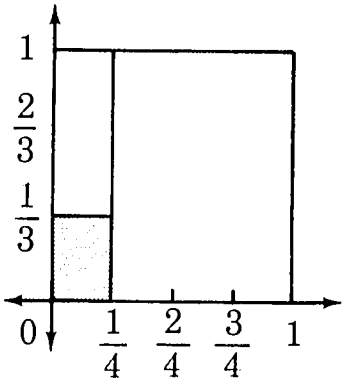
4. $\frac{1}{2} \times \frac{1}{3} = n,\ n =$ _____.

5.



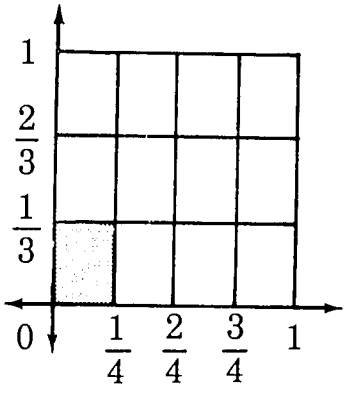
_____ of the unit square is shaded.

6.



_____ of _____ of the unit square is shaded.

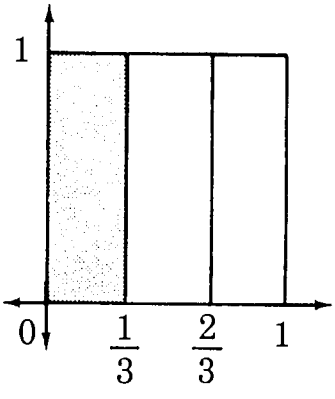
7.



_____ of the unit square is shaded.

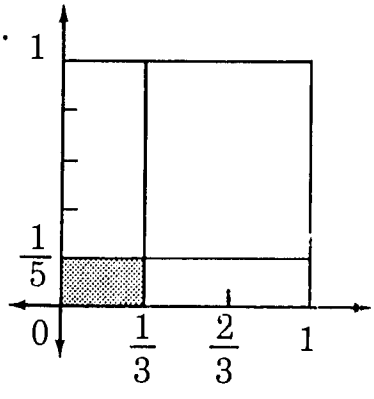
8. $\frac{1}{3} \times \frac{1}{4} = n,\ n =$ _____.

9.



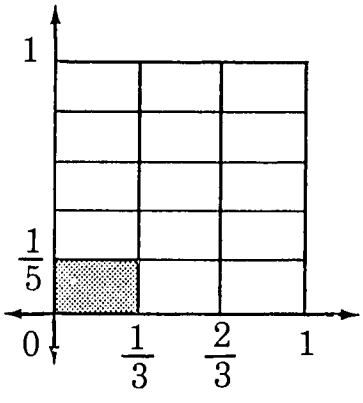
_____ of the unit square is shaded.

10.



_____ of _____ of the unit square is shaded.

11.



_____ of the unit square is shaded.

12. $\frac{1}{5} \times \frac{1}{3} = n,\ n =$ _____.

FRACTIONS

Find the following products.

1. $\frac{1}{3} \times \frac{1}{6} = n$
2. $\frac{1}{4} \times \frac{1}{5} = m$
3. $\frac{1}{2} \times \frac{1}{4} = h$
4. $\frac{1}{5} \times \frac{1}{2} = b$
5. $\frac{1}{8} \times \frac{1}{2} = p$
6. $\frac{1}{7} \times \frac{1}{3} = t$

Write and solve the mathematical sentence for each story problem.

7. A hill is $\frac{1}{8}$ of a mile high. A boy wanted to climb to the top. He became tired $\frac{1}{2}$ of the way up. How many miles did he climb?

8. Obi and his sister Ngozi started from home at the same time to run to school. Obi ran $\frac{1}{3}$ of the way to school when rain started. Ngozi ran half as far as Obi. What part of the way to school did Ngozi run before the rain started?

9. Okeke's home is $\frac{2}{4}$ mile from his school. He walked $\frac{1}{5}$ of the way to school before he remembered his mathematics book. How many miles did he walk before he remembered the book?

Write >, or <, or = to make the sentences true.

*10. $\frac{1}{2} \times \frac{1}{4}$ ___ $\frac{1}{8} + \frac{1}{4}$

*11. $\frac{1}{3} \times \frac{1}{6}$ ___ $\frac{1}{9}$

*12. $\frac{1}{3} \times \frac{1}{6}$ ___ $\frac{1}{3} \times \frac{1}{2}$

*13. $\frac{1}{3} - \frac{1}{5}$ ___ $\frac{1}{3} \times \frac{1}{5}$

*14. $\frac{1}{4} \times \frac{1}{3}$ ___ $\frac{1}{4} - \frac{1}{6}$

*15. $\frac{1}{4} \times \frac{1}{5}$ ___ $\frac{1}{4} - \frac{1}{5}$

FRACTIONS

Find the products.

1. $\frac{5}{7} \times \frac{2}{3} = m$
2. $\frac{1}{3} \times \frac{3}{4} = x$
3. $\frac{3}{5} \times \frac{2}{3} = y$
4. $\frac{5}{7} \times \frac{1}{5} = m$
5. $\frac{3}{2} \times \frac{2}{5} = n$
6. $\frac{4}{5} \times \frac{2}{3} = x$
7. $\cdot 5 \times \cdot 7 = m$
8. $\cdot 9 \times \cdot 4 = n$

Copy and complete the multiplication chart.

9.

$\times$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{2}{5}$	$\cdot 3$	$\frac{3}{4}$
$\frac{1}{2}$				$\frac{3}{20}$	$\frac{3}{8}$
$\frac{1}{3}$			$\frac{2}{15}$		
$\frac{2}{3}$		$\frac{6}{24}$			
$\frac{1}{6}$					
$\frac{1}{4}$					

Write >, or <, or = in the spaces to make the sentences true.

*10. $\frac{3}{4} \times \frac{2}{3}$ _____ $\frac{1}{3} \times \frac{1}{2}$

*11. $\frac{2}{3} - \frac{1}{9}$ _____ $\frac{5}{6} \times \frac{2}{3}$

*12. $\frac{2}{3} \times \frac{3}{4}$ _____ $\frac{1}{2} \times \frac{2}{5}$

*13. $\frac{2}{3} \times \frac{2}{5}$ _____ $\frac{4}{6} \times \frac{1}{2}$

STORY PROBLEMS

1. Mary has wool weighing $\frac{3}{4}$ pound. She gave $\frac{1}{3}$ of the wool to her sister Elizabeth. How many pounds does Elizabeth's wool weigh?

2. A school has 600 pupils. On a rainy day $\frac{1}{3}$ of the pupils were absent. How many pupils were present on that day?

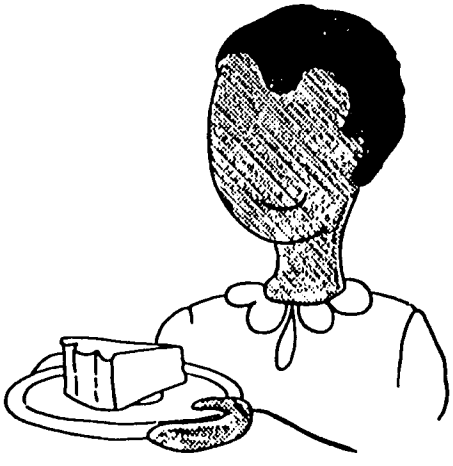
3. In a certain town ·3 of the population are adults and ·4 of the adults are men. What part of the population are men?

4. There are 300 pupils in a secondary school. $\frac{2}{3}$ of the pupils are boys. $\frac{1}{10}$ of the boys wear glasses. How many boys in the school wear glasses? What part of the pupils in the school are boys who wear glasses?

5. One half of the children in a school are ten years and older. $\frac{2}{5}$ of this number are twelve years and older. What part of the children in the school are twelve years and older?

6. I am thinking of a number. It is $\frac{2}{5}$ of $\frac{3}{4}$. What is the number?

7. Ngozi received $\frac{5}{6}$ of a cake from her mother. She gave $\frac{2}{3}$ of her part to her sister. What fraction of the cake did she give to her sister?

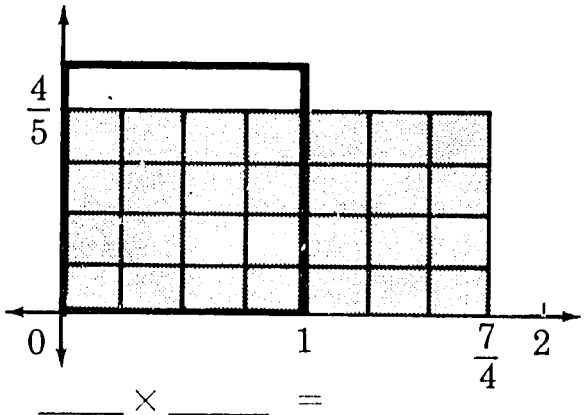


8. In a certain school there are 200 pupils. 20 per cent of the pupils are girls. One half of the girls live in the dormitory. How many girls live in the dormitory?

PRODUCTS

What products do the arrays show?

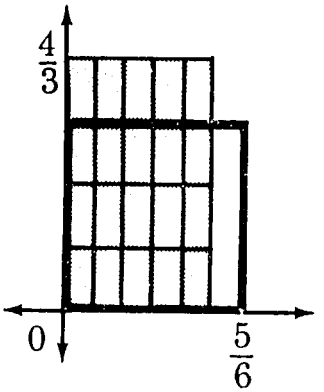
1.



_____ × _____ = _____

The shaded region is_____of the unit square.

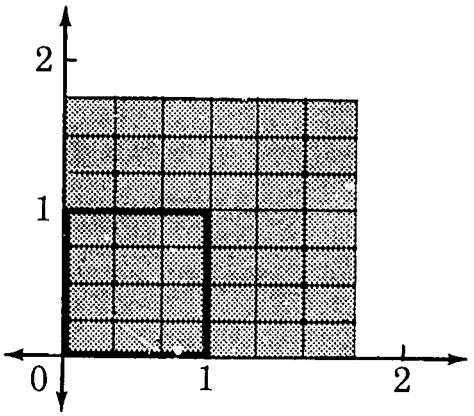
2.



_____ × _____ = _____

The shaded region is _____of the unit square.

3.



_____ × _____ = _____

The shaded region is_____of the unit square.

Find the products.

4. $\frac{2}{3} \times \frac{1}{5}$
5. $\cdot 3 \times \frac{1}{3}$
6. $\frac{4}{5} \times \frac{2}{3}$
7. $\frac{6}{5} \times \frac{4}{3}$
8. $\frac{4}{3} \times \frac{7}{6}$
9. $\cdot 7 \times \frac{5}{4}$
10. $\frac{5}{7} \times \frac{7}{6}$
11. $\frac{13}{2} \times \frac{4}{3}$
12. $5\cdot 2 \times \frac{2}{3}$
13. $\frac{1}{3} \times 45\%$
14. $3\cdot 2 \times \cdot 7$
15. $1\cdot 2 \times \frac{3}{4}$
16. $\frac{6}{7} \times 21\%$
17. $\frac{3}{5} \times 40\%$
18. $\cdot 8 \times 25\%$
19. $3\cdot 7 \times 2\cdot 3$
20. $\frac{9}{8} \times \frac{3}{7}$
21. $3\cdot 2 \times \cdot 45$

SOLVE THE SENTENCES

1. $5 \times n = \frac{5}{3}$
2. $5 \times m = 5$
3. $5 \times a = 3$
4. $4 \times b = 5$
5. $\cdot 8 \times y = \cdot 8$
6. $s \times \frac{4}{5} = 4$
7. $3 \times c = \frac{1}{2}$
8. $d \times 4 = \frac{2}{5}$
9. $f \times \frac{1}{2} = 3$
10. $\cdot 8 \times g = 1$
11. $\frac{5}{6} \times y = \frac{10}{15}$
12. $\frac{3}{4} \times n = \frac{9}{16}$
13. $m \times \frac{1}{4} = 1$
14. $3 \times n = 1$
15. $\frac{2}{3} \times t = 1$
16. $q \times \frac{7}{6} = 1$

Write a sentence; solve the sentence.

17. What fraction must be multiplied by $\frac{3}{4}$ to give the product 1?

18. What fraction must be multiplied by $\frac{a}{b}$ to give the product 1 (if a is not 0)?

19. Is there a number that can be multiplied by $\frac{0}{4}$ to give the product 1? Explain your answer.

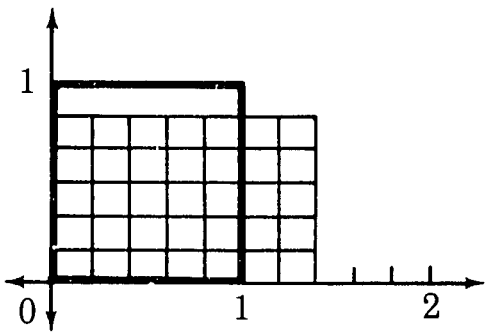
FRACTIONS

Write many names for these fractions.

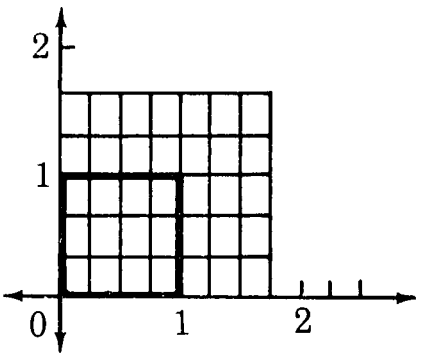
1. $\frac{3}{4}$ = _____ = _____ = 75% = _____ = _____
2. $\frac{5}{2}$ = _____ = 2·5 = _____ = _____ = _____
3. $\frac{7}{10}$ = $\frac{14}{20}$ = _____ = _____ = _____ = _____
4. ·9 = _____ = _____ = 90% = _____ = _____
5. $2\frac{1}{4}$ = _____ = _____ = _____ = $\frac{18}{8}$ = _____
6. 1 = _____ = _____ = _____ = _____ = _____
7. $5\frac{3}{4}$ = _____ = _____ = _____ = _____ = _____
8. $\frac{13}{4}$ = _____ = _____ = _____ = _____ = _____

What fraction of the unit square does the array show?

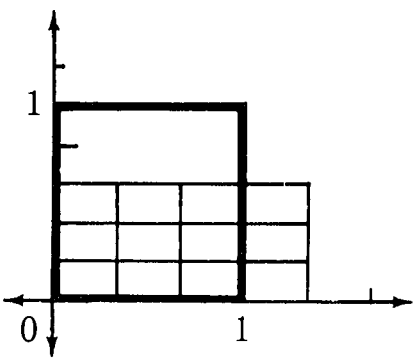
9.



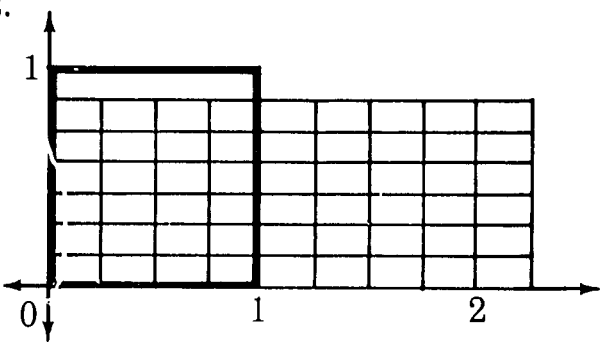
10.



11.



12.

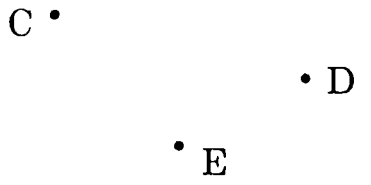


USING A STRAIGHTEDGE

1. Mark two points A and B.
2. Make A and B endpoints of a line segment.
3. Can you draw another line segment from A to B?

---

4. Mark three points C, D and E, not on the same line.
5. Use the points to draw line segments that make angles.
6. How many angles did you draw?
7. Name the angles.
8. What figure is made by the three angles?



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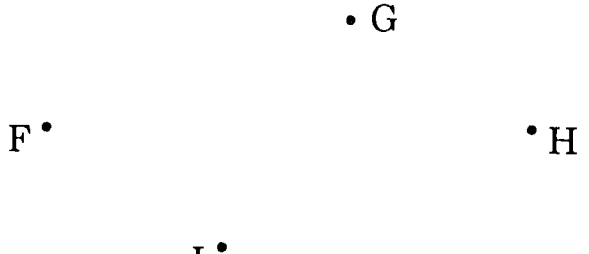
9. Mark four points F, G, H, and I, not on the same line.
10. Use the points to draw line segments that make a closed curve.
11. Name the closed curve.
12. Is it a simple closed curve?



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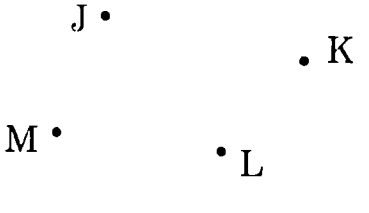
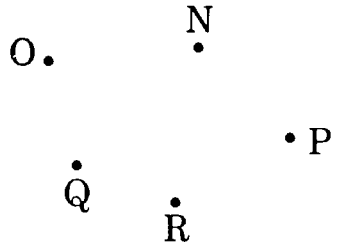
13. Mark four other points J, K, L, and M. Let no three be on the same line.
14. Join each point to every other point with line segments.
15. How many line segments did you draw?



USING A STRAIGHTEDGE

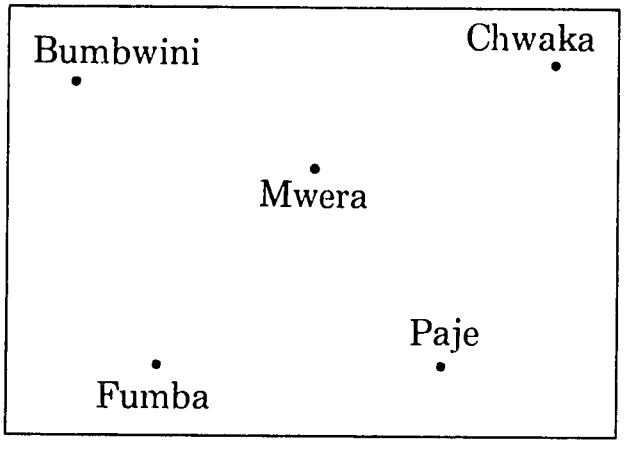
16. Mark five points N, O, P, Q, and R. Let no three be on the same line.



17. John walked from R to P to Q to N to O to R. Draw his path.

18. Is the path John walked a simple closed curve?

19. Draw a path that does make a simple closed curve.



This is the map of five towns in a province. The ministry built straight roads from each town to every other town.

20. Copy the map. Draw all the roads.

21. How many straight roads are there?

22. Name all the different paths you can travel from Bumbwini to Paje. Do not go through any town twice. (Call the towns points B, M, F, P, C.)

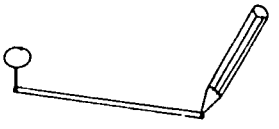
23. Along how many paths can you travel?

USING A STRAIGHTEDGE

Copy the points. Follow the points from 1 to 2, 2 to 3, 3 to 4, and so on.

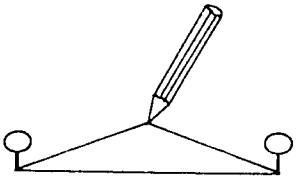
DRAWING FIGURES WITH STRINGS

Put a drawing pin in your exercise book. Put a string loop around the pin and around your pencil.



1. Hold your pencil against the string and move your pencil around the pin. Your pencil will draw a closed curve.
2. Is the figure a circle?
3. Mark the centre of your circle C. Draw a radius of the circle.
4. Draw a diameter of the circle.
5. Mark three points on the circle. Call them A, B, and D. Draw $\overline{CA}$, $\overline{CB}$, and $\overline{CD}$.
6. Which of these line segments is the longest?

Put two drawing pins in your exercise book. Put a string loop around the pins and around your pencil.



7. Hold your pencil against the string and move your pencil. The pencil will draw a closed curve.
8. Is the figure a circle?

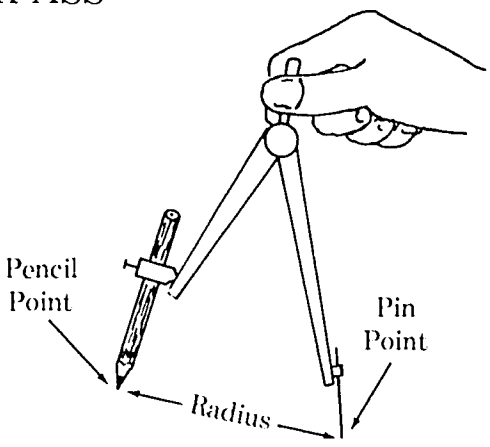
---

9. Cut out the circle you drew in (1).
10. Fold the cutout so part of the cutout fits on the other part.
11. Fold the cutout as many ways as you can to make the two parts fit.
12. How many ways can you fold the cutout?

---

13. Cut out the figure you drew in (7).
14. Fold the cutout into two parts to make the parts fit.
15. Fold the cutout as many ways as you can to make the two parts fit.
16. How many ways did you fold the cutout?
17. Does the cutout show a circle?

USING A COMPASS



1. Draw a line segment $\overline{AB}$ on your paper. Make $\overline{AB}$ 7 inches long.
2. Set your compass with any radius. Put the pin point on A. With the pencil point mark a point on $\overline{AB}$. Name the point X.
3. Put the pin point on B. With the pencil point mark a point on $\overline{AB}$. Name the point Y.
4. Are $\overline{AX}$ and $\overline{BY}$ congruent? Why?

---

5. Draw a line segment $\overline{CD}$ that is 16 centimetres long.
6. Set the radius of your compass to 4 centimetres. With the pin at C, mark a point on the line 4 centimetres from C.
7. Put the pin at this point. Mark another point on the line 4 centimetres away.
8. Put the pin at this point. Mark another point 4 centimetres away. Go on in this way until you come to point D.
9. How many congruent line segments did you mark on $\overline{CD}$?

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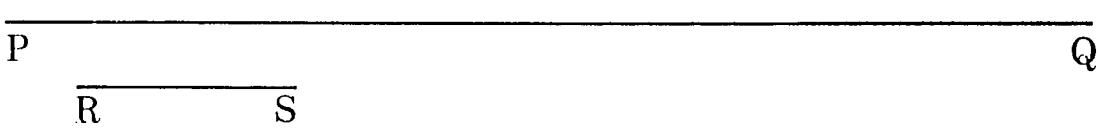
10. Copy line segments $\overline{PQ}$ and $\overline{RS}$ on your paper.



11. Set the radius of your compass to the length of $\overline{RS}$. With this radius, mark congruent line segments on $\overline{PQ}$.
12. Let $\overline{RS}$ be a unit of measure. Then the measure of $\overline{PQ}$ is_____.

DRAWING CIRCLES

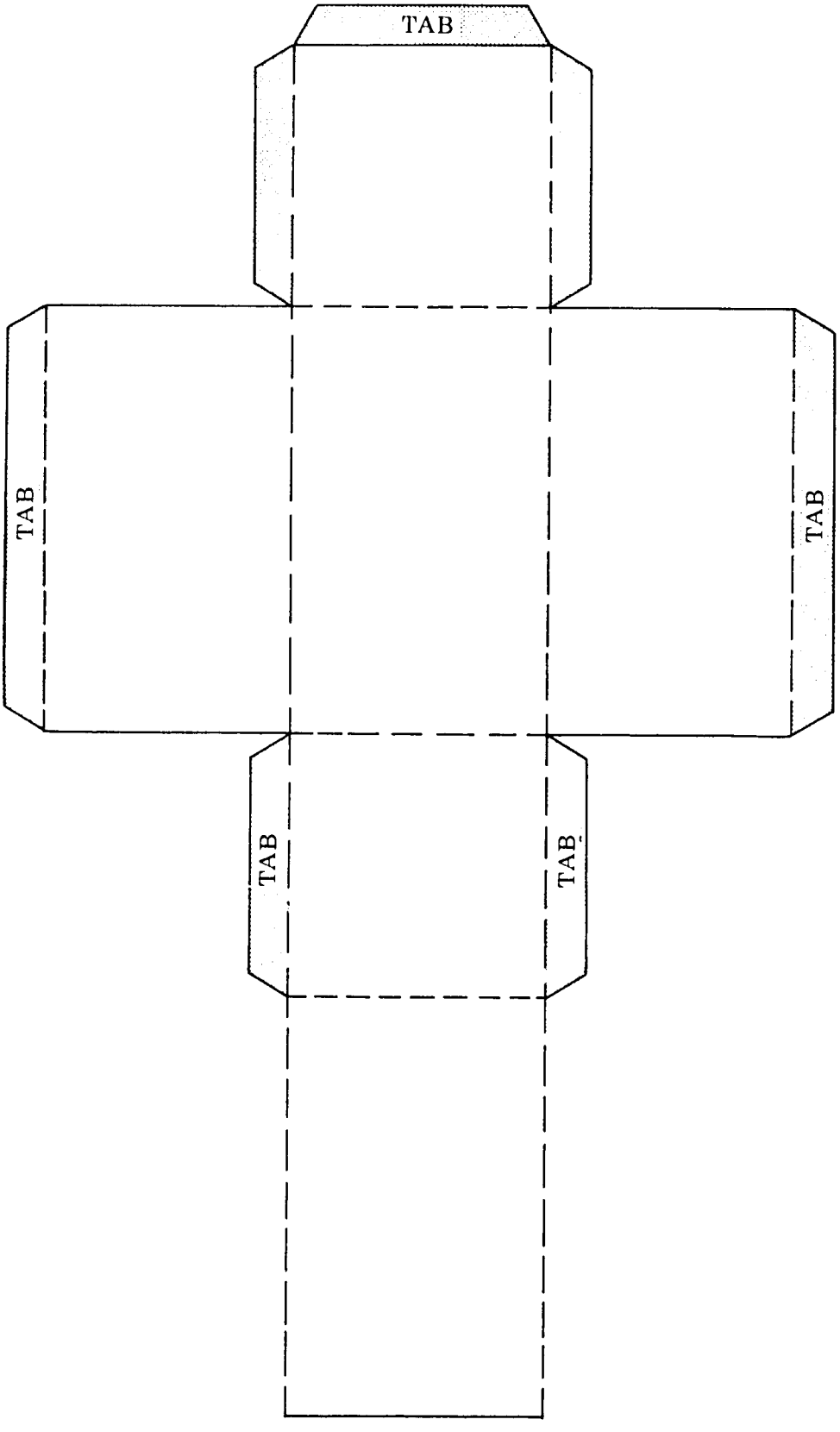
1. Set the radius of your compass at 2 inches. Draw a circle with this radius.
2. Mark the centre and name it O.
3. Mark three points A, B, and C on the circle.
4. Draw $\overline{OA}$, $\overline{OB}$, and $\overline{OC}$. Are they congruent? Why?
5. Can you tell the lengths of $\overline{OA}$, $\overline{OB}$, and $\overline{OC}$ without measuring them?
6. Draw a diameter of the circle. How long is it?
7. Draw another circle with centre at O and with radius 6 centimetres.
8. Do the two circles intersect?
9. Shade the region that is inside one circle but outside the other circle.

---

10. Mark two points P and Q that are 4 inches apart.
11. Draw two circles with radius 2 inches, one with centre at P and the other with centre at Q.
12. Do the circles intersect?
13. Mark and name the intersection point.
14. Draw two circles with radius 4 centimetres, one with centre at P and the other with centre at Q.
15. Do these two circles intersect?
16. Draw two circles with diameter 6 inches, one with centre at P and the other with centre at Q.
17. Do these two circles intersect?
18. Mark and name the intersection points.

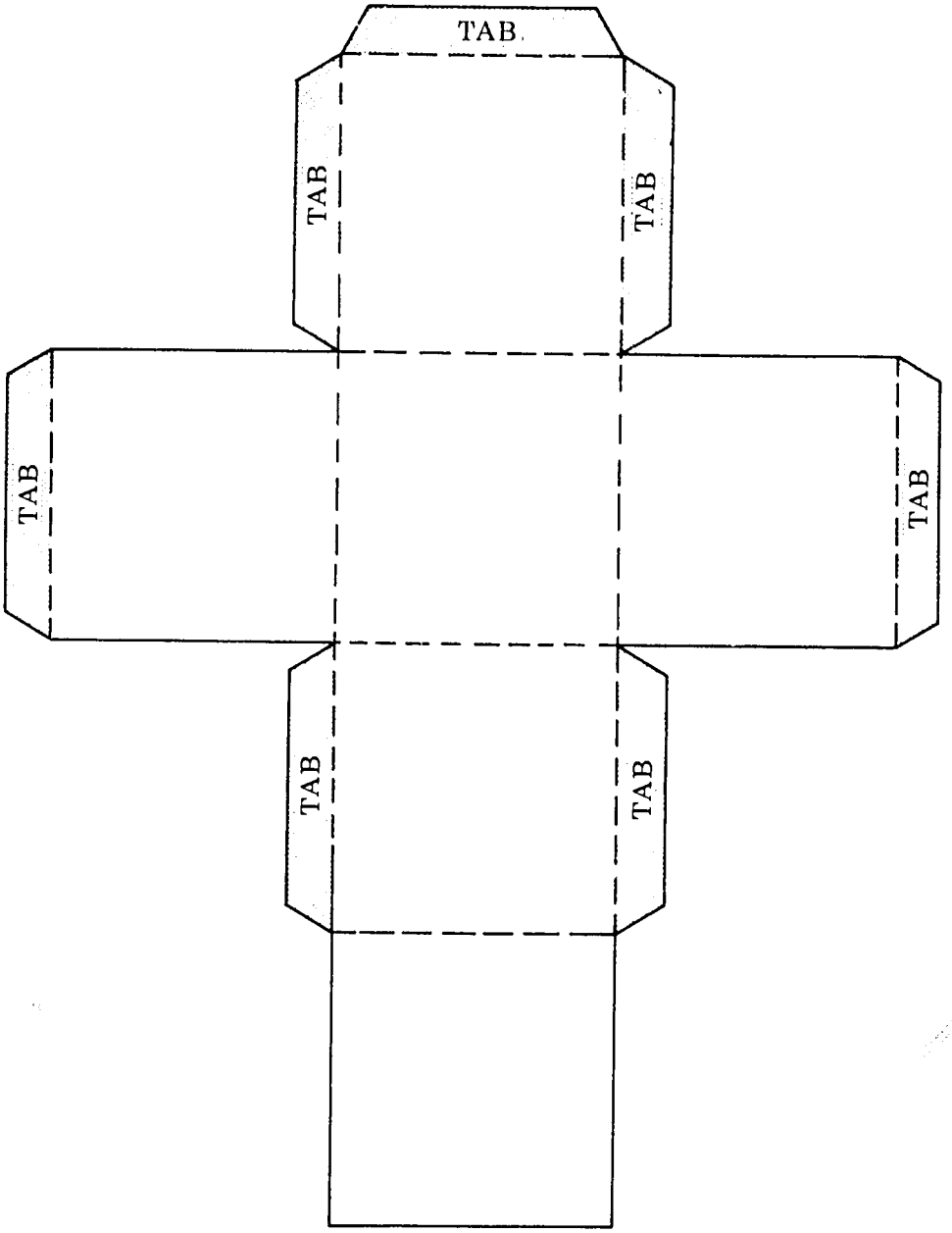
SOLID FIGURE

Make a solid figure. What is it?



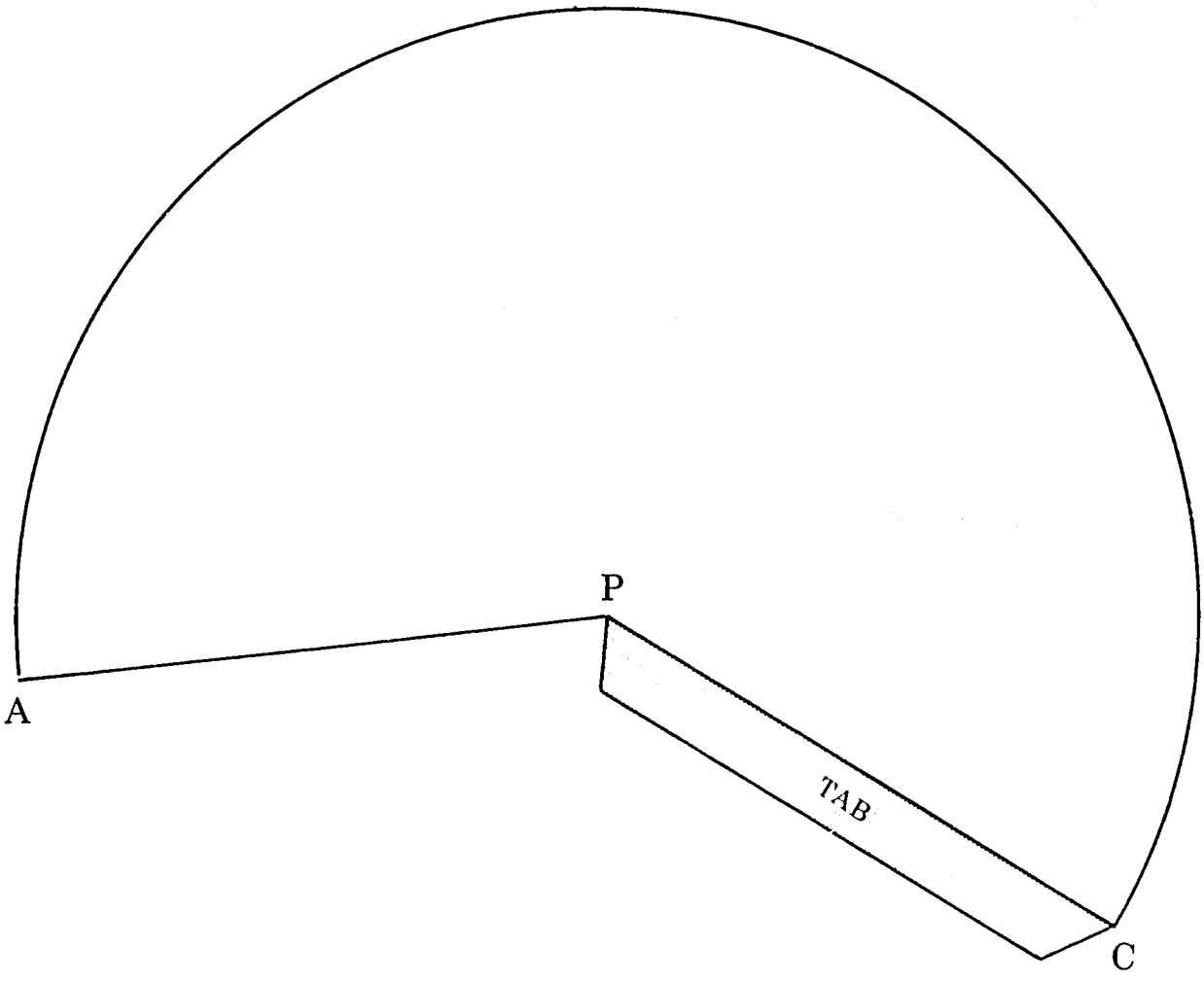
SOLID FIGURE

Make a solid figure. What is it?



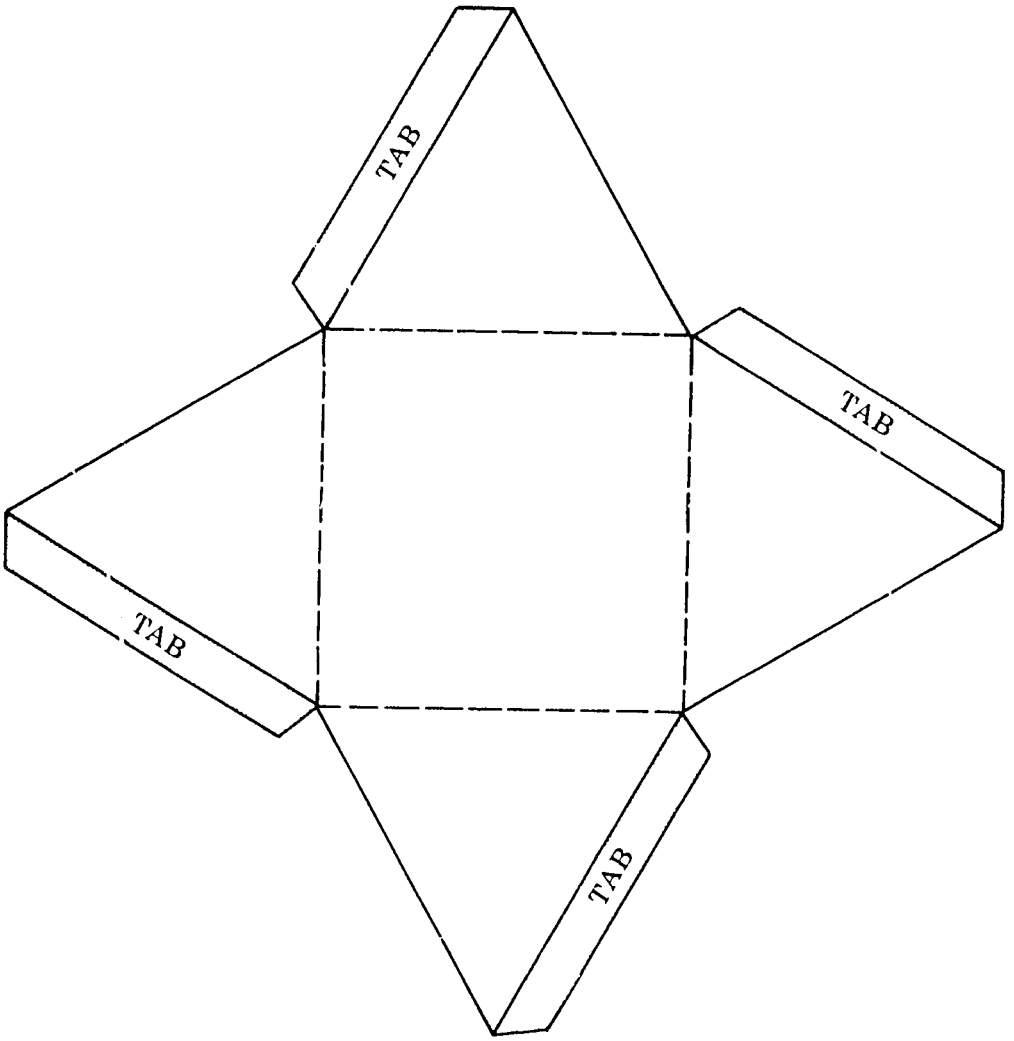
SOLID FIGURE

Make a solid figure. What is it?



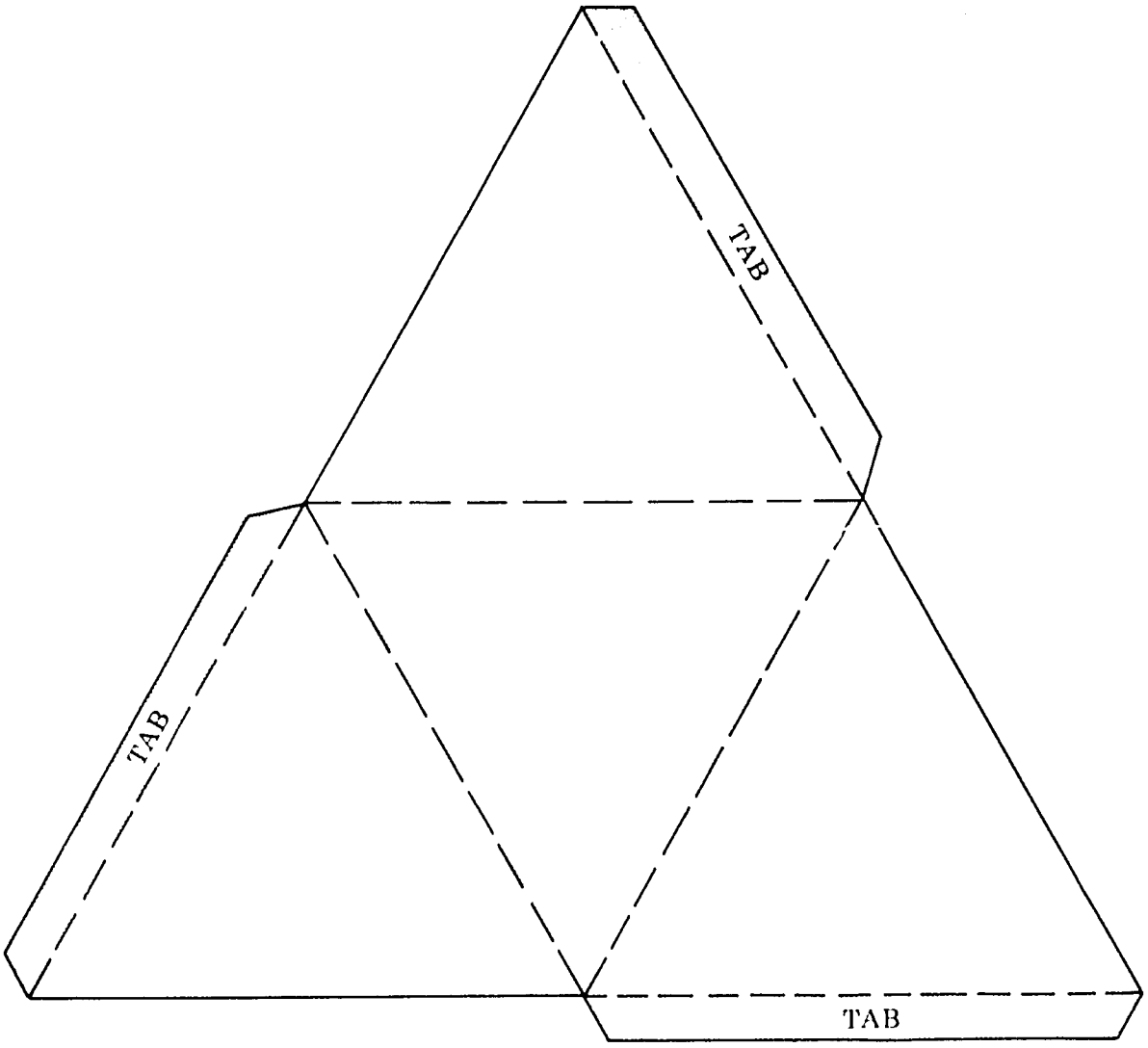
SOLID FIGURE

Make a solid figure. What is it?



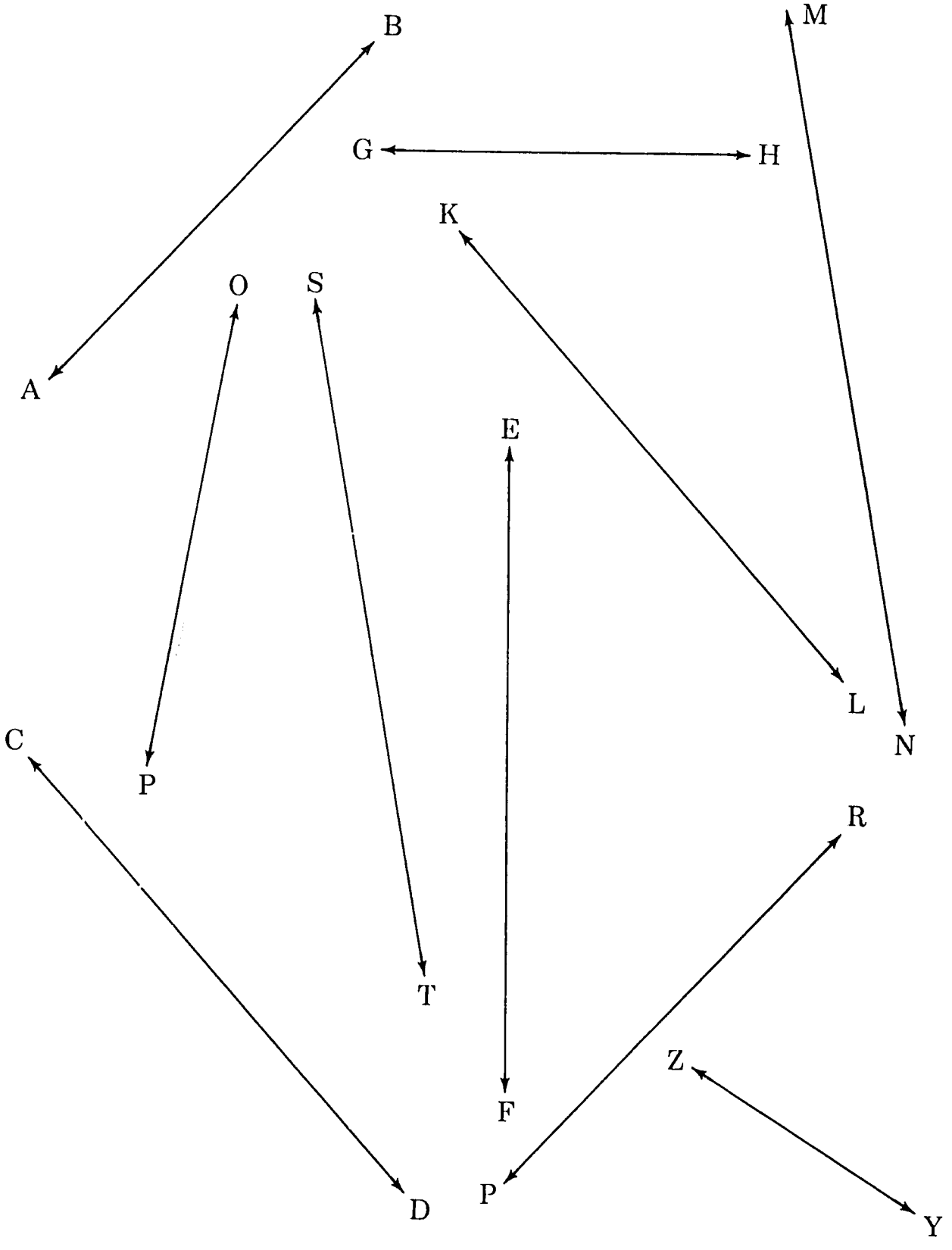
SOLID FIGURE

Make a solid figure. What is it?



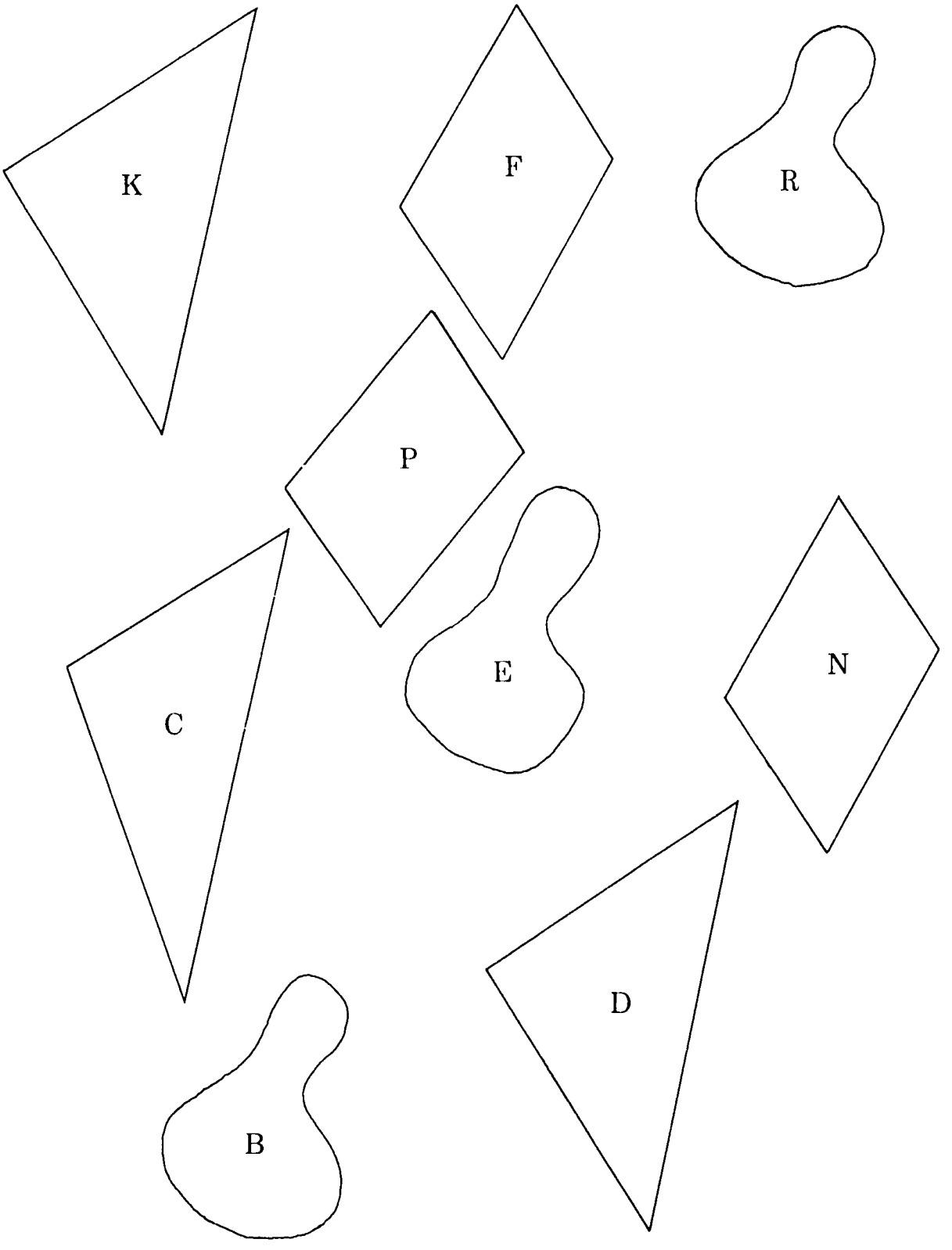
PARALLEL LINES

Which lines are parallel?

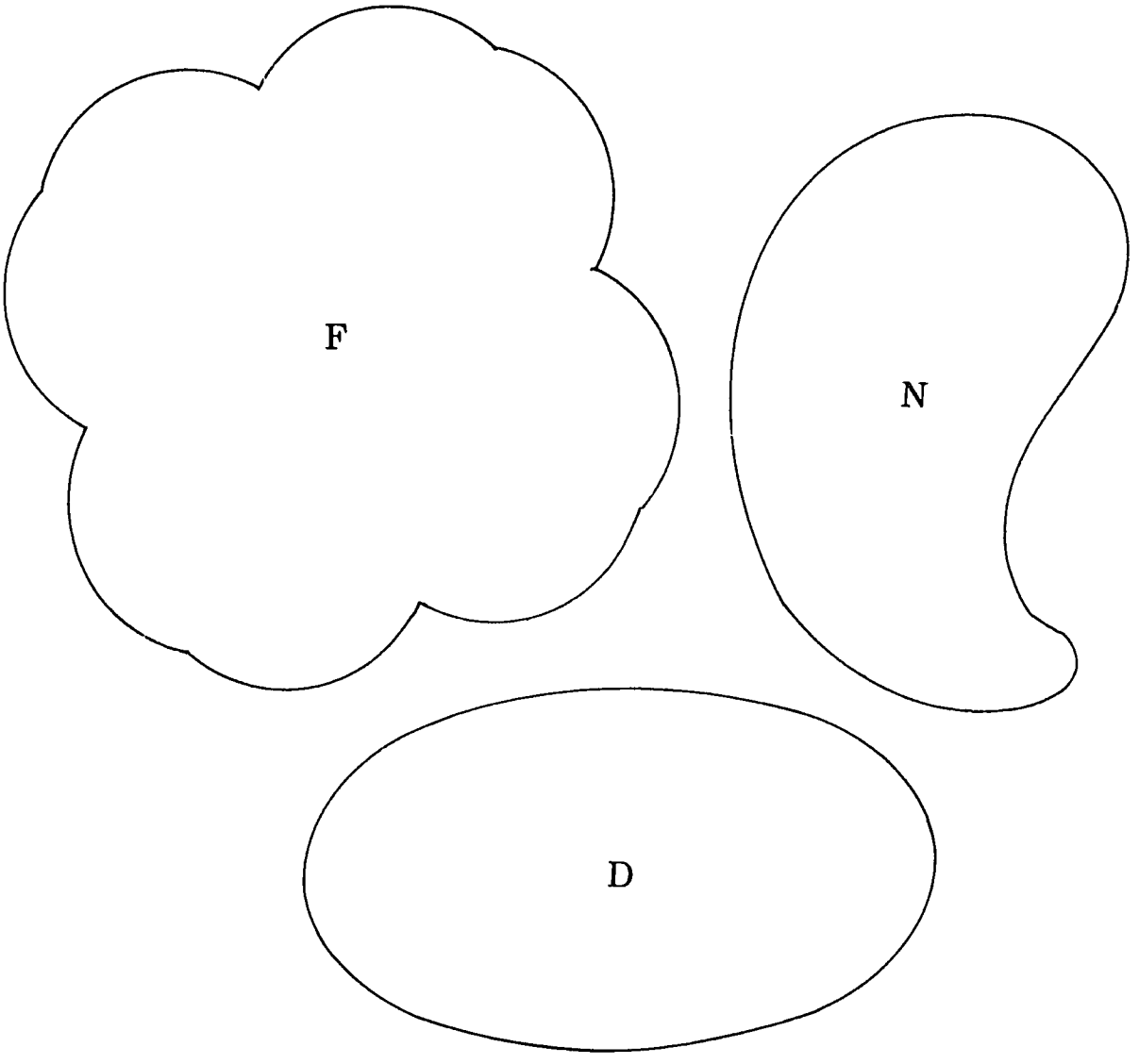


CONGRUENT FIGURES

Which figures are congruent?



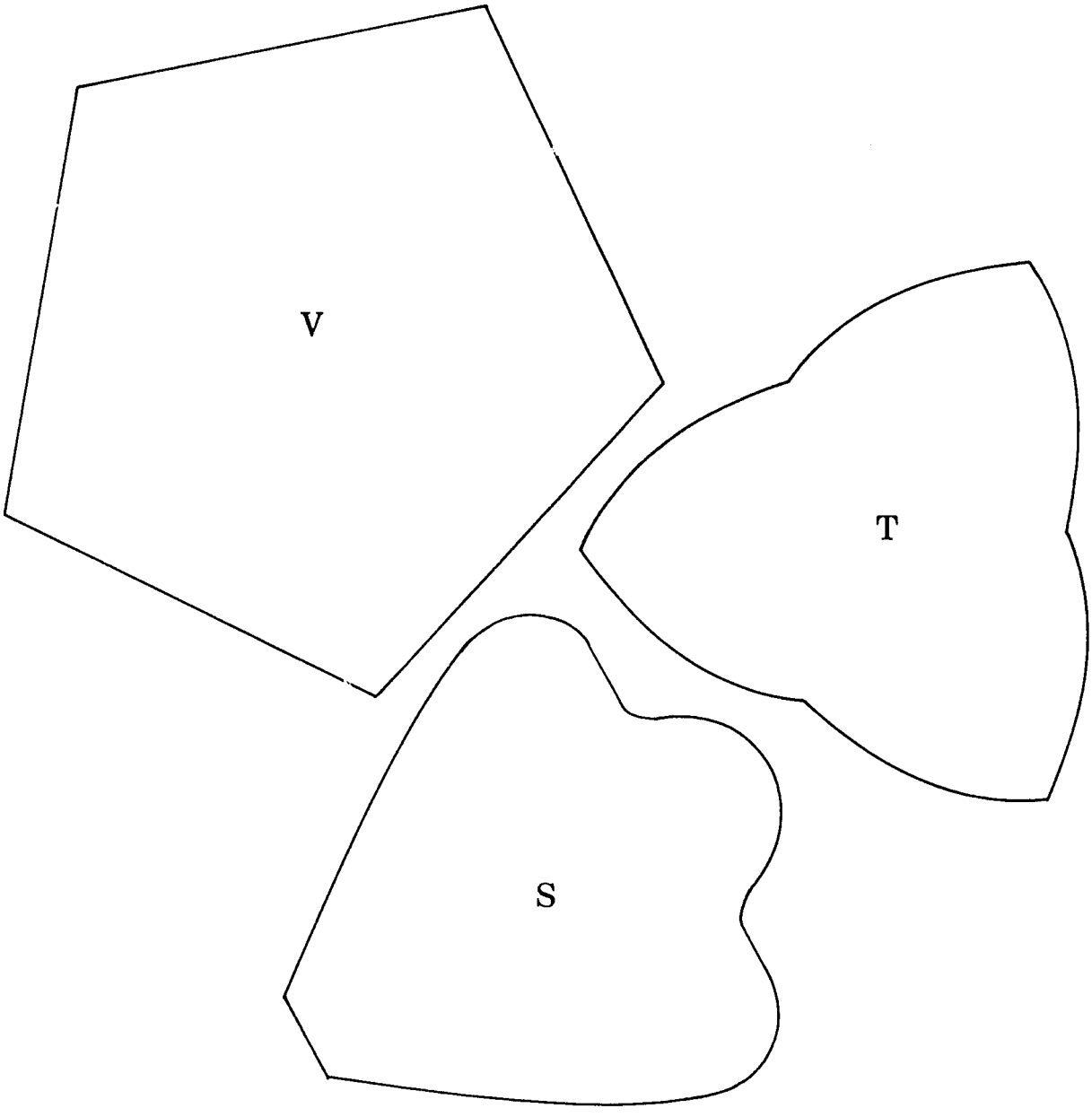
SYMMETRIES



How many symmetries?

	Figure	Folding Symmetries	Turning Symmetries
1.	F	_____	_____
2.	N	_____	_____
3.	D	_____	_____

SYMMETRIES

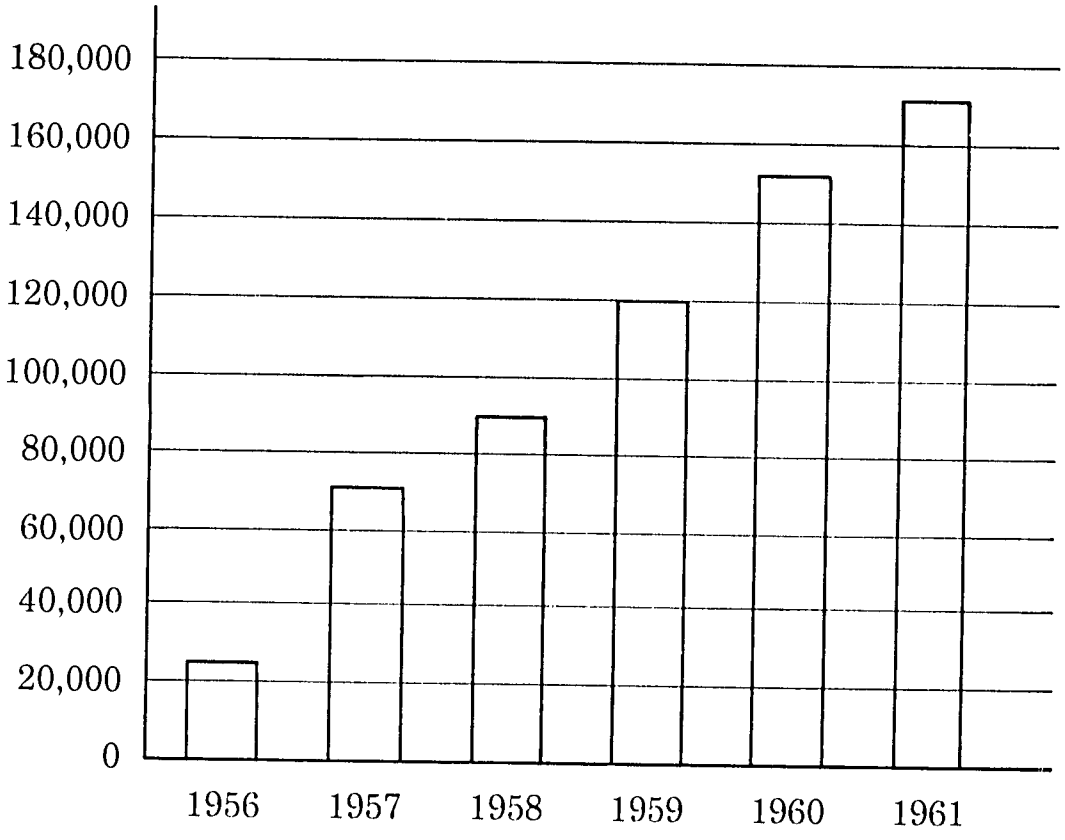


How many symmetries?

	Figure	Folding Symmetries	Turning Symmetries
4.	V	_____	_____
5.	T	_____	_____
6.	S	_____	_____

READING GRAPHS

Secondary Grammar School Enrollment in Nigeria



1. Estimate the enrollment in 1958, in 1959, in 1960.

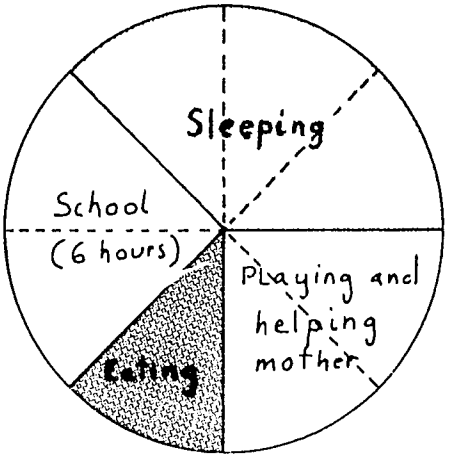
2. Estimate the enrollment in 1956, in 1957, in 1961.

3. Between which two years was the increase in enrollment the greatest?

4. Between which two years was the increase in enrollment the least?

READING GRAPHS

How Onyerisara Spends a Day



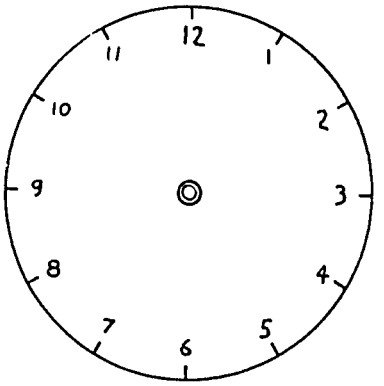
1. What per cent of the day does he spend at school?
2. What fraction of the day does he spend playing and helping mother?
3. How many hours does he spend playing and helping mother?
4. What fraction of the day does he spend sleeping?
5. How many hours a day does he sleep?
6. How many more hours does he spend sleeping than he spends eating?
7. How many more hours does he spend at school than he spends playing and helping mother?
8. What fraction of the day does he spend eating?

CLOCK ARITHMETIC

Use the clock face to answer the questions.

1.

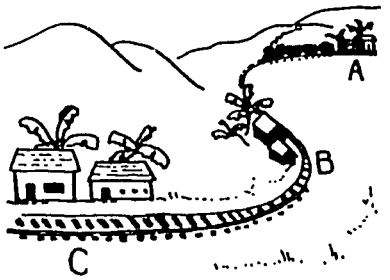
Time	3 hours later	5 hours later	11 hours later
8 o'clock			
11 o'clock			
12 o'clock			
3 o'clock			



2. Chintu's father works in an office. He starts working at 8 o'clock. He works for 4 hours. Then he has 2 hours off for lunch. After lunch he works 3 hours more. At what time does he finish work?

3. Two groups of children come to the Bububu school. Mohamed is in a group that comes at 8 o'clock and stays 4 hours. Ame is in a group that comes at 11 o'clock and stays 4 hours. What time does Mohamed's group leave school? (_____o'clock) What time does Ame's group leave school? (_____o'clock) Are Mohamed and Ame at the school at the same time? If so, for how long are they at school together? (_____hours)

4. A train goes from station A to station B then to station C. It takes 3 hours to go from A to B. It stops at B for 1 hour. Then it takes 2 hours to go from B to C. At what time does it arrive at C if it leaves A at 6 o'clock? If it leaves A at 9 o'clock?

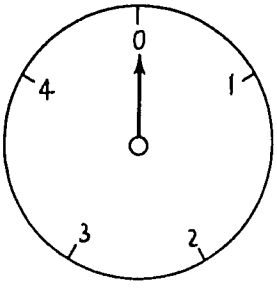


*5. Mambue lives on the coast. He keeps a table of the time of the tides. He marks the time to the nearest hour. He finds that it is about 6 hours from high tide to low tide and about 6 hours from low tide to the next high tide. Help Mambue finish his table.

Day	High	Low	High	Low
Monday	2	8	2	8
Tuesday	3			
Wednesday	4			
Thursday	5			

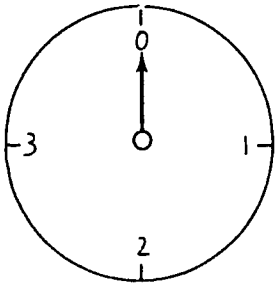
CLOCK ADDITION

5-clock



1. 3 + 2 = _____
2. 2 + 3 = _____
3. 2 + 4 = _____
4. 4 + 2 = _____
5. 0 + 3 = _____
6. 3 + 0 = _____
7. 4 + 1 = _____
8. 1 + 4 = _____
9. 2 + 2 = _____
10. 3 + 3 = _____
11. 1 + 2 = _____
12. 2 + 1 = _____
13. 4 + 4 = _____
14. 1 + 1 = _____

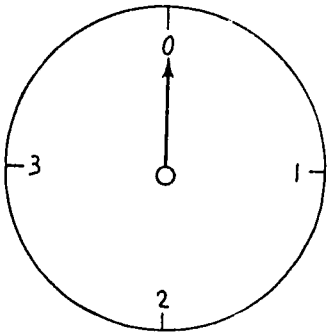
4-clock



15. 2 + 1 = _____
16. 0 + 3 = _____
17. 1 + 2 = _____
18. 2 + 2 = _____
19. 3 + 3 = _____
20. 2 + 0 = _____
21. 2 + 3 = _____
22. 3 + 1 = _____
23. 1 + 3 = _____
24. 3 + 2 = _____
25. (2 + 3) + 2 = _____
26. 2 + (3 + 2) = _____
27. (1 + 2) + 3 = _____
28. 1 + (2 + 3) = _____

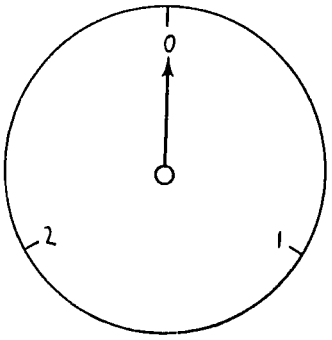
CLOCK ADDITION TABLES

1. Complete the addition table for the 4-clock.



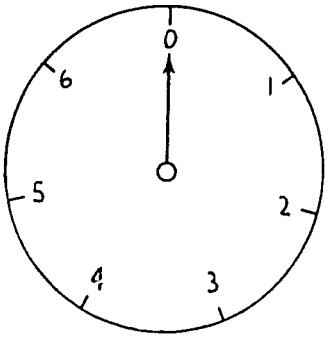
+	0	1	2	3
0				
1				
2				
3				

2. Complete the addition table for the 3-clock.



+	0	1	2
0			
1			
2			

3. Complete the addition table for the 7-clock.



+	0	1	2	3	4	5	6
0							
1							
2							
3							
4							
5							
6							

CLOCK ARITHMETIC

Use the addition table to find what numbers make the sentences true.

+	0	1	2	3	4
0	0	1	2	3	4
1	1	2	3	4	0
2	2	3	4	0	1
3	3	4	0	1	2
4	4	0	1	2	3

Addition table for the 5-clock

1. $3 + 4 = a + 3$
2. $4 + 2 = 2 + b$
3. $0 + 3 = c + 2$
4. $4 + 0 = d$
5. $2 + 4 = e$
6. $4 + 2 = f$
7. $2 + 0 = g$
8. $1 + k = k + 1$
9. What is the truth set for (8)?

Complete the 4-clock addition table using the commutative property.

+	0	1	2	3
0	0			
1	1	2		
2	2	3	0	
3	3	0	1	2

Addition table for the 4-clock.

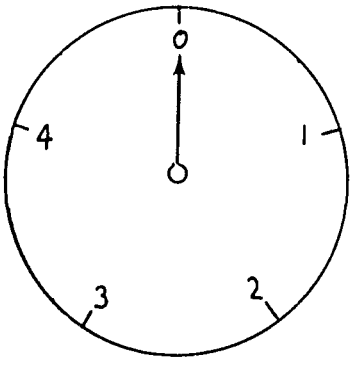
10. Can you use this table to find what a or b is in (1) and (2)? Why?

Use the completed table to find what numbers make the sentences true.

11. $2 + 3 = p$
12. $3 + 2 = q$
13. $2 + 0 = x + 2$
14. $3 + y = 1 + 3$
15. $3 + 0 = w$
16. $0 + 1 = z$

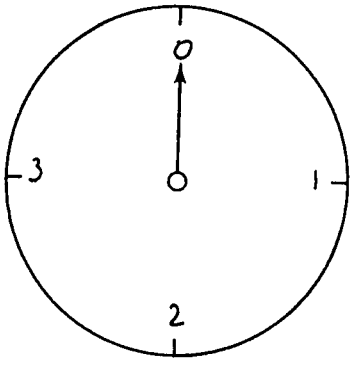
CLOCK ARITHMETIC

Use the 5-clock to find what numbers make the sentences true. Check by using the addition table for the 5-clock on page 249.



1. $3 + n = 4$
2. $b + 4 = 4$
3. $c + 3 = 2$
4. $1 + d = 0$
5. $4 + e = 1$
6. $4 - 1 = f$
7. $3 - 3 = g$
8. $2 - 3 = h$
9. $1 - 4 = k$
10. $3 - 2 = g$

Use the 4-clock to find what makes the sentences true. Check by using the completed table on page 249.



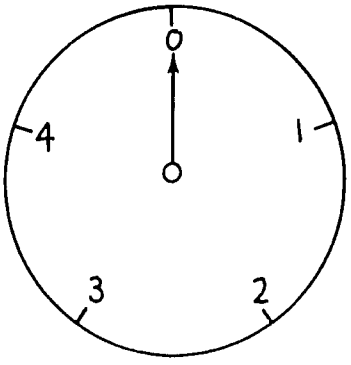
11. $3 + p = 0$
12. $1 + q = 3$
13. $2 + m = 2$
14. $3 + n = 1$
15. $n + 3 = 2$
16. $1 + n = 0$
17. $3 - 2 = n$
18. $2 - 3 = s$
19. $1 - 3 = t$
20. $3 - 1 = w$

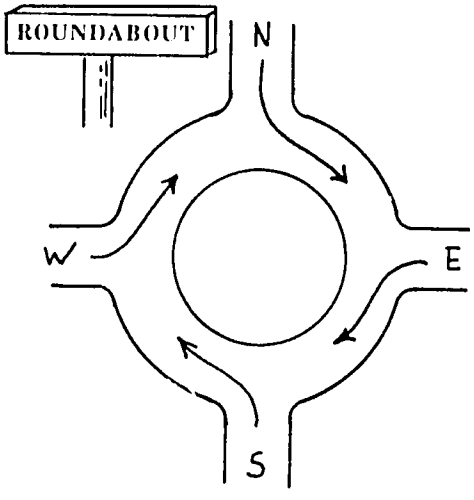
21. Look again at the results of 17 and 18, and of 19 and 20. Is subtraction commutative?

CLOCK ARITHMETIC

Add or subtract. Use the 5-clock.

1. $2 + 1 = n$
2. $3 + 3 = n$
3. $3 + 2 = n$
4. $1 + 3 = n$
5. $0 + 2 = n$
6. $2 + 4 = n$
7. $4 - 2 = n$
8. $3 - 3 = n$
9. $2 - 3 = n$
10. $1 - 2 = n$



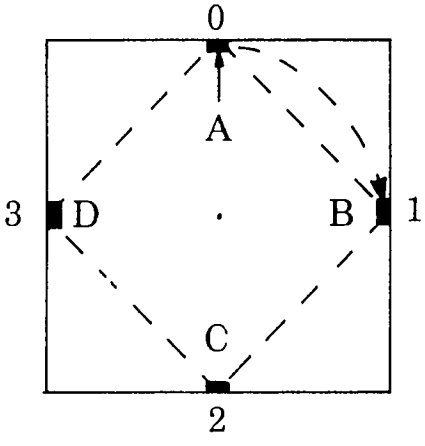


How many $\frac{1}{4}$ turns?

11. Enter at N, leave at S. _____
12. Enter at N, leave at W. _____
13. Enter at S, leave at E. _____
14. Enter at W, leave at W. _____
15. Enter at E, leave at S. _____

---

16. Turn 1 + Turn 1 = Turn 2
17. Turn 2 + Turn 1 = Turn _____
18. Turn 2 + Turn 1 = Turn _____
19. Turn 0 + Turn 1 = Turn _____
20. Turn 2 + Turn 2 = Turn _____
21. Turn 3 + Turn 2 = Turn _____



+	0	1	2	3
0				
1				
2				
3				

22. Complete the table.
23. A starts at 0. How many $\frac{1}{4}$ turns to get A back to 0?

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