ACCELERATED LEARNING PROGRAM

MATHEMATICS

LEVEL 2B

SECRETARIAT OF EDUCATION
NEW SUDAN

ACCELERATED LEARNING PROGRAM

MATHEMATICS

LEVEL 2B

Secretariat of Education
New Sudan

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Contents

Unit 1: Place Value

Whole Numbers 1
Operation on Whole Numbers 8
Multiplication of digit Numbers 20
Division of digit Numbers 24
Ordinal Numbers 28
Multiples and Factors 30
Divisibility Tests 33
Fractions 38
Comparing Fractions 60
Numerators and Denominator 64
Equivalent Fractions 65
Decimals 72

Unit 2: Measurement

Length 86
Length in Centimeters 92
Changing Centimeters to Meters 98
Area 106
Area of Rectangles and Squares 113
Volume 118
Capacity 121
Weight 130
Money 134
Calendar 140

Unit 3: Geometry 155

Unit 4: Algebra 173

Unit 5: Statistics 178

UNIT 2 Measurement

2.1 Measurement of length, perimeter and area

2.1 (a) Measuring length in metres and centimeters

A metre is basic unit of measurement of length.

Example

5 m + 6 m = 11 metres

27 m + 38 m = 65 metres

10 m − 5 m = 5m

Exercise 1

A. 1 5 meters + 9 meters =

2. 12 meters + 10 meters =

3. 25 meters + 33 meters =

4. 9 meters + 17 meters =

B. 1. 14 meters
+ 5 meters

2. 27 meters
+ 32 meters

3. 47 meters
+ 6 meters

4. 56 meters
+17 meters

5. 72 meters
+ 64 meters

6. 48 meters
+50 meters

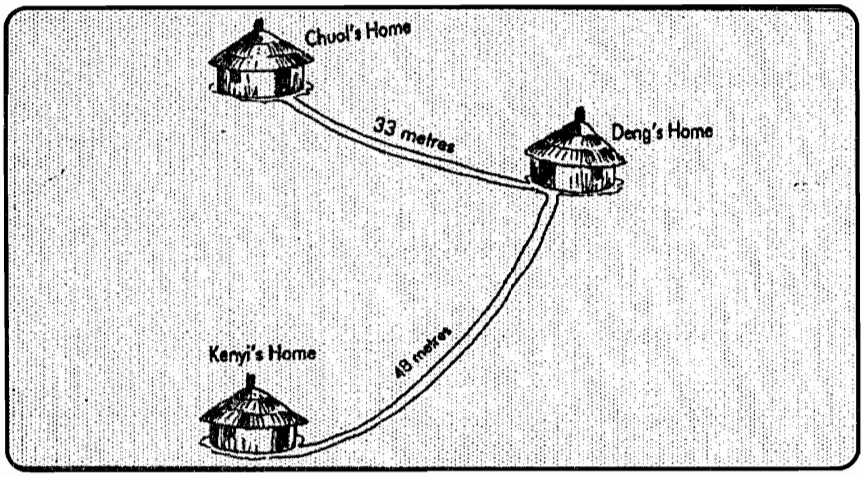
7. 37 meters
+18 meters

8. 28 meters
+ 91 meters

C.1. John has a rope which is 57 meters long. His sister Joan has a rope which is 12 meters long. Find the length of the two ropes.

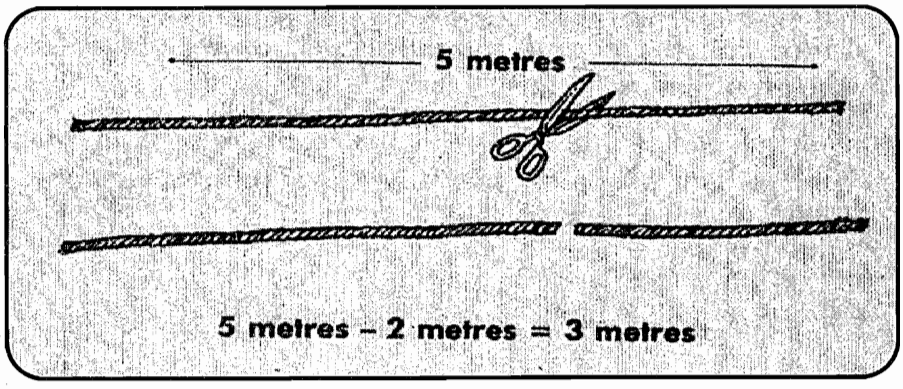
Pages 1 to 85 are Missing

2. Study the picture



a) How far is Chuol's home from deng's home?
b) How far is Kenyi's home from deng's home?
c) How many metres are there between Chuol's home and Kenyi's home following the road?

Subtraction



Exercise 2

A. 1. 7 metres – 4 metres =

2. 15 metres – 3 metres =

3. 26 metres – 13 metres =

4. 42 metres – 15 metres =

5. 63 metres – 24 metres =

B. 1. 9 metres
– 6 metres

2. 18 metres
– 6 metres

3. 45 metres
– 23 metres

4. 62 metres
– 5 metres

5. 53 metres
– 27 metres

6. 38 metres
– 19 metres

C. 1. Riti had a piece sugarcane measuring 3 metres. He cut a piece for his friend measuring 1 metre. How much sugarcane was left?

2. Martha bought a piece of material 8 metres long. She used 3 metres to make a dress. How many metres were left?

3. Chuol used 105m of a thread for sewing his trousers and 56m for his shirt. How many metres of thread was used altogether?

2.1 (b) Multiplying in metres

4 metres x 2 = 8 metres
12 metres x 5 = 60 metres

14 metres	40 metres
x 6	x 3
84 metres	120 metres

Exercise 3

1. 9 metres x 6 =
2. 12 metres x 5 =
3. 10 metres x 8 =
4. 6 metres x 7 =
5. 5 metres x 11 =
6. 8 metres x 12 =

7. 15 metres
   x 2
8. 23 metres
   x 3
9. 43 metres
   x 2
10. 35 metres
    x 2
11. 14 metres
    x 7
12. 28 metres
    x 3
13. 42 metres
    x 3
14. 54 metres
    x 2
15. 63 metres
    x 3
16. 72 metres
    x 4
17. 52 metres
    x 4
18. 19 metres
    x 5

Dividing in metres

Examples

16 metres ÷ 8 = 2 metres 36 ÷ 4 = 9 metres

$$\begin{array}{r} 6 \text{ metres} \\ 4\overline{)24} \text{ metres} \\ \underline{24} \\ 00 \end{array} \qquad \begin{array}{r} 8 \text{ metres} \\ 6\overline{)48} \text{ metres} \\ \underline{48} \\ 00 \end{array}$$

Exercise 4

1. 18 metres ÷ 3 =
2. 25 metres ÷ 5 =
3. 36 metres ÷ 6 =
4. 33 metres ÷ 11 =
5. 54 metres ÷ 9 =
6. 60 metres ÷ 6 =
7. $2\overline{)42}$ metres
8. $7\overline{)56}$ metres
9. $3\overline{)63}$ metres
10. $4\overline{)84}$ metres
11. $7\overline{)42}$ metres
12. $2\overline{)64}$ metres
11. $3\overline{)36}$ metres
12. $9\overline{)72}$ metres

Mixed Exercise 5

1. 16 metres ÷ 4 =

2. 7 metres x 5 =

3. 9 metres x 6 =

4. 84 metres ÷ 12 =

5. 12 metres ÷ 4 =

6. 7 metres x 6 =

7. $4\overline{)44}$ metres

8. $9\overline{)27}$ metres

9. $9\overline{)45}$ metres

10. $3\overline{)24}$ metres

11. 15 metres
x 5

12. 17 metres
x 2

13. 8 metres
x 10

14. 5 metres
x 8

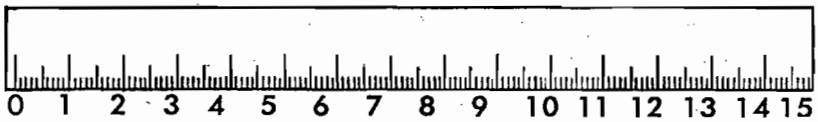
15. 16 metres
x 3

16. 28 metres
x 2

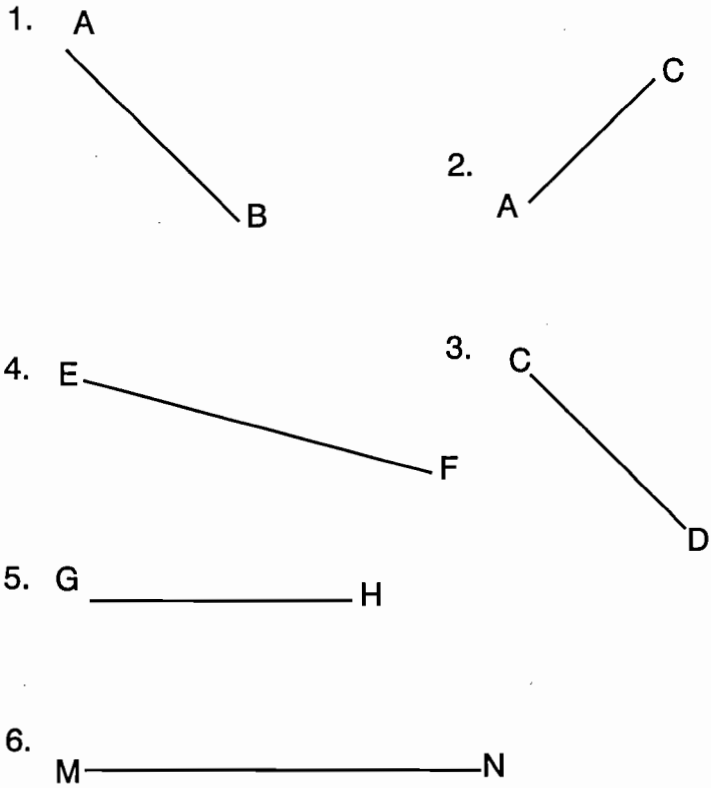
2.1. (c) Measuring length to the nearest metres and centimeters

Length in Centimeters (cm)

A centimeter is a smaller unit of length. The ruler below is 15 cm long. The numbering is from zero to 15 cm.



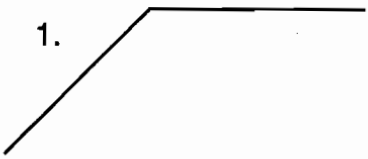
Use a ruler marked in centimeters to find the lengths of the following lines.



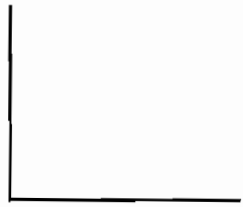
Exercise 6

Find the total length of the shapes below

1.



2.



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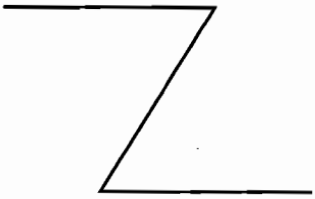
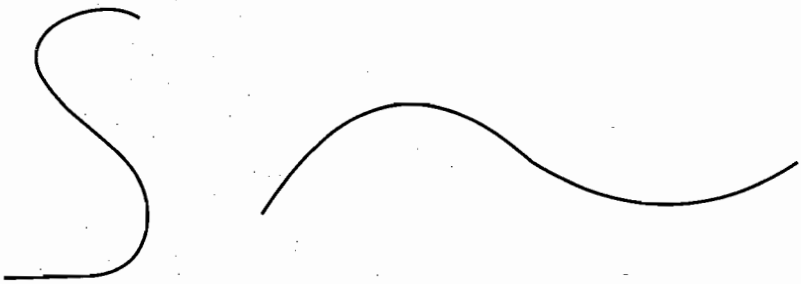


4.

5. Using a piece of string or a strip of paper, find in cm the lengths of:

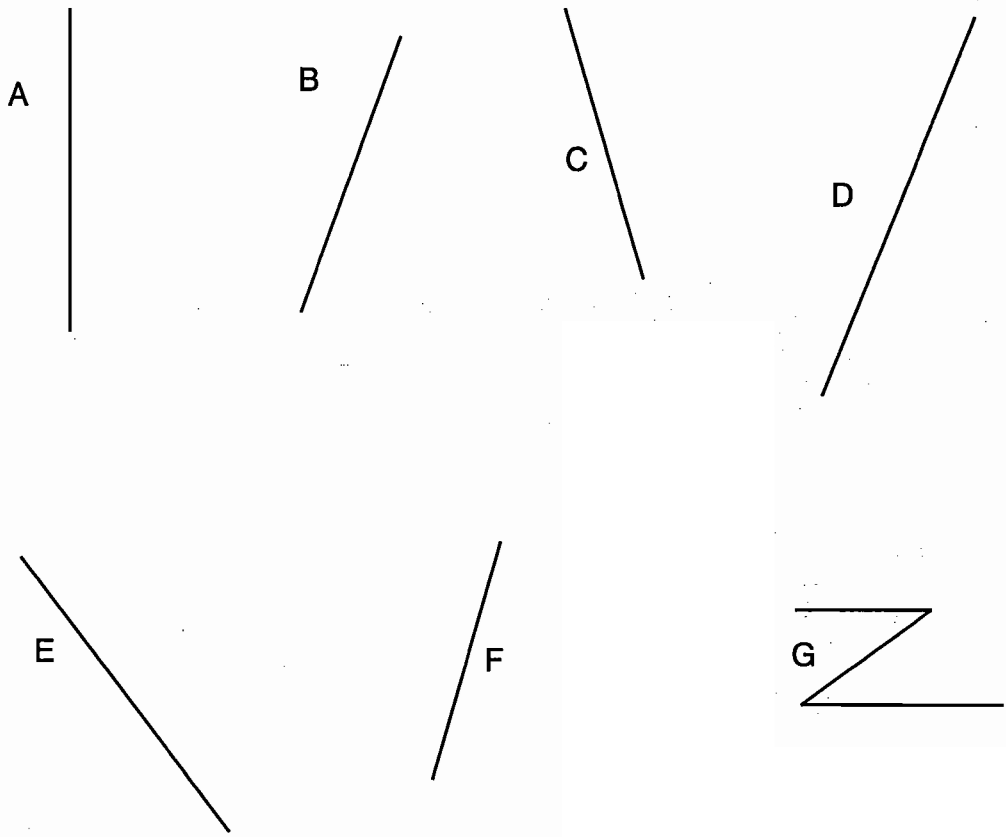


6. Draw lines measuring:

a) 5 cm b) 3 cm c) 10 cm d) 6 cm e) 7 cm

Measuring lines in centimeter

1. Measure the following lines to the nearest centimeter.



2.1 (d) Estimating length in metres and centimetres

Give the estimate and real length of the following objects

Object	Estimated length in (cm or)	Real length
1. length of the class room	m	m
2. Length of a whole piece of chalk	cm	cm
3. The length of the pencil	cm	cm
4. The length of the door	m	m
5. The height of your friend	m	m
6. the length of your math book	cm	cm
7. The length of your small finger	cm	m

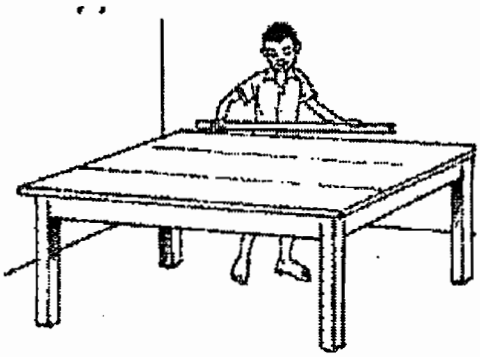
Conversion of units

The metre is related to the centimeter as follows:

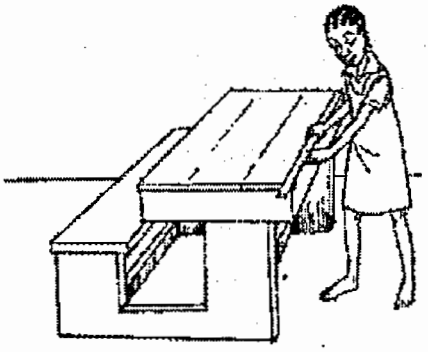
1 metre = 100 cm

Find the length of the figures in metres and centimeters:

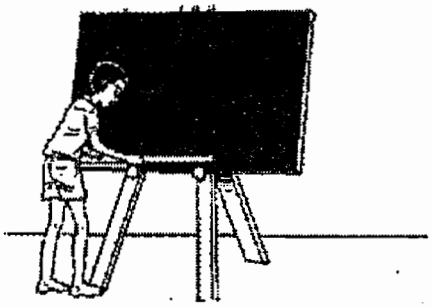
a) The teacher's table



b) The length of your desk.



c) The length of your blackboard



Converting centimeters to metres and metres to centimeters

1 m = 100 cm

Write the following meters in cm.

Example

a) 2 m b) 3m

Answer

a) 1 m = 100 cm 2 m = 2 x 100 = 200 cm

b) 1 m = 100 cm 3 m = 3 x 100 = 300 cm

Exercise 7

1. Convert the following metres into cetimeters

a) 5 m b) 6 m c) 4 m d) 8m e) 7 m

Changing centimeters to metres

Examples

a) 200 cm b) 400 cm

Answer

a) 100 cm = 1 m 200 cm = 200 ÷ 100

$$\begin{array}{r} 2 \\ 100\overline{)200} \\ \underline{200} \end{array}$$

= 2m

b) 100 = 1 m 400 = 400 ÷ 100

$$\begin{array}{r} 4 \\ 100\overline{)400} \\ \underline{400} \end{array}$$

= 4m

Exercise 8

1. Convert the following centimetres into metres

a) 600 cm b) 400 cm c) 300 cm

d) 500 cm e) 900 cm

Addition in metres and centimetres

Example 1: Arrange the sum in vertical form. Follow the steps.

1m 32cm + 2m 48cm

m	cm
1	32
2	48

(i) add the cm column

32
48
80cm

Remember when cm are not more than 100cm, you write them in the cm column.

(ii) Add the metres column: 1 + 2 = 3. Write metres in the metres column

Example 2

Add 3m 45cm to 2m 63cm. Arrange the sum vertically. Follow the steps shown below.

m	cm
3	45
2	63
6	08

Add the cm column

32
+ 48
108cm

Write the 8 in the cm column and carry 1m over to the metres column.

Add the metres column: 2 + 3 = 5. Add the 1 metre you carried from the cm column: 5 + 1 = 6cm

Exercise 9

1. a) 3m 40 cm + 2m 35cm = b) 6m 25cm + 5m 60cm =

2. a)

	m	cm
	6	45
+	2	50

b)

	m	cm
	7	15
+	1	75

c)

	m	cm
	9	50
+	1	45

d)

	m	cm
	6	80
+	1	15

3. a)

	m	cm
	2	46
+	2	37

b)

	m	cm
	1	54
+	3	27

c)

	m	cm
	6	73
+	1	25

d)

	m	cm
	4	81
+	2	08

4. a)

	m	cm
	2	73
+	1	45

b)

	m	cm
	4	95
+	1	50

5. a)

	m	cm
	7	21
+	23	95

b)

	m	cm
	37	45
+	4	85

c)

	m	cm
	11	63
+	15	45

d)

	m	cm
	4	49
+	13	76

6. Ladu had 565m 20cm of wire. He bought another piece of wire 285m 87cm long. How many metres of wire did he have altogether?

7. The distance of my school from my home is 805m 97cm. What distance do I cover to and from every day?

8. My father's plot in Yambio town measures 35m 50cm long and 15m 80cm wide. What is the total length of the two sides?

9. Rebeca's home is 112m 25cm from Esther's. And Judith's home is 230m 89cm from Esther's. What is the distance of Rebeca's home from Judith's home.

Subtraction in metres and centimetres

Examples

	m	cm
	3	65
−	1	34
	2	31

	m	cm
	14	57
−	10	39
	4	18

a

	m	cm
	8	47
−	3	65
	4	82

b

	m	cm
	7	52
−	2	87
	4	65

Exercise 10

1. a)

	m	cm
	9	43
−	9	22

b)

	m	cm
	21	97
−	10	65

2. a)

	m	cm
	2	40
−	1	65

b)

	m	cm
	5	57
−	3	88

3. a)

m	cm
12	38
− 9	12

b)

m	cm
36	88
− 25	63

4. a)

m	cm
9	43
− 8	29

b)

m	cm
20	77
− 12	38

5. a)

m	cm
9	38
− 3	54

b)

m	cm
8	43
− 3	61

6. a)

m	cm
15	33
− 12	72

b)

m	cm
23	43
− 11	70

7. a)

m	cm
8	43
− 4	57

b)

m	cm
12	72
− 3	83

8. a)

m	cm
5	25
− 1	37

b)

m	cm
4	63
− 2	94

9. Elijah has a piece of sugarcane 3m 27cm long. If he cuts a piece 1m 49 cm for his sister, how long is the piece he is left with?

10. A rope measures 8 m 35 cm. Kaku cut a piece measuring 3 m 47cm to tie firewood. What length of rope was left?

11. A mother bought a piece of cloth measuring 7 m 35 cm. If she used 3 m 40 cm to make her friends dress. What length of cloth was left?

Multiplication in metres and centimetres

a)

m	cm
2	42
x	2
4	84

Multiply cm column by 2 (42 x 2 = 84). 84 is less than 100 cm so write 84 under cm column.

Multiply the m column. 2 x 2 = 4 m. Write 4 in the metres column.

b)

m	cm
4	65
x	3
13	95

Multiply the cm column by 3. (65 x 3 = 195 cm)

Change 195 cm into m and cm.

```
      1 rem 95
100 ) 195
      100
       95
```

Write the reminder in cm column

Multiply m column by 3 (4 x 3 = 12) then add 1m you carried from the cm column, (12 + 1 = 13). Write 13 under the m column.

Exercise 11

1. a)

m	cm
5	25
x	3

b)

m	cm
4	15
x	5

2. a)

m	cm
12	40
x	4

b)

m	cm
20	26
x	5

3. a)

m	cm
6	27
x	6

b)

m	cm
10	70
x	8

4. a)

m	cm
13	52
x	4

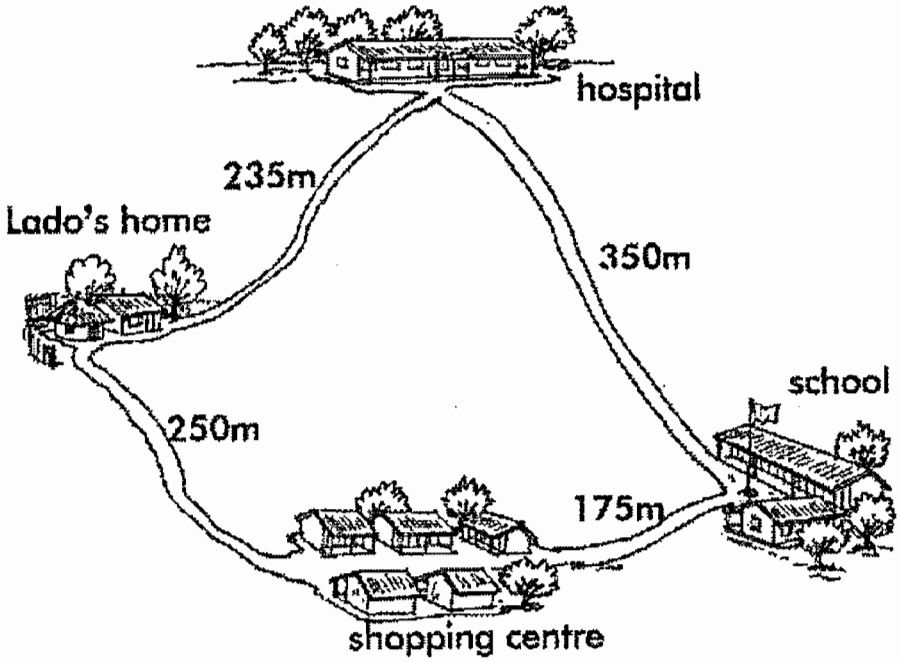
b)

m	cm
25	15
x	2

5. Find the total length of three ropes each of which measures 1m 50 cm.

4. A mother bought a piece of cloth measuring 7m 35cm. If she used 3m 40cm to make her friend a dress, what length of cloth was left?

Exercise 12: Use the map below to answer questions 1 - 6



1. How far is Lodo's home from the shopping centre?

2. What distance does Lodo walk from home to school through the shopping centre?

3. What distance does he walk from his home to school through the hospital?

4. Asha went to the hospital. After treatment she went to the shopping center through the road passing the school. What distance did she cover from the hospital to the shopping centre?

5. The distance from the classroom to the flag pole is 30m 40cm. If Miriam walked from the classroom to the flag pole three times, what distance did she cover altogether?

6. Add 3 m 57 cm to 6 m 92 cm

2.1 (e) Area

The area of a shape is the closed surface of the shape.

Trace the diagrams below. Cut and put on top of each other to find out which is bigger or smaller.

a)

b)

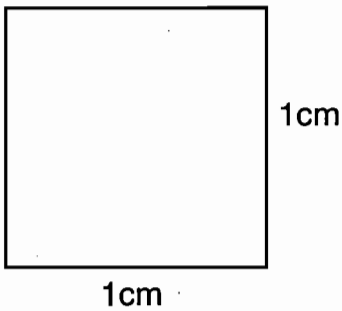
Which one is bigger: a or b?

Look at the shapes above.

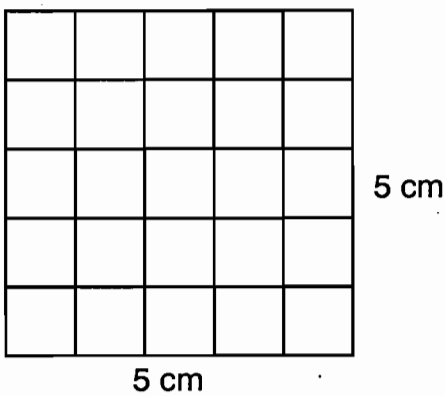
In the shapes, the surface enclosed by the lines are the areas of the shape.

2.1 (f) Measuring areas

Area is usually measured by counting unit squares, a unit square whose sides are 1 unit length.



The figure is a unit square of 1 cm by 1 cm. The area of the figure therefore is 1 square centimetre.

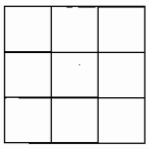


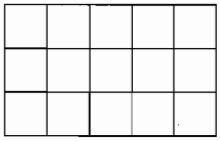
The Figure is 5 cm by 5 cm. Count the number of 1 unit squares in the figure. How many square units do you find?

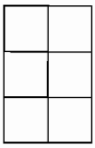
There are 25 unit squares. Hence, the area of the figure is 25 unit squares, which is 5 rows x 5 columns, or 25 square centimetres.

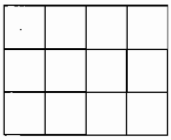
Exercise 1: Finding area using unit square

How many small squares are there in the following figures?

a) 

b) 

c) 

d) 

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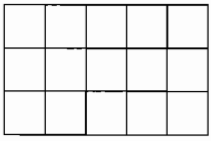
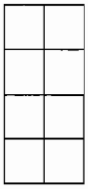
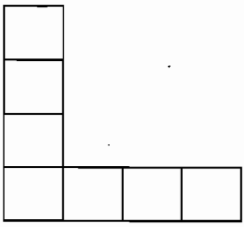
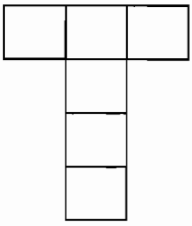
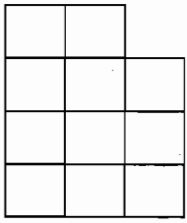
f) 

g) 

2. How many square units?

a) 

b) 

c) 

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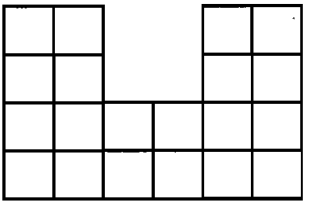

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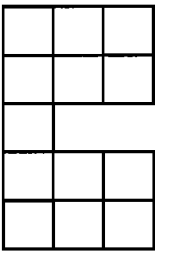
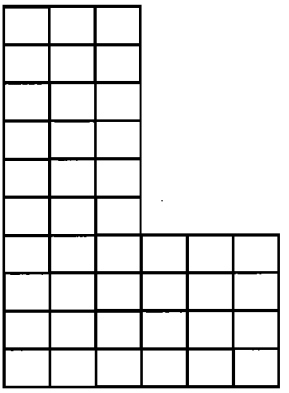
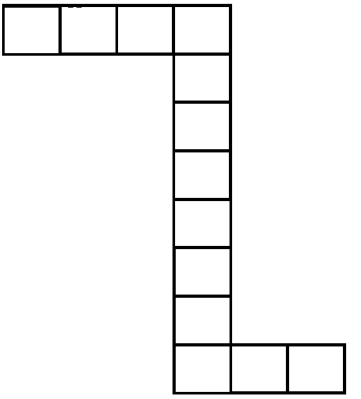


f)



g)



2.1 (g) Rows and Columns

The seating arrangement of 25 pupils in a classroom is as shown.

	1st column	2nd column	3rd column	4th column	5th column
1st row	1	2	3	4	5
2nd row	6	7	8	9	10
3rd row	11	12	13	14	15
4th row	16	17	18	19	20
5th row	21	22	23	24	25

The identification of a pupil in the class can be made by stating the number of the row and the column. For example the pupil number 8 is sitting in the 2nd row, 3rd column

Exercise 2

Find the positions of the following pupils in the classroom.

a) The 18th pupil

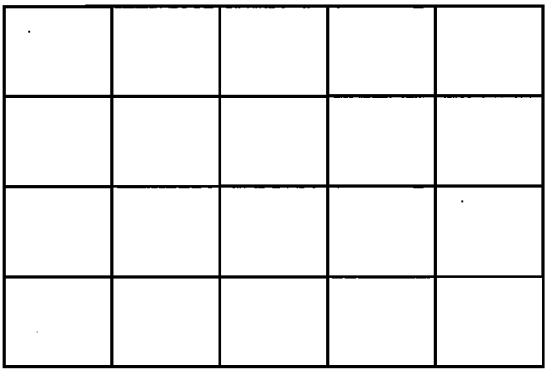
b) The 23rd pupil

c) The 25th pupil

d) The 11th pupil

Example

Look at the figure below

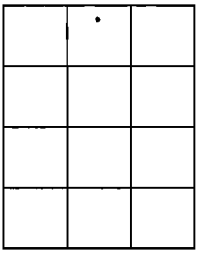


How many rows and columns are there?

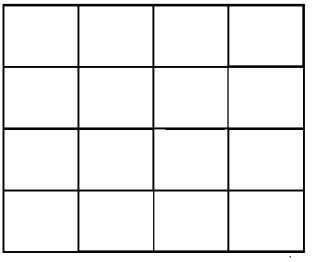
Solution

There are 4 rows and 5 columns. The total number of unit squares are 4 rows x 5 columns = 20 unit squares.

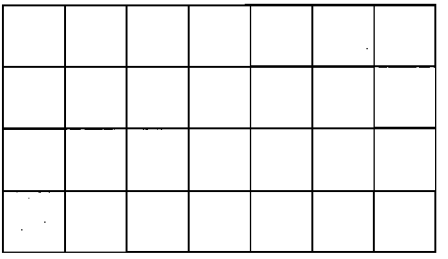
(a)



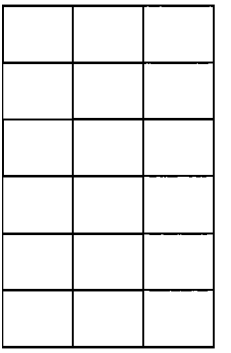
(b)



(c)



(d)



Figures	Number Of Rows	Number Of Columns	Total Unit Squares
1	4	3	4 X 3=12
2			
3			
4			

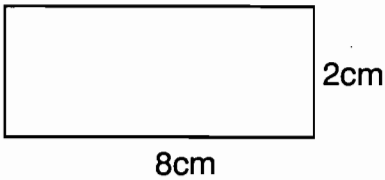
Copy this table and fill it in from figures a - d above. The first one has been done for you.

2.1 (h) **Area of rectangles and Squares**

Examples

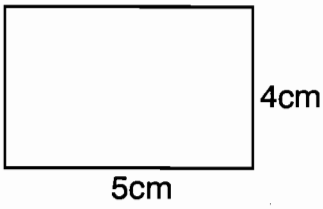
Find the area of the following figures

1.



A = l x b
= 8cm x 2cm
= 16 sq centimetres

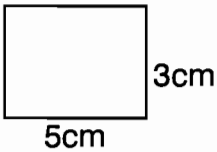
2.



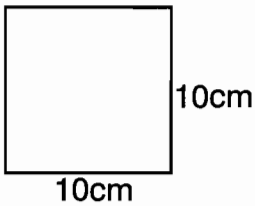
A = l x b
= 5cm x 4cm
= 20 sq centimetres

Exercise 4

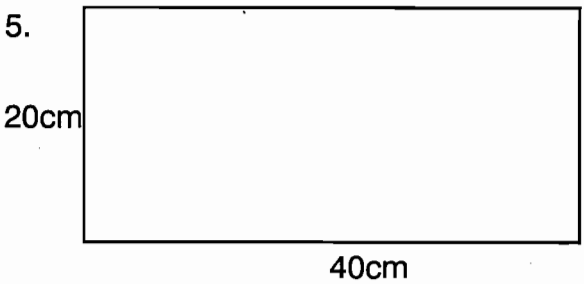
3.



4.



5.



6. The top of a table measures 90cm by 70cm. Find the area of the table.

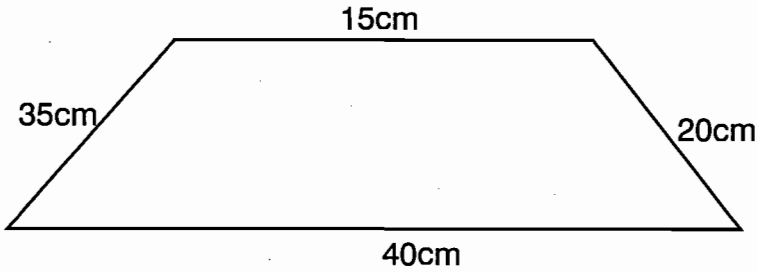
7. A rectangular mat measures 25cm by 15cm. Find the area of the mat.

8. A square garden has a length of 14m. Find the area of the square.

2.1 (i) Perimeter

Perimeter means all the way around an enclosed figure.

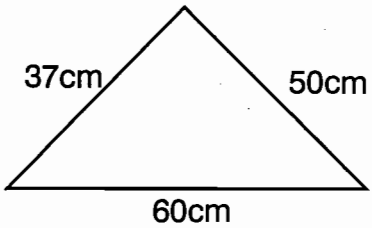
For example



The total distance around the above figure will be 15 cm + 40 cm + 20 cm + 35 cm = 110 cm
Therefore the perimeter of the above figure is 110 cm

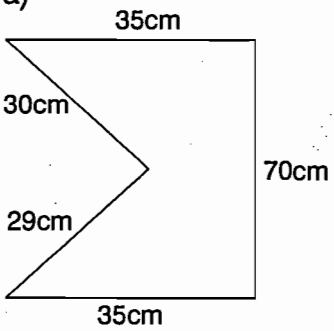
Exercise 4

1. Find the perimeter of the following

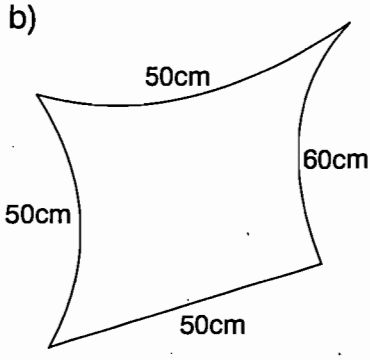


2. Find the perimeters of the following figures:

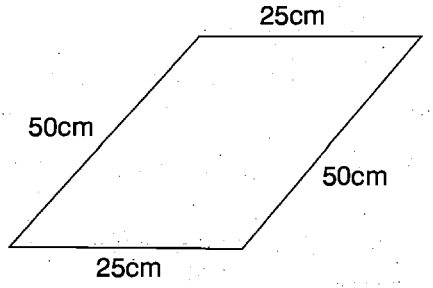
a)



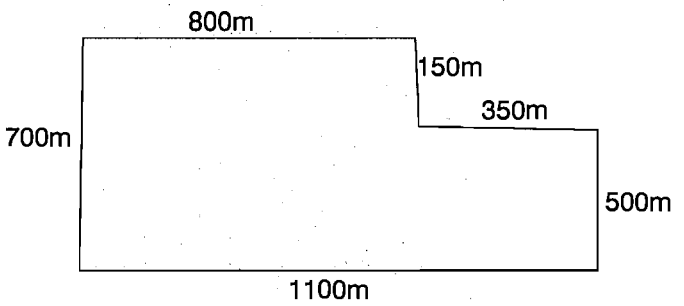
b)



c)

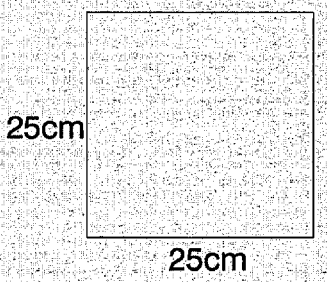


3. Find the perimeter of the compound.



Finding the perimeter of a Square

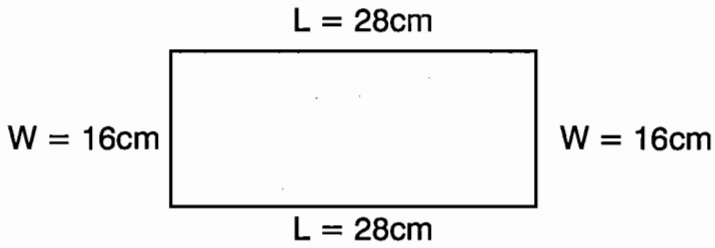
Note the square has all sides equal



The perimeter will be

(l + l) + (w + w)
(25 + 25) + (25 + 25)
= 50 + 50 = <u>100cm</u>

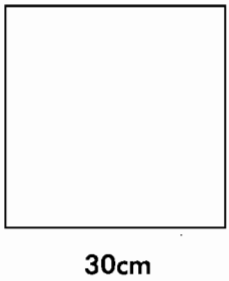
Finding the perimeter of a rectangle



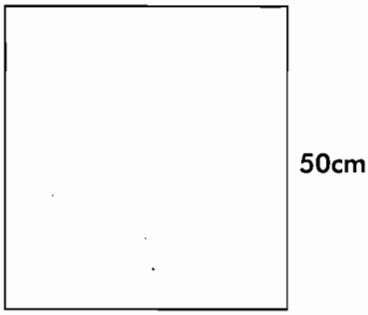
Perimeter = length + length + width + width
Perimeter = 28 cm + 28cm+ 16 cm + 16 cm
Perimeter = 56cm + 32cm
Perimeter = 88 cm

1. Find the perimeters of the following squares.

a)



b)



2. Find the perimeters of squares with sides measuring:
   a) 20cm b) 15m c) 40cm

3. Find the perimeter of a square with sides of 75cm.

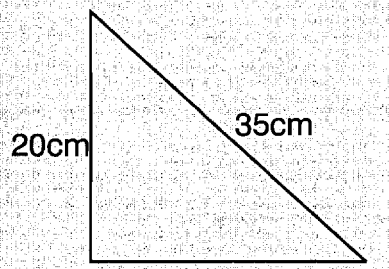
4. One side of a square measures 45cm. Find the perimeter of the square.

2. Find the perimeter of rectangles with the following measurements

a) 55cm by 20cm b) 70m by 35m

c) 80cm by 45cm d) 95m by 90m

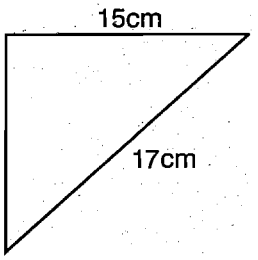
Finding the perimeter of a triangle



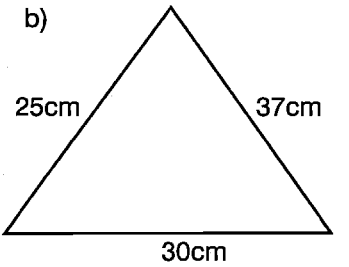
Perimeter is the length of all the sides. Therefore the perimeter of the triangle is 20 + 15 + 355 = 70cm

Exercise 6: Find the perimeter of the following triangles.

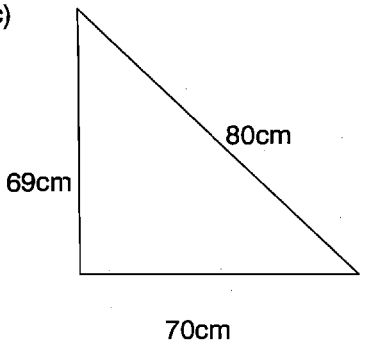
a)



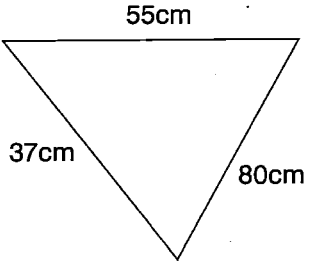
b)



c)



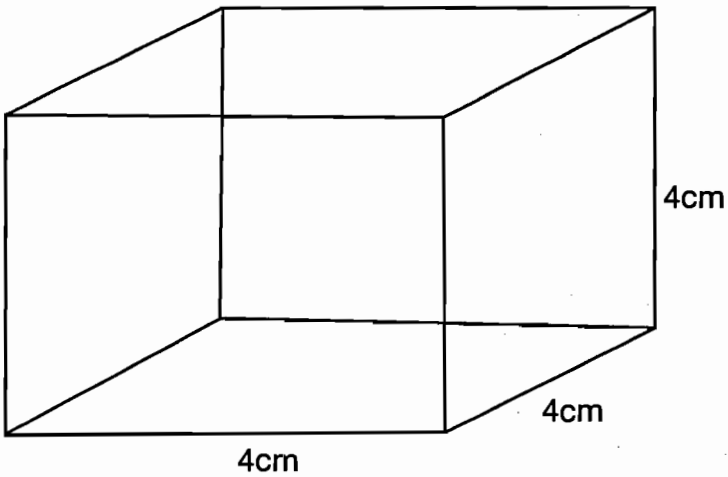
d)



2.2 Volume

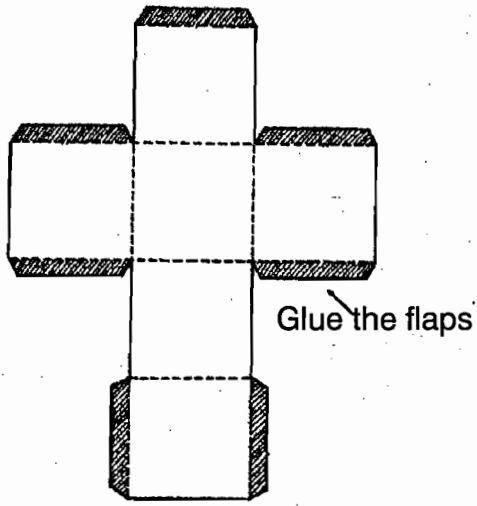
2.2 (a) Finding the volume of an object

The figure below represents a cube. A cube has all sides equal. It has six faces.



How to make a cube

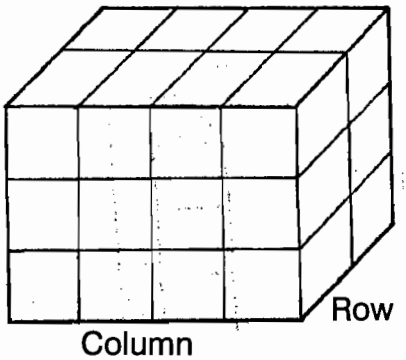
(i) Trace the net below and fold it along the dotted lines.



(ii) Using glue or any other sticky substance join the sides of the cube.

2.2 (b) Finding volume by counting the cubes in a stack

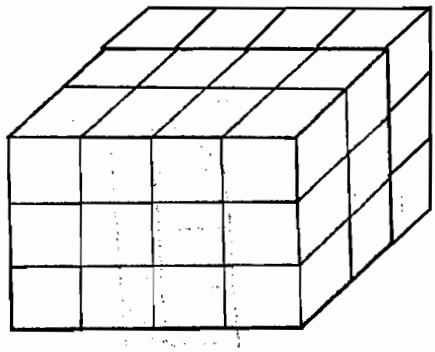
Example



This stack has 4 columns, 2 rows, 3 layers

To get the number of cubes, multiply columns x rows x layers
4 x 2 x 3 = 24

Therefore we have 24 cubes in the stack.

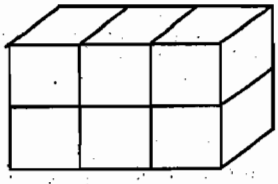


Count the number of columns; rows; and layers. What is the volume of the figure?

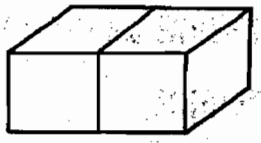
Volume = columns x rows x layers = 4 x 3 x 3 = 36 cubes.

Exercise 7: Count the number of cubes in each block

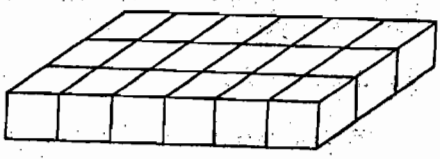
1.



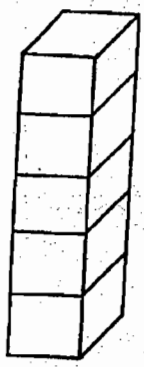
2.



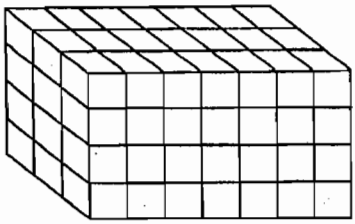
3.



4.



5.

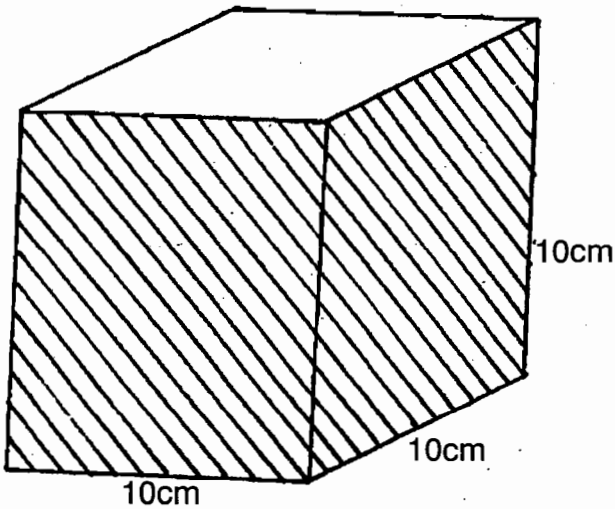


6.

2.3 Capacity

2.3 (a) Measuring capacity in litres

Example



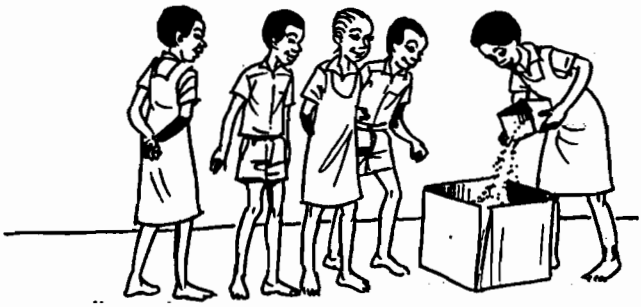
A cubic tin

V = 10 x 10 x 10

= 1000 centimeter cube = 1 litre

Group 1

Group 2



1. How many litres does
   a) the basin hold?
   b) the tin hold?
2. Which container holds more?
3. Which container is the smallest?

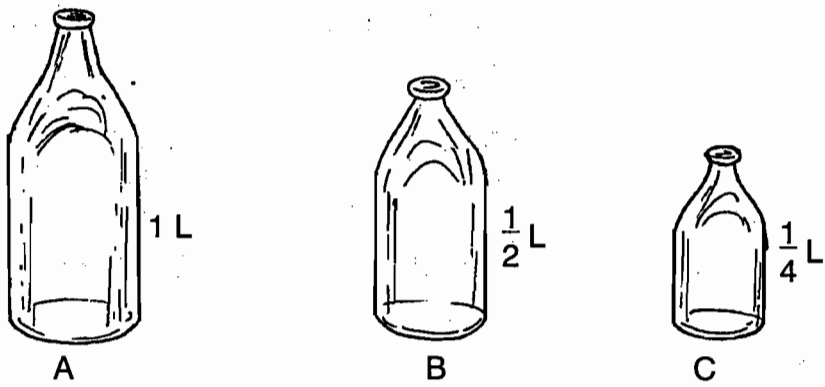
4. How many litres of water does it hold?

A litre is a unit of measurement for liquids, for example a litre of oil or water is equal to 100 centimetre cube

2.3 (b) Estimating and measuring capacity to the nearest litres

Example: half and quarter litres

There are three bottles A,B,C.



(i) How many half litre bottles will fill a 1 litre bottle?

$$\frac{1}{2} + \frac{1}{2} = 1$$

Therefore 2 half litre bottles will fill a litre

(ii) How many quarter litre bottles will fill a 1 litre bottle?

$$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = 1$$

Therefore 4 quarter litre bottles will fill a litre

(ii) How many quarter litre bottles will fill half litre bottle?

$$\frac{1}{4} + \frac{1}{4} = \frac{1}{2}$$

Therefore 2 quarter litre bottles will fill half litre bottle

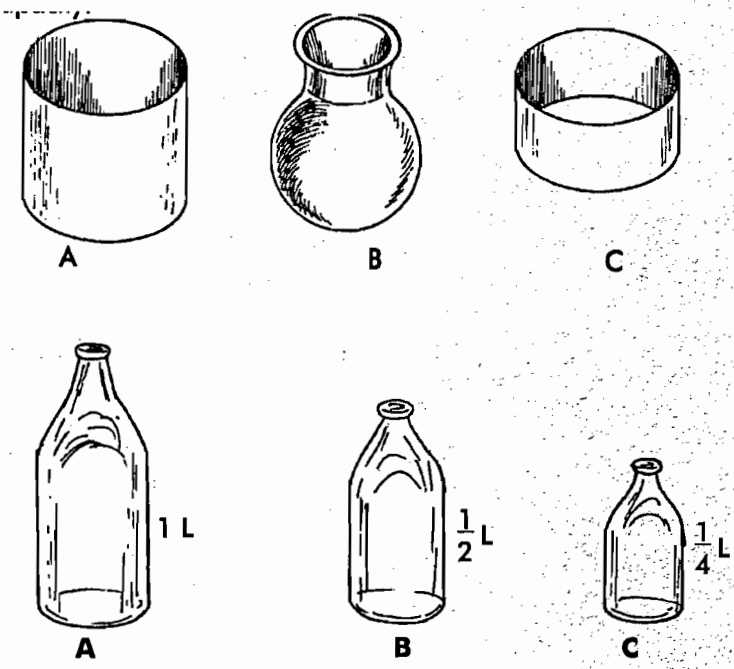
Exercise 8

1. How many times the content in bottle C go into i) bottle A ii) bottle B

2. How many times the content in bottle B go into bottle A

Things to do in class

Use containers like these to estimate the measure of their capacities



Container	Estimate	Real
A	1 litres	
B	2 litres	
C	$\frac{1}{2}$ litres	

Exercise 9

1. Deng had 2 litres of milk. He poured them into cups measuring half a litre. How many cups of milk did he fill?

2. a) $\frac{1}{2}L + \frac{1}{2}L =$ b) $\frac{1}{4}L + \frac{1}{4}L =$

   c) $\frac{1}{4}L + \frac{3}{4}L =$ d) $\frac{1}{4}L + \frac{1}{4}L + \frac{1}{4}L =$

3. a) 15L + 2L = b) 4L + 6L = c) 20L + 40L =

   d) 23L + 2L =

4. Asha bought ¼ litre of oil from a shop. On her way home she bought another ¼ litre of oil. How much oil did she buy altogether?

5. Thomas was given 2 bottles of milk. If each bottle was half a litre, how much milk was he given?

Exercise 10

1. a) 6L − 4L = b) 16L − 8L = c) 18l − 9L =

   d) 20L − 10L =

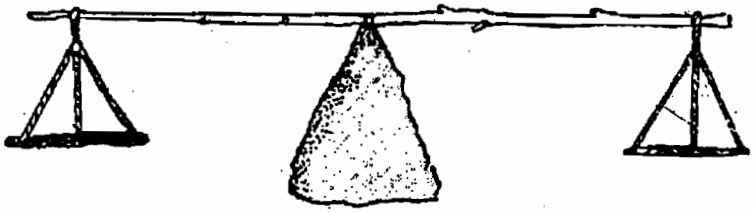
2. a) $\frac{1}{2}L - \frac{1}{2}L =$ b) $\frac{3}{4}L - \frac{1}{4}L =$ c) $\frac{4}{4}L - \frac{1}{4}L =$

3. Mariam had $\frac{3}{4}$ litres of milk. She gave her sister $\frac{1}{4}$ litre. How much milk was she left with?

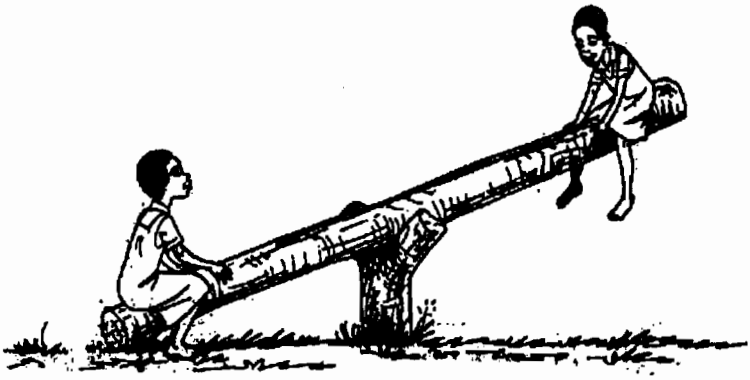
Weight

2.4 Introduction

I)

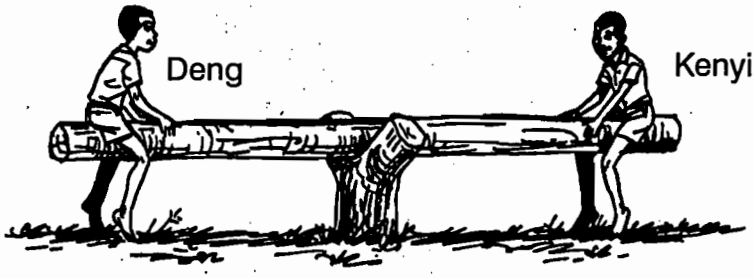


II) See-saw



Poni Lucy

Lucy is lighter than Poni.



Kenyi weighs the same as Deng.

The bucket is heavier. The book is lighter.

The two books are of the same weight.

Example 1

Compare the weight of the orange and the weight of 1 kilogram.

Which is heavier? **Which is lighter?**

Is the orange heavier than one kilogram?

Is the orange lighter than one kilogram?

Does the orange weigh exactly one kilogram?

Exercise 1

Mary carries a stone and a mango.

Is the stone heavier than the mango?

Is the stone lighter than the mango?

Is the stone the same weight as the mango?

Exercise 2

a) John carries a bow and spear. Which one is heavier?

b) Alice carries firewood on her head and water on her hand. Which one is lighter?

Weighing

Example

Miriam brought ¾kg sugar. She later gave her sister ¼ kg of sugar.

How much sugar was she left with?

Sugar bought by Mariam = ¾
Amount of Sugar given to her sister = ¼kg

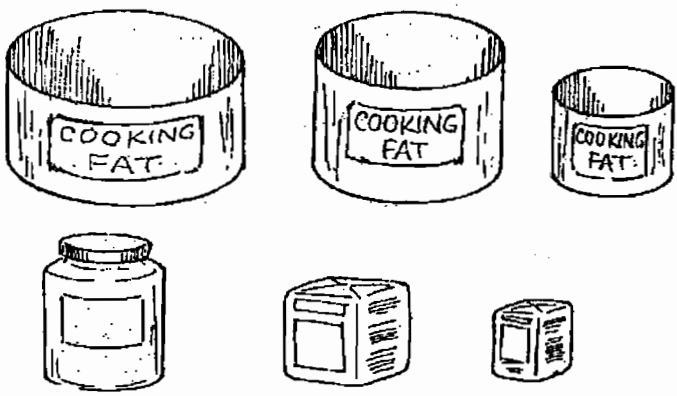
Sugar left = ¾ -¼ = ½ kg

Important points to note

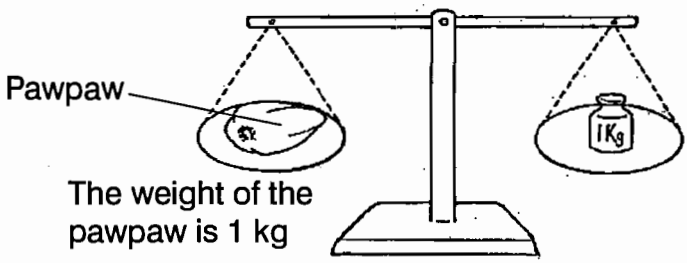
a) Read and understand the problem or story
b) Understand what you are asked to find out.
c) Find out what operation is needed in working out the problem.
d) Arrange your work neatly.

2.4 WEIGHT

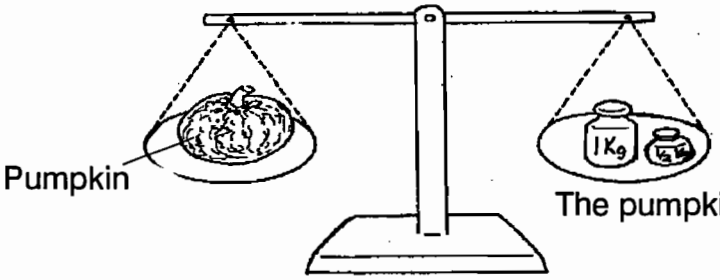
2.4 (a) Measuring weight in Kgs



1 kg ½kg ¼



The weight of the pawpaw is 1 kg



The pumpkin weighs 1½kg

2.4 (b) Estimate and then measure to find the real weight

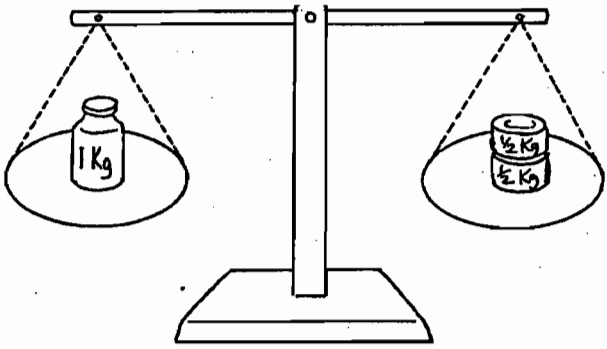
a) The weight of your maths textbook.

b) The weight of the school bell.

c) The weight of a box of chalk

d) The weight of a stone the size of your fist.

1 kg = 2 half kilograms



Exercise 1

1. How many half kilograms are there in:

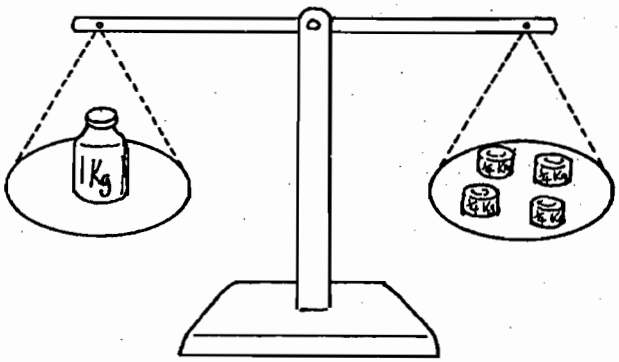
   a) 2kg b) 5kg c) 6kg d) 10kg

2. How many 1 kilogram weights are there in:

   a) 8 half kg b) 10 half kg c) 16 half kg

   d) 4 half kg e) 12 half kg

I kg = 4 quarter kilograms



3. How many quarter kilograms are there in:

   a) 2kg b) 3kg c) 7kg d) 10kg

4. How many 1 kilogram weights are there in:

   a) 8 quarter kg b) 16 quarter kg

   c) 12 quarter kg d) 20 quarter kg

5. A shopkeeper has 6kg of flour. He packs the flour into quarter kg packets. How many quarter kg packets does he get?

6. Jane had 10 half kg packets of sugar. She put the sugar into 1kg packets. How many 1 kg packets of sugar did she get?

Exercise 2

Add

1 a) $\frac{1}{2}$kg + $\frac{1}{2}$kg = b) 4kg + 4kg + 5kg =

c) 15kg + 10kg = d) 12kg + 6kg =

2 a) $\frac{1}{4}$kg + $\frac{1}{4}$kg = b) $\frac{3}{4}$kg + $\frac{1}{4}$kg =

3 a) $\frac{1}{4}$kg + $\frac{1}{4}$kg + $\frac{1}{4}$kg + $\frac{1}{4}$kg =

4. Nyathom bought ½ kg of millet flour and ½ kg of cassava flour. How much flour did she go home with altogether?

5. Grace bought a cabbage weighing ¼kg and another one weighing ¾ kg. Find the total weight for the two cabbages.

Subtract

1 a) 1kg – $\frac{1}{2}$ kg = b) $\frac{1}{2}$kg – $\frac{1}{2}$kg =

2. a) 13kg – 9kg = b) 15kg – 7kg =

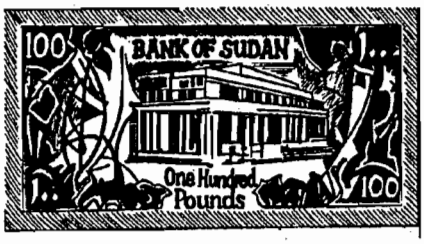
c) 15kg – 9kg = d) 35kg – 10kg =

3. a) $\frac{3}{4}$kg – $\frac{1}{4}$kg = b) 1kg – $\frac{1}{4}$kg =

4. John bought 3 kg of meat. He gave 1½ kg to his friend. How much meat did John take home?

5. Rebecca bought ¾ kg of simsim. She gave her daughter ¼ kg to take to her friend. How much simsim was Rebecca left with?

2.5 Money



2.5 (a) Convert £ into Pts and vise versa

Example 1 One Sudanese £ (pound) equals twenty piestres (pts)

£1 = 20 pts
£2 = 20 x 2 pts = 40 pts
£7 = 20 x 7 pts = 140 pts

Example II Converting piestres to pounds

$$1\text{pt} = \frac{1}{20} \text{ pound}$$

$$10 \text{ pts} = \frac{1}{20} \times 10 = \frac{10}{20} = \frac{1}{2} \text{ pounds}$$

$$20 \text{ pts} = \frac{1}{20} \times 20 = \frac{20}{20} = 1 \text{ pounds}$$

Exercise 1

Convert the following into pounds or piastres

(1) 50pts (2) 60pts (3) 100pts (4) 300pts

(5) £25 = _____ pts (6) £100 = _____ pts

(7) £30 = _____ pts (8) £120 = _____ pts

2.5 (b) Operations involving pounds and piestres

Exercise 1

1. £s.550 + £s.100 =

2. £s.300 + £s.50 =

3. £s.4750
   + £s.3970

4. £s.8500
   + £s.9750

5. Mary bought a tin of groundnuts for £s.250. She also bought a tin of sorghum for £s.360. How much money did she spend altogether?

6. James went to the shop and bought the following items: 1kg of sugar for £s.150, cooking fat for £s.75 and flour for £s.230. How much money did he spend altogether?

Multiply

Example

The price of a pencil is £s.25. How much will 4 pencils cost?

Solution

1 pencil = £s.25
4 pencils = £.25 x 4 = £s.100

Exercise 3

1. Lomodong took 3 of his chickens to the market for sale. If he sold each chicken for £s.75. How much money did he get from the 3 chickens?

2. Zindo's family spends £s.50 on milk every day. How much money does it spend in 7 days?

3. £s.24 x 5 =

4. £s.35 x 7 =

5. £s.625 x 2 =

6. £s.155 x 4 =

7. £s.15
   x £s. 7

8. £s.25
   x £s. 9

9. Aya had 10 cabbages. She sold each one for £s.25. How much money did she get from the cabbages?

10. Kaku's baby drinks 2 litres of milk every day. If 1 litre of milk costs £s.50, how much money does Kaku send per day?

Divide

Example
Rebecca spend £s. 600 to buy 6 cups. How much did she pay for each cup?

Solution

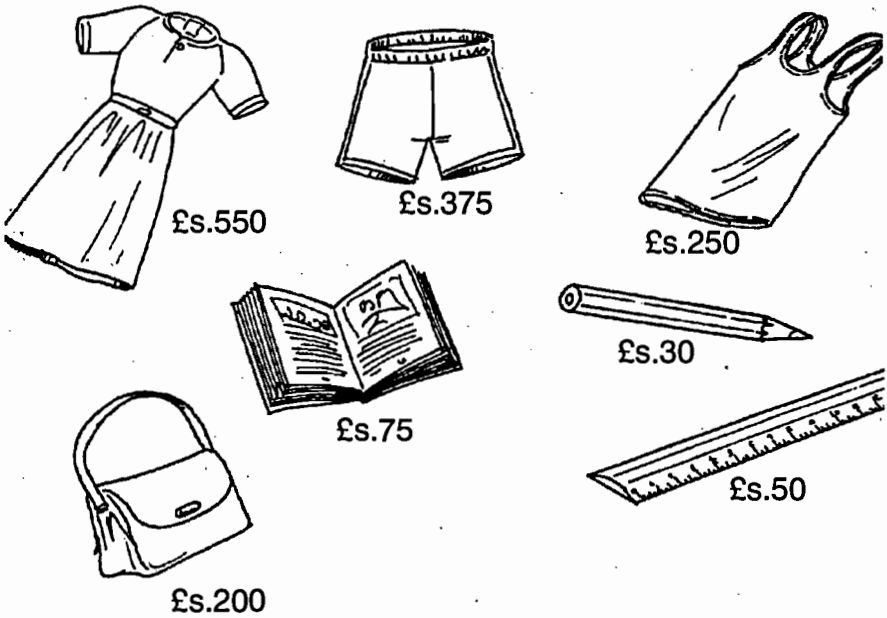
6 cup cost	£s 600
1 cup costs	£s 600÷6 = £s 100.

Exercise 4

1. £s.35 ÷ 5 =
2. £s.160 ÷ 4 =
3. £s.220 ÷ 10 =
4. £s.75 ÷ 3 =
5. £s.300 ÷ 6 =
6. £s.720 ÷8 =
7. Makana paid £s.360 for six chickens. Find the cost of each chicken.
8. In one week Lobojo's family spends £s.350 on bread. How much does Lobojo's family spend in one day?
9. John spent £s.180 to buy 9 pencils. How much was the cost of 1 pencil?
10. 4 books cost £s.480. How much is the cost of one book?

2.5 (c) Determining balances

Use the pictures to answer the questions below



1. Lohide bought a dress for his wife. If he gave £s.1000 to the shopkeeper, how much change did he receive back?

2. Idwa went to the shop. She bought a book and a pencil.
   a) How much money did she spend?
   b) If she gave the shopkeeper a £s.200 note, how much change did she receive back?

3. £s.380
   – £s.290

4. £s.1250
   – £s. 990

5. £s.6730
   – £s. 289

6. £s.525
   – £s.290

7. £s.8050
   – £s. 960

8. £s.485
   – £s.290

9. Deng bought the following items. Sugar at $150, trouser at $350 and bread $80. He gave the shopkeeper $1000. How much balance did he receive?

10. Waui went to Juba in a bus and spent one night in a hotel and paid $120 as lodging fee. He had $250. How much money was he left with?

11. Out of 350 pupils in a school, 250 were boys. How many girl's are there in that school?

2.6 Time

2.6 (a) Calendar

Learn this rhyme to remember how many days each month has.

Thirty days has September,
April, June and November,
All the rest have thirty one,
except February alone,
which has twenty-eight days clear,
And twenty-nine in each leap year,

A calendar shows the way a year is divided into months, weeks and days.

January

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

February

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

March

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

April

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

May

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

June

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

July

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

August

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

September

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

October

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

November

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

December

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

There are twelve months in a year.

Exercise 1

1. How many months are there in a year?

2. Which month comes after
   a) January b) April c) June
   d) September e) November

3. Which month comes before:
   a) March b) October c) September
   d) May e) August

4. How many days are in:
   a) August b) April c) February (leap year)
   d) November e) March

Month	Days	Days in a leap year
January	31	31
February	28	29
March	31	31
April	30	30
May	31	31
June	30	30
July	31	31
August	31	31
September	30	30
October	31	31
November	30	30
December	31	31
Total number of days in a year	**365**	**366 leap year**

In a year when February has 28 days, there are 365 days In a leap year February has 29 days making the total number of days in a leap year 366. A leap year occurs every four years.

5. Write down the names of the months with:
   a) 30 days b) 31 days

6. How many full weeks are there in a month?

Exercise 2

1. If 1996 was a leap year; the next leap year would be ___.

2. In 1996 Asha stayed in Juba for the whole of February and March. How many days was she away from home?

3. Which two months following each other have 31 days each?

4. What is the fifth month of the year?

5. What is the shortest month in the year?

Ways of writing dates

1. 1st June 1999 2. 1 - 6 - 1999

2.6 (b) Conversion of hours into minutes, years into months, months into days and vise versa.

Changing Months into Years

Examples

a) Change 24 months to years

12 months = 1 year
24 months = 24 ÷ 12 = 2 years

B Change 18 months to years

12 months = 1 year
18 months = 18 ÷ 12 = 1 ½ years

Changing years to months
Examples

How many months are there in:

a) 2 years b) 1 ½ years

a) 1 year = 12 months
2 years = 2 x 12 = 24 months

b) 1½ year = 18 months

Exercise 1

1. How many years are there in:
   a) 36 months b) 12 months c) 48 months
   d) 6 months e) 60 months f) 24 months

2. How many months are there in:
   a) ¼ year b) 4 years c) 5 years
   d) 3 years e) ½ year f) 1½ year

3. James stayed with his uncle for 3½ years. How many months did he stay with his uncle?

4. Kaku spend 24 months in a tailoring course. How many years did Kaku spend in the course?

5. How many days are there in:
   a) 4 weeks b) 10 weeks c) 35 weeks
   d) 11 weeks e) 15 weeks

6. How many weeks are there in: (take 1 month = 4 weeks)
   a) 63 days b) 154 days c) 35 days
   d) 98 days e) 42 days

7. How many weeks are there in: (take 1 month = 4 weeks)
   a) 8 months b) 4 months c) 10 months
   d) 6 months e) 12 months

Changing Days into hours

1 day = 24 hours

Examples

a) Change 2 days into hours

Solution: 1 day = 24 hours
2 day = 24 x 2 = 48 hours

b) Change 2½ days to hours

Solution: 1 day = 24 hour
2½ days = 24 x 2½ = 24 x 5/2 = 60 days

Changing hour into days

Examples:

24 hours = 1 day

a) Change 36 hours to days
24 hours = 1 day

Solution: 36 hour = 36 ÷ 24 = 1 ½ day

b) Change 48 hours to days

Solution: 24 hour = 1 day
48 hour = 48 ÷24 = 2 days

Exercise 1

1. Change the following days into hours

   a) 4 days b) 5 days c) 1½

2. Change the following hours to days

   d) 96 hours e) 120 hours f) 60 hours

Changing hours to minutes

Example 1

Change 2 hours to minutes

1 hour = 60 minutes
2 hours = 60 x 2 = 120 minutes

Example 2

Change 3 hours and 20 minutes to minutes

1 hour = 60 minutes
3 hours = 60 x 3 = 180 minutes

3 hours 20 minutes = 180
+ 20
200

Exercise 2

1. Change the following hours to minutes:

   a) 3 hours b) 5 hours

   c) 8 hours d) 10 hours

   e) 4 hours f) 1 hour

2. Change the following hours and minutes to minutes.

   a) 1 hour 30 minutes b) 3 hours 8 minutes

   c) 2 hours 50 minutes d) 4 hours 15 minutes

   e) 5 hours 25 minutes f) 6 hours 10 minutes

Changing minutes to hours

Example

Change 240 minutes to hours

60 minutes = 1 hour

240 minutes = (240 ÷ 60) hours

$$\begin{array}{r} 4 \\ 60\overline{)240} \\ \underline{240} \\ \underline{000} \end{array} = 4 \text{ hours}$$

Exercise 3: Changing to hours and minutes

Example

Change 210 minutes to hours and minutes

60 minutes = 1 hour
210 minutes = (210 ÷ 60)

```
        3 rem 30
60 ) 210
     180
      30   = 3 hours 30 minutes
```

4. Change the following minutes to hours and minutes.

   a) 150 minutes b) 90 minutes c) 260 minutes

   d) 330 minutes e) 190 minutes f) 280 minutes

5. How many hours are there in 120 minutes?

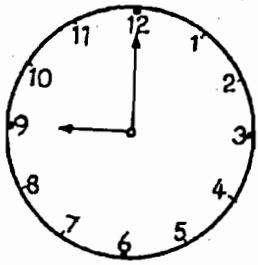
6. How many minutes are there in 1½ hours?

7. How many hours and minutes are there in 220 minutes?

8. Nyankiir walked for 50 minutes to the market and 70 minutes to her home. How long did the whole journey take?

2.6 (c) Telling the time in hours and minutes

What time is it?



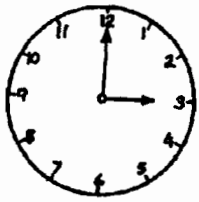
It is 9 o'clock

Exercise 4

A. 1.

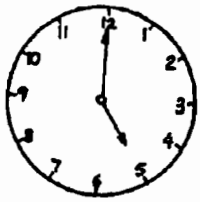
It is ____ o'clock

2.



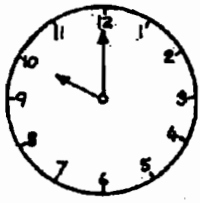
It is ____ o'clock

3.



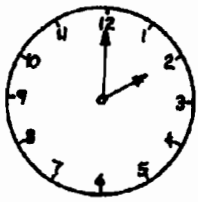
It is ____ o'clock

4.



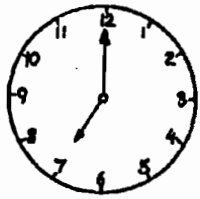
It is ____ o'clock

5.



It is ____ o'clock

6.

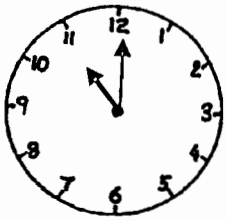


It is ____ o'clock

Indicate the time written beneath on each clock face.

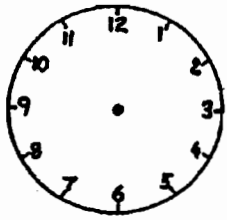
Example

1



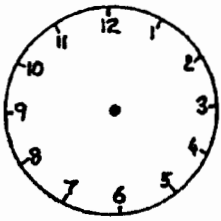
11 o'clock

2



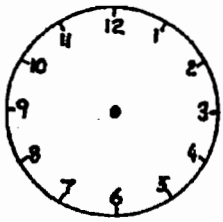
12 o'clock

3



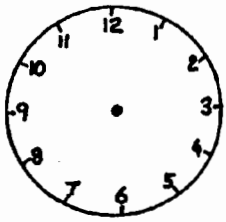
6 o'clock

4



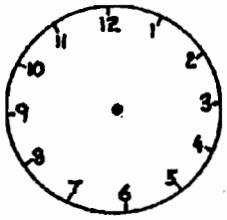
4 o'clock

5



8 o'clock

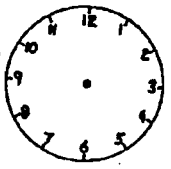
6



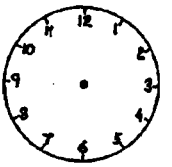
3 o'clock

Exercise 5

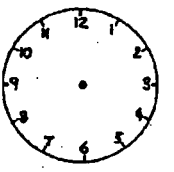
A. Draw the clock faces below and show the times indicated

1. 

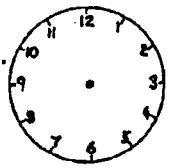
Half past 3

2. 

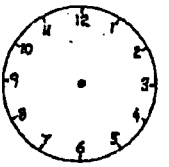
Half past 9

3. 

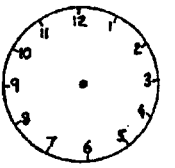
Half past 2

4. 

Half past 5

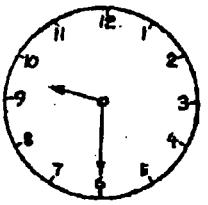
5. 

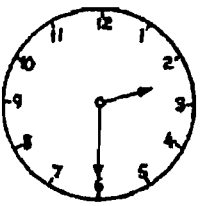
Half past 7

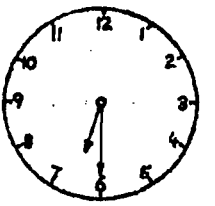
6. 

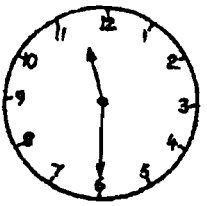
Half past 6

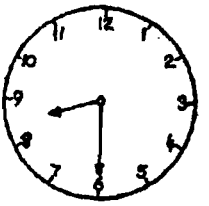
B. What time is it ?

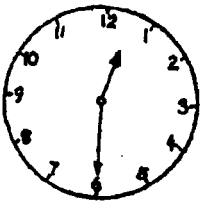
1. 

2. 

3. 

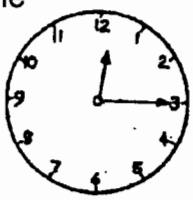
4. 

5. 

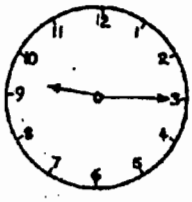
6. 

C. What time is it?

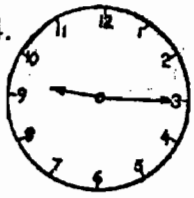
Example

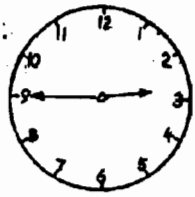
1. 

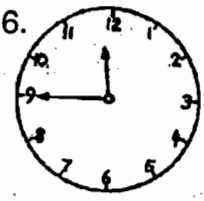
A quarter past 12

2. 

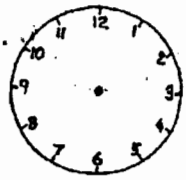
3.

4. 

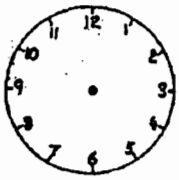
5. 

6. 

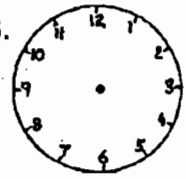
D. Show the time indicated

1. 

A quarter to 3

2. 

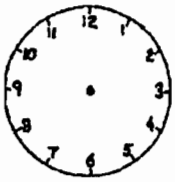
A quarter to 5

3. 

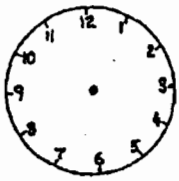
A quarter to 9

4.

A quarter past 11

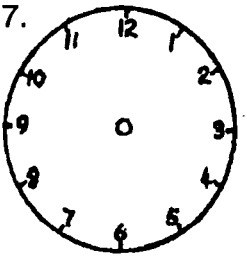
5. 

A quarter to noon

6. 

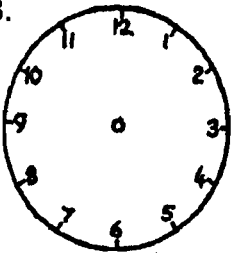
A quarter past 6

7.



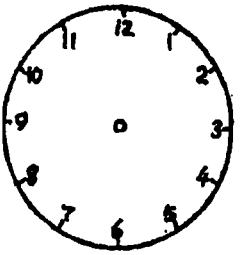
A quarter past 12

8.



Half past 12

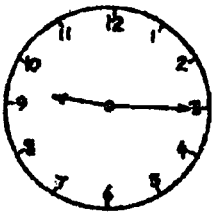
9.



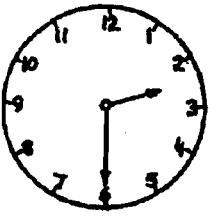
A quarter to1

What is the time shown by the clock faces below?

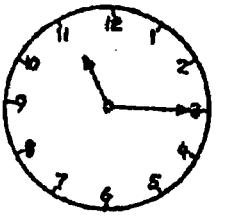
1.



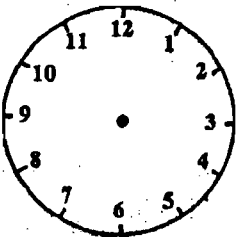
2.



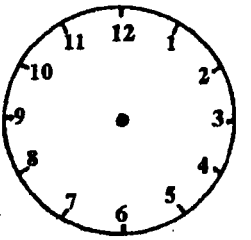
3.



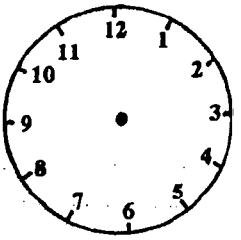
E. Trace and show the time on the clock faces below

1. 

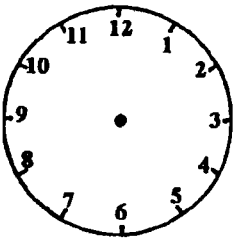
Half past 5

2. 

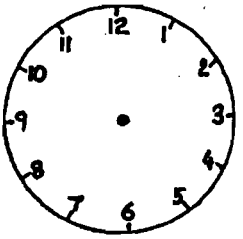
A quarter to 6

3. 

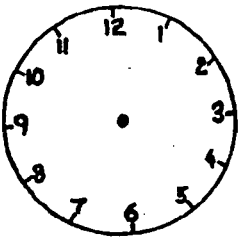
A quarter to 11

4. 

Half past 2

5. 

A quarter to 7

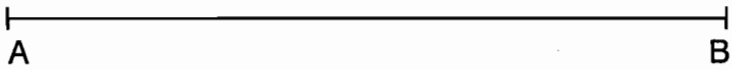
6. 

A quarter past 9

UNIT 3 Geometry

Naming lines

Letters of the alphabet are used in naming lines. For example, the line below is AB



Exercise 1

1. Name the following lines.

a) Q ———————— R

b) M ———————— N

c) A ———— B

d) S ———————— T

e) C ———————— D

2. Draw the following lines using a ruler.

a) RS 5cm

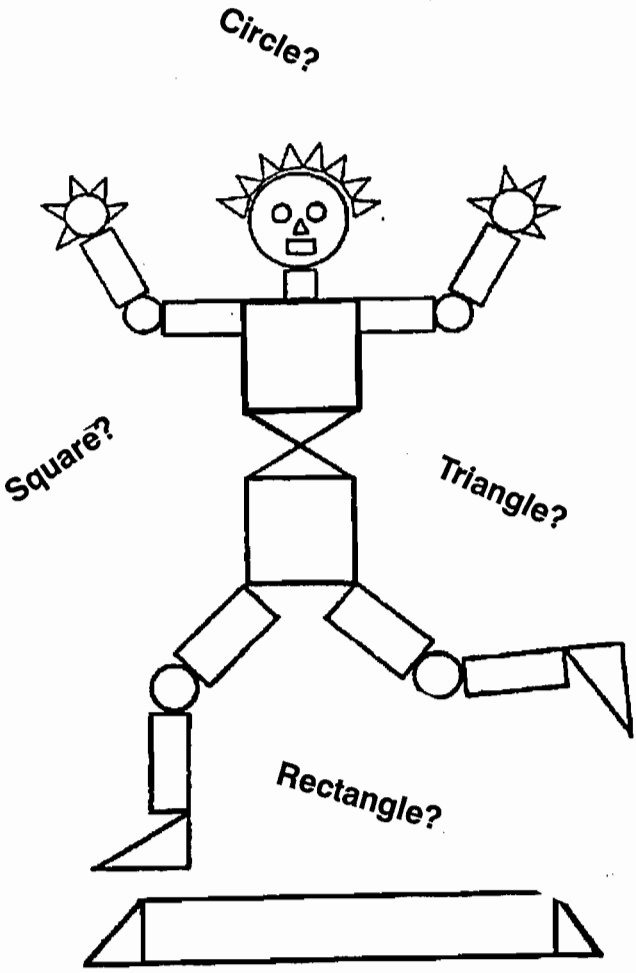
b) PQ 8cm

c) AB 6cm

d) CD 4cm

e) KL 10cm

Revision: Study the shape of the man below



Trace and colour all

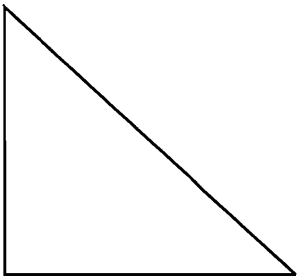
1. Circles - red.
2. Rectangles - yellow.
3. Triangles - blue.
4. Squares - black.

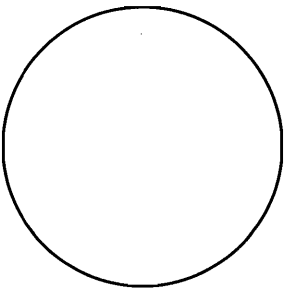
Shapes

Revision

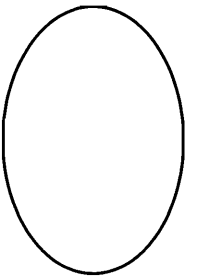
Exercise 2

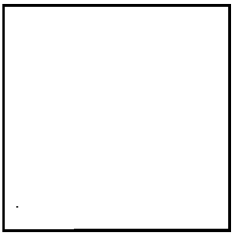
A. Name the shapes below.

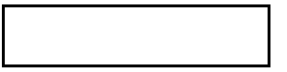
1. 

2. 

3.

4. 

5. 

6. 

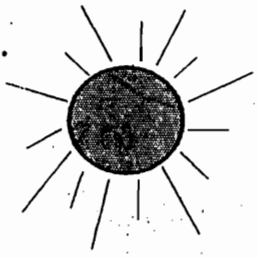
B. Draw the following shapes in your exercise book.

1. Oval 2. Circle 3. Square

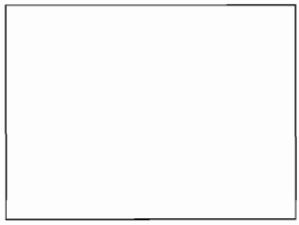
4. Triangle 5. Rectangle

C. Name the shapes below:

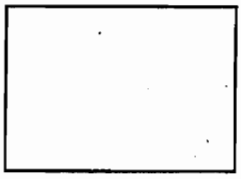
1.



2



3.

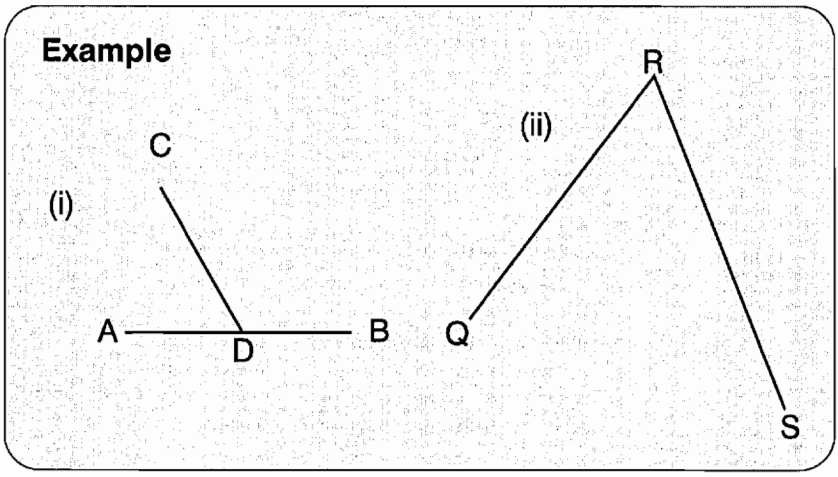


4.

5.

3. (a) Intersecting lines

The point where two lines meet is known as the point of intersection.

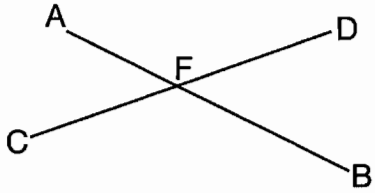


The intersecting lines are: (i) AB and CD (ii) QR and RS. The point of intersection in (i) is D and (ii) is R.

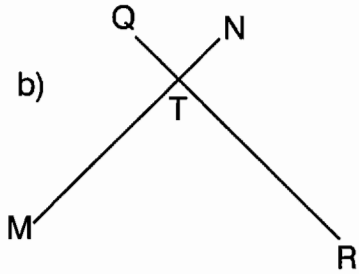
Exercise 1

1. Name:
   (i) the points of intersection in the following diagrams
   (ii) Intersecting lines

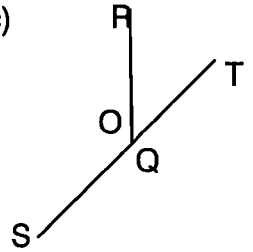
a)



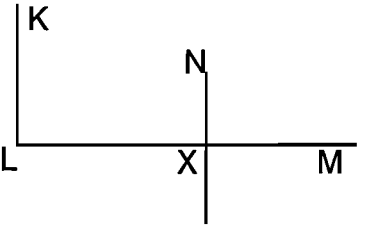
b)



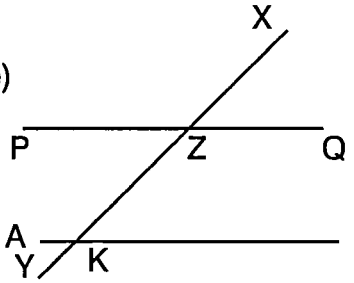
c)



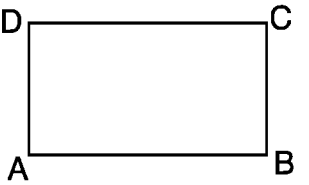
d)



e)

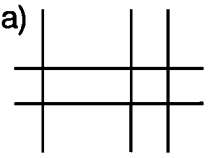


f)



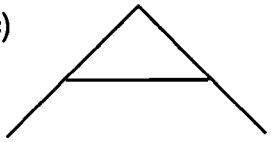
2. How many points of intersection can you find in the following diagrams?

a)

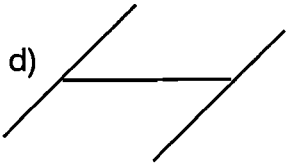


b)

c)



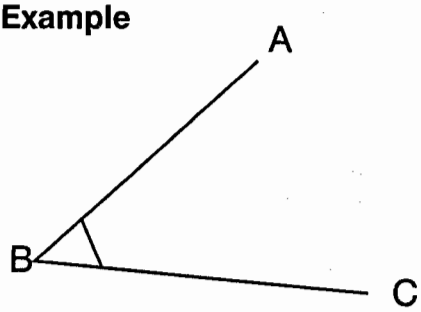
d)



3 (b) (i) Identifying angles, acute, obtuse, right angles

An angle is formed at the point of intersection of two lines

Example

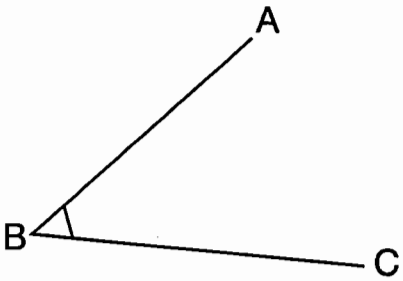


There are two lines in this diagram. AB and BC. The point of intersection is B. Therefore an angle is formed where two lines intersect

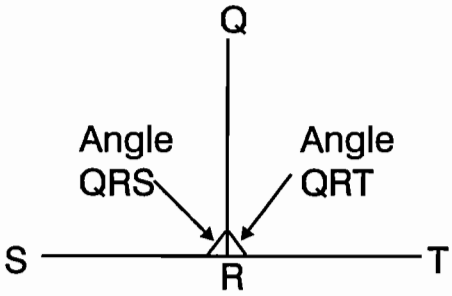
3 (b) (i) Naming angles

Angles can be named using letters of the alphabet.

Example



The angle formed by lines AB and BC is named < ABC



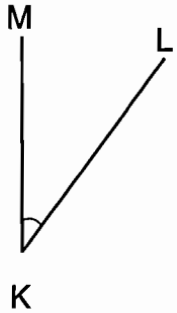
Lines ST and QR form two angles at the meeting points.

They are:
(i) <QRT and angle
(iii) <QRS.

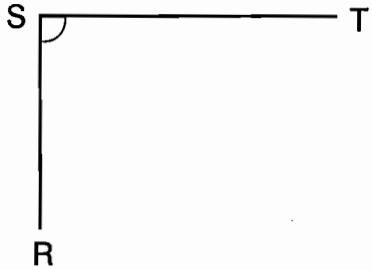
Exercise 2

Name the angles marked in the following diagrams

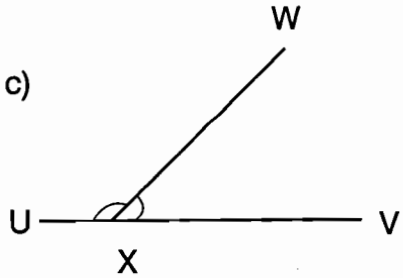
a)



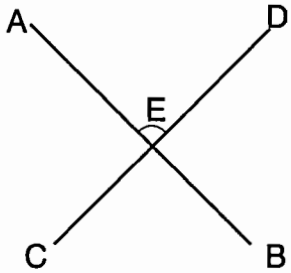
b)



c)

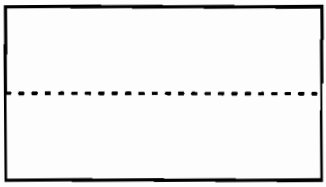


d)

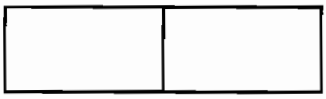


3 (b) (ii) Right Angles

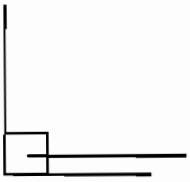
Fold a piece of paper in half



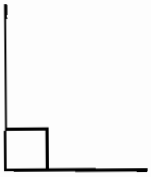
Fold along the dotted lines



Fold it again along the line to form a quarter



The angle formed at the corners is called a right angle

The symbol of a right angle is 

Exercise 5

1. Use the right angle you have formed to find other objects which have right angles. e.g.

   (i) the edges of your mathematics text book

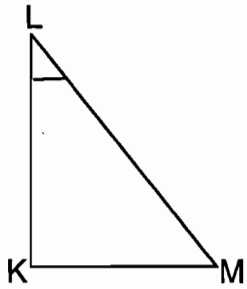
   (ii) the edge of your teacher's table

   (iii) the edge of your desk

   (iv) the corners of your classroom

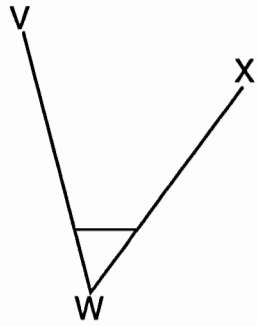
2. Using your folded piece of paper which has a right angle at the corner, find out which of the following angles are right angles. Use "is" or "is not" a right angle.

a)



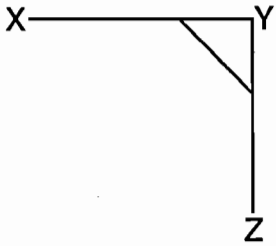
Angle KLM _____ a right angle.

b)



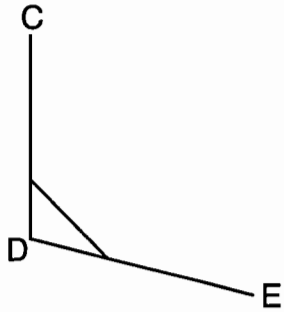
Angle VWS _____ a right angle.

c)



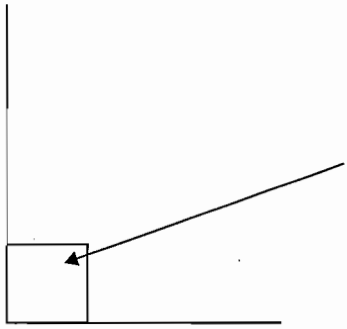
Angle XYZ _____ a right angle.

d)

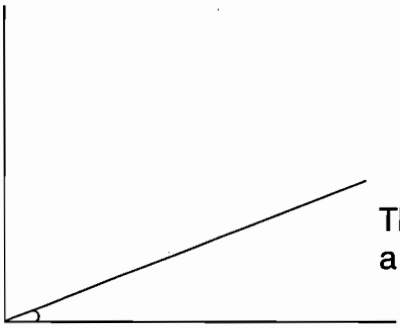


Angle CDE _____ a right angle.

3 (b) (iii) Acute Angles



This is a right angle

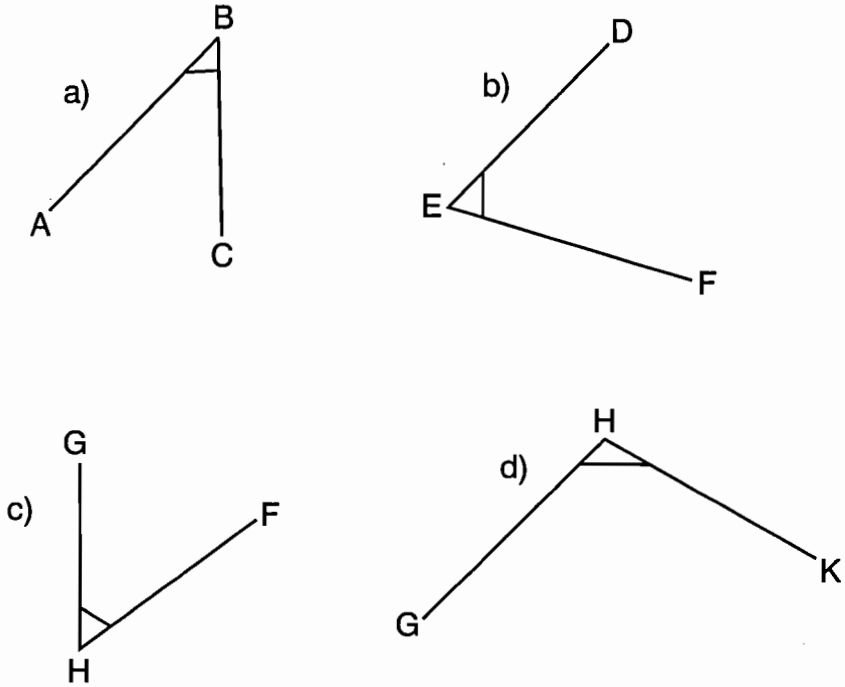


The angle marked is smaller than a right angle

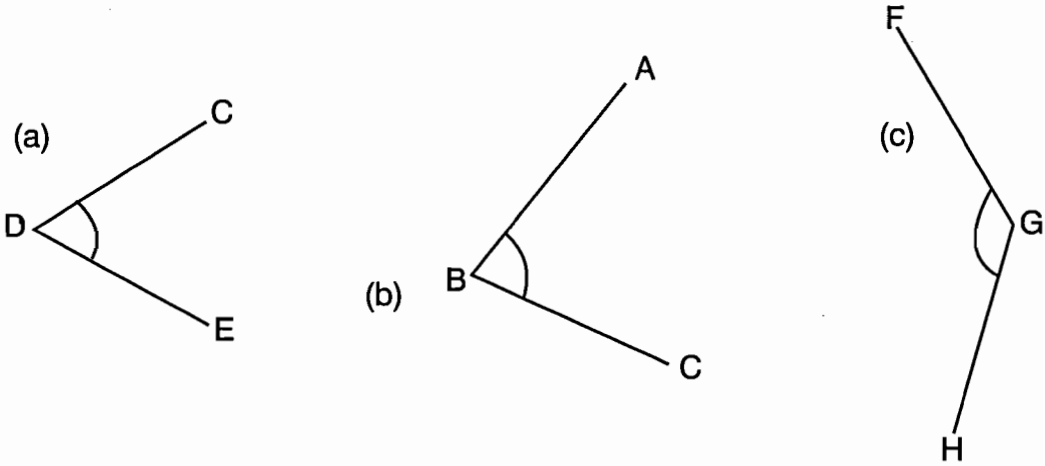
An angle which is smaller than a right angle is called and **ACUTE ANGLE**

Exercise 1

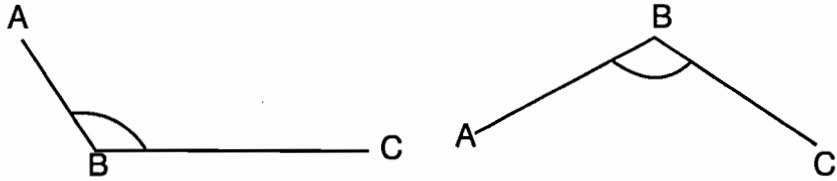
1. Using a right angled folded paper, find out which of the following angles are acute.



2. Use your folded right angled piece of paper to find out which of the following angles are greater than a right angle.

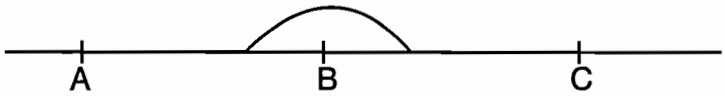


3(b) (iv) Obtuse Angles



An angle which is greater than a right angle as shown above, is called an **OBTUSE** angle

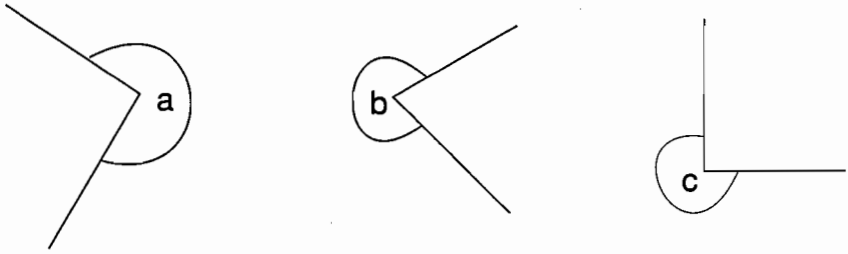
3 (b) (v) Angle on a straight line



When two straight lines AC and CB intersect to form a straight line, the angle formed is known as angle on a straight line and it is 180^0.

3 (b) (vi) Reflex angle

Look at the angles marked with letters



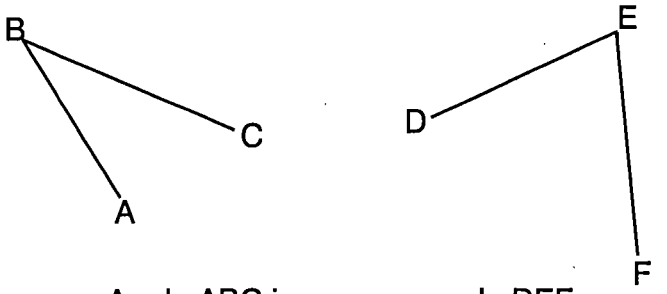
An angle which is greater than a straight line angle is called a **REFLEX ANGLE**

3 (c) Comparing Angles

Exercise 1

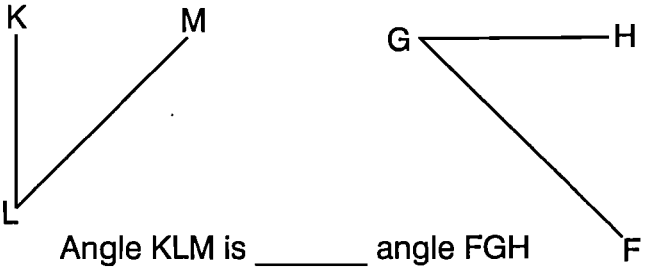
3. Use a folded piece of paper to compare the sizes of the following pairs of angles. Use the words GREATER THAN, SMALLER THAN, SAME AS

a)



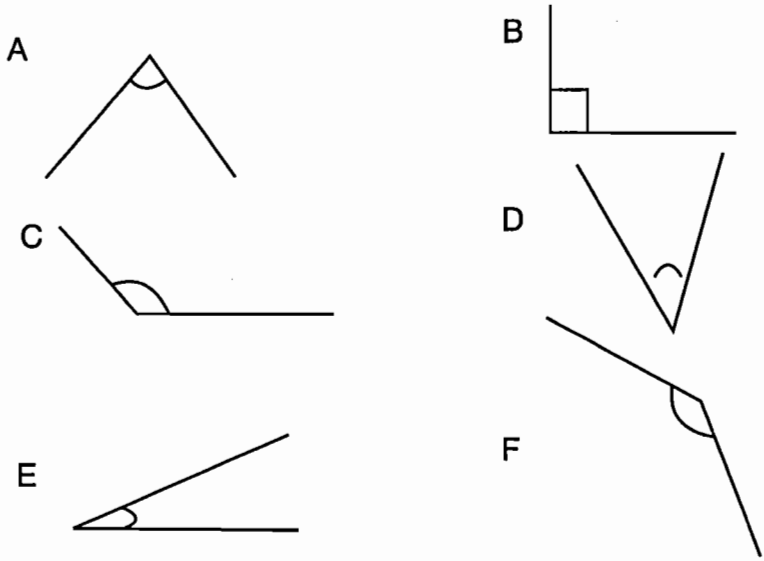
Angle ABC is _____ angle DEF

b)



Angle KLM is _____ angle FGH

Exercise 2



Using a folded paper, find out from the marked angles above which ones are right angled, acute, obtuse or reflex and put a tick in the correct places in the table below.

Figure	Right Angle	Acute Angle	Obtuse Angle	Reflex Angle
A				
B				
C				
D				
E				
F				

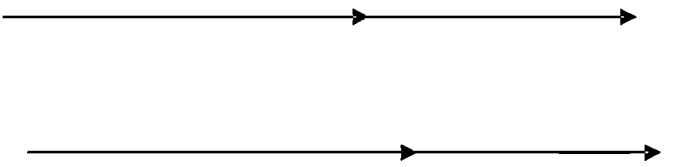
3 (d) **Angle measurement**

About 2,500 years ago, the Babylonians devised a method of measuring angles, which we still use today. They believed that the sun traveled around the earth (what really happens?) and that it took 360 days. Therefore they divided a circle into 360 equal parts, which they called degrees.

Parallel lines

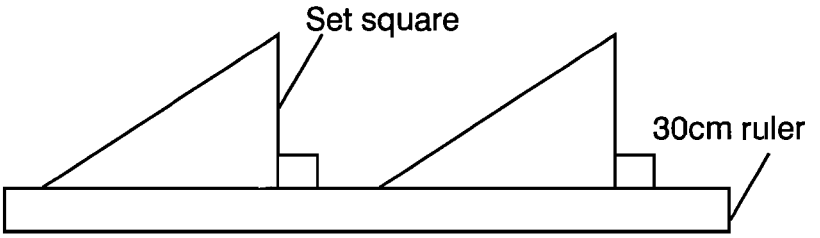
Draw Parallel lines

a) Using a ruler
Place your ruler on a piece of paper or exercise book and draw a straight line from the two edges of the ruler.

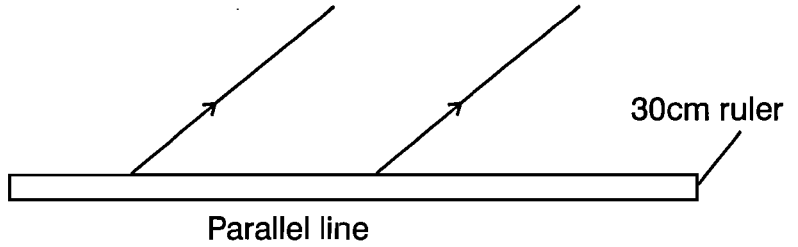


b) Place a ruler on a paper or exercise book and hold it tight. Place the set square against it then draw a line a long its straight edge. Slide the set square for some length and draw another line along the same edge as shown below.

(i)

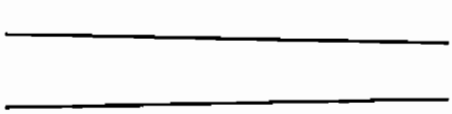


(ii)

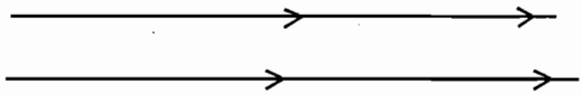


Look at the pairs of lines (a) and (b) below

a)



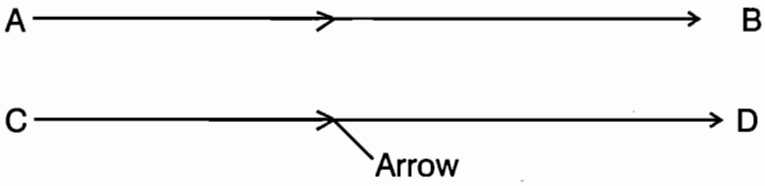
b)



In (a) if you extend the lines to the right they will intersect somewhere but in (b) the two lines will never intersect at any point.

Definition:
Two lines that can never intersect and are the same distance apart are called PARALLEL LINES

To show that two lines AB and CD are parallel, we draw two arrows on the lines as shown below.

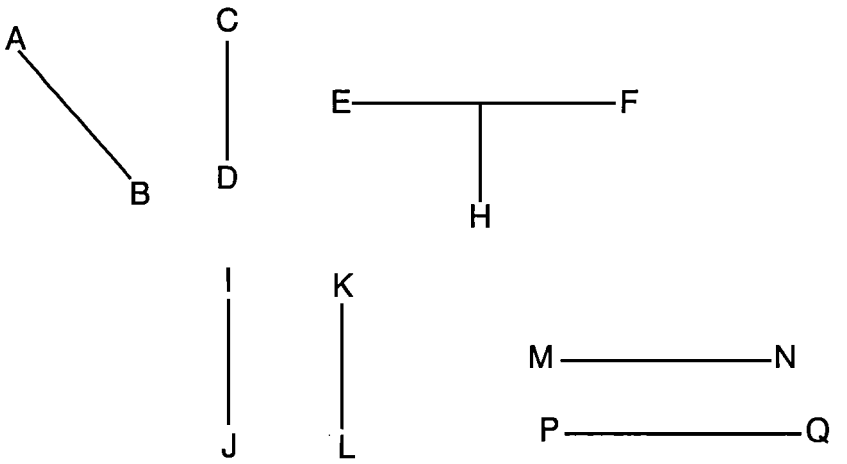


Activity

a) Identify parallel lines on blackboard, exercise book, classroom wall and maps on the wall.

b) Draw parallel lines using a set square and a ruler.

c) Which of these lines are parallel?



UNIT 4 Algebra

4. (a) Using letters for numbers

Algebra is a way of representing numbers with letters which we call unknowns.

Example

a) The price of two cows is £s 75,000, what is the cost of one cow?
We let a cow be represented by letter C

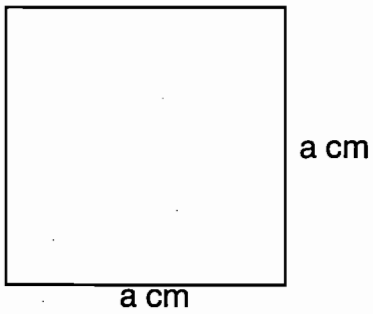
Therefore, the number of cows is C + C = 2C

$$\text{Hence } 2C = \frac{£75{,}000}{2} = \; = £\,37{,}500$$

The cost of one cow is = £ 37,500

b) The side of a square is **a** cm what is its perimeter?

perimeter = a + a +a + a = 4a



4 (b) (i) Like and unlike terms

Like terms

$a + a + a + a = 4a$

We add them up by counting the number of times it occurs, therefore
$a + a + a + a = 4a$

Unlike terms

Two things which are not the same can not be added together or subtracted.

For example cows and goats are different kinds of animals so we cannot add or subtract them. They are called unlike terms, or items.

Examples

a) $a + a = 2a$,
$b + b + b = 3b$,
$c + c + c + c = 4c$
2a, 3b, 4c are all different terms, they are called unlike terms

b) 3a, 6a, 7a, are like terms, because each contains the letter a; we can add them, thus $3a + 6a + 7a = 16a$

c) 4b, 7b, are like terms because each contains the letter b, thus $4b + 7b = 11b$

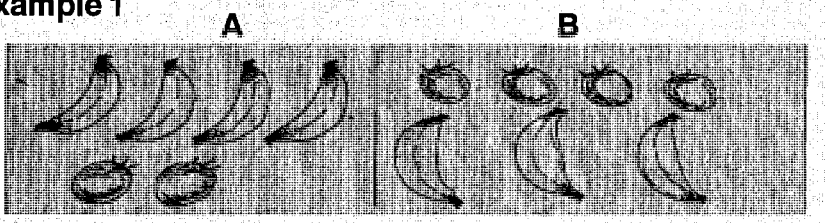
d) $3a + 4b + 2a + 3b$ consist of like terms as well as unlike terms in such situation we collect like terms together and then add them.

e) $3a + 4b + 2a + 3b = 3a + 2a + 4b + 3b = 5a + 7b$

4 (c) Addition and subtraction of simple algebric expressions

We can use letter instead of the numbers.

Example 1



Each banana can be represented by b and each passion fruit by p.

In A we have 4b bananas and 2p passion fruit. In B we have 3b bananas and 4p passion fruit. Altogether we have :

$$4b + 2p + 3b + 4p$$

Let's first add all the bananas (4b + 3b) bananas.
Add the passion fruit (2p + 4p) passion fruit.

Altogether $4b + 3b + 2p + 4p$
Add the b's
And all the p's

Example 2

$$2t + t + 3w + w = 3t + 4w$$

Example 1
Deng had 8p pawpaws. He gave his sister 4p pawpaws. How many pawpaws was he left with?

Answer
Deng had 8p pawpaws
He gave 4p pawpaws
He was left with: $8p - 4p =$ <u>4p pawpaws</u>

Example 2
$5t - 3t = 2t$

Exercise 1

1. Lado has 2c cows and his brother 3c cows. How many cows do they have altogether?

2. Kenyi has 4b boys and 5g girls. How many children does Kenyi have?

3. a) $b + b + b =$ b) $2m + 3m + 5m =$

   c) $q + 3q =$ d) $6y + 3y =$

   e) $4k + 3k + k =$ f) $4a + 6a + 2a =$

4. In a bag there were 3w red pencils and 2y green pencils. How many pencils were there altogether?

5. John has 3m blue marbles and 7n red marbles. How many marbles does he have altogether?

6. a) $9w - 7w =$ b) $6k - 2k =$ c) $12a - 6a =$

Exercise 2

1. $3a + 2b + 2a + 4b =$ 2. $4w + v + 3w =$

3. $7t + 2c + 4t =$ 4. $5x + 2y + 3x\ 4y =$

5. $5c + 2b + 6c =$ 6. $2b + 4k + 3b + k =$

7. In a school of 125p pupils, 75p pupils were absent. How many pupils were present on that day?

8. A taxi in Rumbek carries 14q passengers per trip. If the taxi can make 8 trips per day. How many passengers can the taxi carry per day?

9. A bar manager sold 10c crates of beer an 15c crates of soda every day. How many crates does he/she sell everyday?

10. In Maridi R.T.T.I they register 370r men and 21or women every academic year.

    (a) Find the total number of registration every year.
    (b) what is the difference in the number of men and women?

11. Chol walked 6d km from home to school. Then he was given a lift on a bicycle. If the school is 15d km away from home, what distance did he travel by bicycle?

12. Okello sat for primary leaving examination and obtained the following results: Maths 63p, English 75p, Social Studies 54c and Science 85c
    (a) What is the total marks obtained?
    (b) What is the total marks obtained in both Maths and English?
    (c) What is the total marks got in both Social Studies and Science?

13. Poni travelled for 95d km by bus. She then walked for 2t km. Find the total distance she travelled.

UNIT 5 Statistics

Statistics is about the collection of information (data) and representing such information on diagrams. From the diagrams, we can see and understand a given situation that can lead us to make decisions.

5 (b) Recording date in a table

Example

a) Ajack's family has 10 heads of cattle, 34 goats, 48 sheep, 28 pigs, 5 dogs and 63 chickens. This information can be represented in a table form as shown below.

Animals	Numbers
Cattle	20
Goats	34
Sheep	48
Pigs	28
Dogs	5
Chicken	63

Questions

1. What is the total number of animals owned by the Ajack's family?

2. Which animal do they own the smallest number of?

5 (a) Collecting of Data (information)

In a mathematics test which was marked out of 10, the marks obtained by 50 pupils were recorded as shown below

0, 2, 2, 2, 2, 2, 1, 1, 3, 3, 3, 3, 4, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 7, 7, 7, 6, 6, 6,6, 6, 6, 6, 6,6, 6, 6, 6,8, 8, 8, 8, 8, 8, 9, 9, 9, 9, 10

This information can be represented in a table form by use of tables.

Marks	Tallies	Number of pupils
0	I	1
1	I	2
2	~~IIII~~	5
3	IIII	4
4	I	1
5	~~IIII~~ ~~IIII~~	10
6	~~IIII~~ ~~IIII~~ III	13
7	III	3
8	~~IIII~~ I	6
9	IIII	4
10	I	1

In statistics when recording information in a table we use TALLIES as shown in the table above.

Questions

From the above table answer the following questions:

1. How many pupils scored 2 marks?

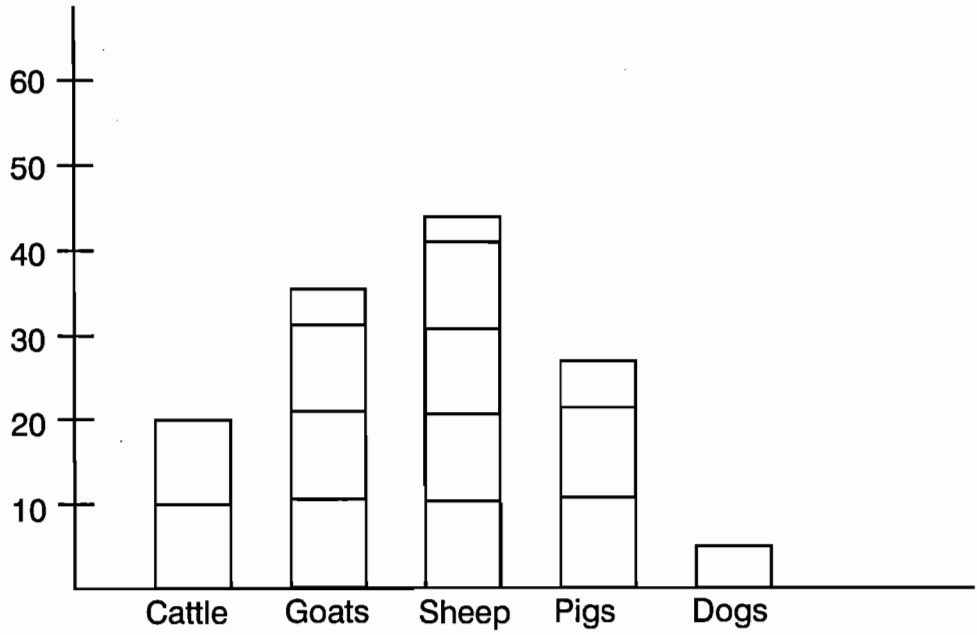
2. What mark was scored by the most of pupils?

3. If a passing score was five or more:
   (a) How many pupils passed?
   (b) How many pupils failed?

5 (c) Making bar graphs using concrete objects (bricks)

Use bricks to make a bar graph on the information about Ajack's animals in the previous example.

Draw a vertical and a horizontal line. Let the vertical line represent the number of animals and the horizontal line represent the animals as shown below.



Let one brick represent ten animals
This is how to represent data in the form of a bar graph.

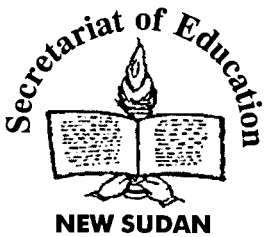
Exercise

1. In a Mathematics test, the marks obtained are shown below.
   95, 93,91, 91, 91, 91, 85, 85, 83, 83, 83, 83, 80, 80, 80, 80, 60, 60, 61, 63, 63, 61, 60, 54, 54, 52, 49, 49, 40, 35.
   Make a table to show this information.

2. The following are Science scores by 30 pupils.
   78, 65, 65, 65, 70, 70, 50, 55, 55, 70, 65, 65, 70, 50, 45, 45, 30, 35, 60, 60, 65, 75, 75, 55, 45, 35, 30, 70, 75, 61, 61, 80.

   (a) Draw a table to show this information.
   (b) What was the highest score?
   (c) How many pupils had a score of 70.
   (d) Draw a bar graph (1 block to represent 10 marks).
   (e) How many pupils had the lowest score?

3. Heights in centimetres of 15 pupils are:
   120, 125, 125, 124, 124, 124, 120, 124, 125, 127, 126, 124, 120, 120, 127.
   Make a table to show this information.



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