CUMBERNAULD ACADEMY

Faculty of Mathematics & Numeracy

2nd / 3rd Level

Block 3 - homework booklet

Chapter 11

Exercise 1

Look at the seating plan for class 2A1.

Bill	Mary	Jon	Fred
Bob	Tam	Jack	Teri
Dan		Ann	Jim
	Sam	Alice	
Joy		Sally	Harry

Teacher

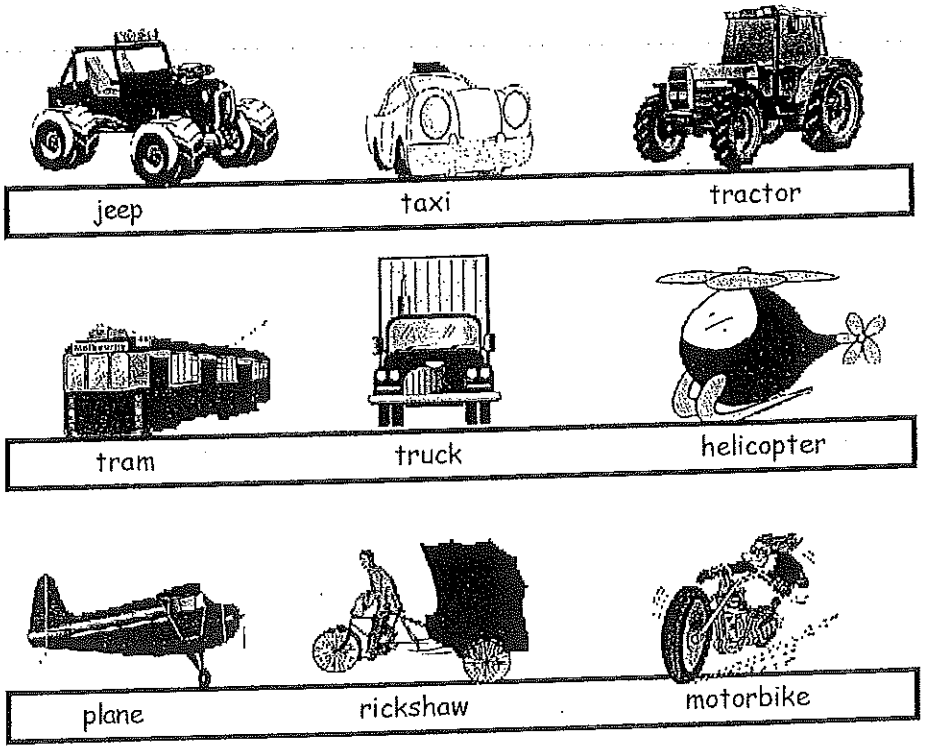
1. The teacher is standing in front of his class. He is looking at the boys and girls.
   - a Who sits behind Bob
   - b Who sits in front of Alice
   - c Who sits to the right of Jack
   - d Who sits to the left of Mary
   - e Who sits 3 seats behind Sally
   - f Who sits 2 seats to the left of Jim ?

2. Joy swaps seats with the person 3 seats behind and 2 to the right of her.
   Who does Joy swap seats with ?

3. Azi joins the class and sits in "**the empty seat between Ann and Dan**".
   Answer the following questions :-
   - a Who does Azi sit behind ?
   - b Who is Azi sitting in front of ?
   - c Who is Azi sitting to the left of ?
   - d Who is Azi sitting 2 seats in front of ?

4. Jack is facing the teacher. Who sits to **Jack's left** ?

Look at how the toys shown opposite are sitting on the 3 shelves.



5. Describe what is :-

a 1 above the plane

b just to the left of the truck

c just below the tractor

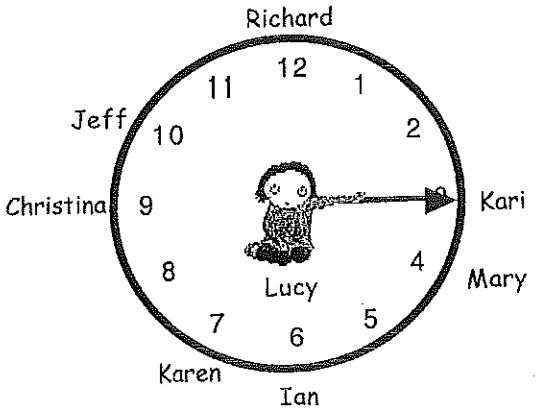
d 1 up and 2 to the right of the tram.

6. As you look at the picture, say how you would get from :-

a the plane to the motorbike

b the taxi to the tram ?

7. Lucy sits surrounded by some children. Lucy is pointing to Kari.



a From Kari, Lucy makes a quarter turn anti-clockwise.

Who is she now pointing to ?

b She points to Jeff and then makes a half turn clockwise.

Who is she now pointing to ?

c Describe the turn Lucy has to make to turn :-

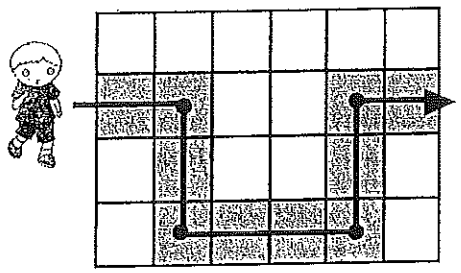
(i) from Christina to Ian.

(ii) from Mary to Karen.

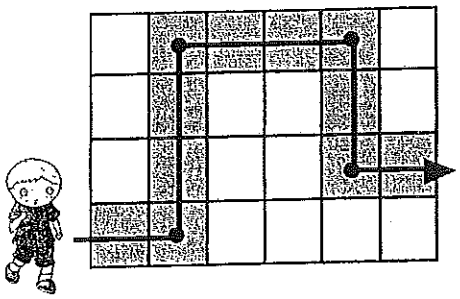
Exercise 2

1. Write clear instructions for each pathway through the maze for Ben :-
(Use words like "forward", "left", "right").

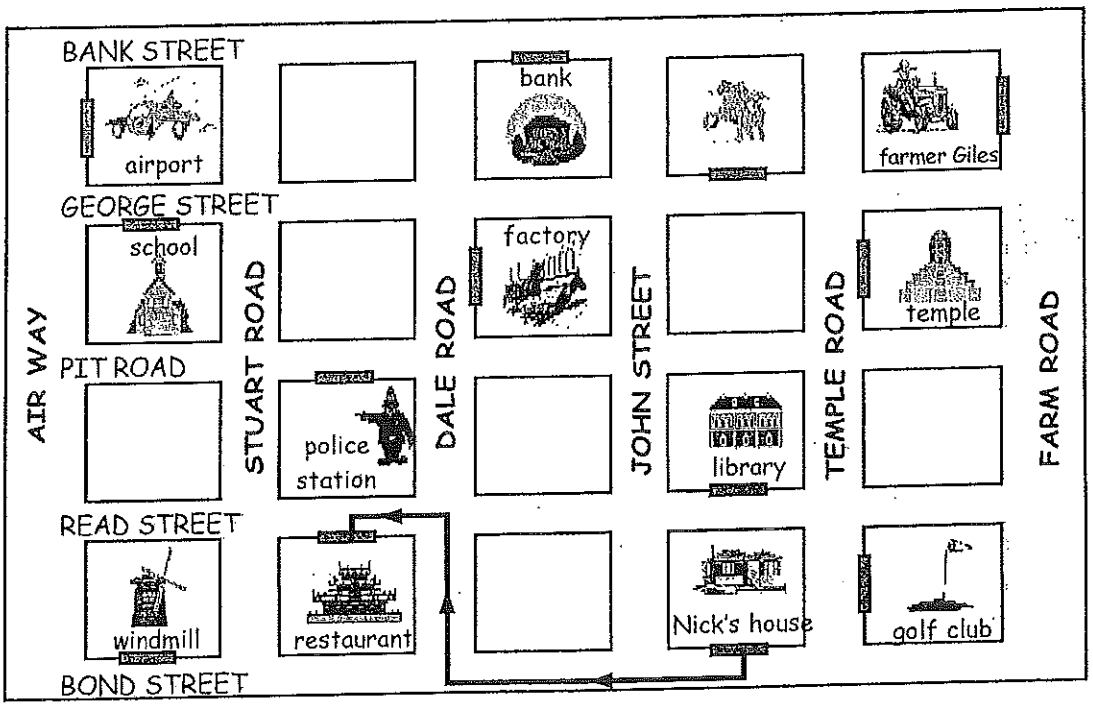
a



b



2. Look at the street map below. It shows a journey taken by Nick :-



a Copy this sentence. Complete it to show Nick's journey from his house.

When Nick goes to the Chinese Restaurant he comes out of his house, **turns** ..... along Bond Street, **turns 2nd** ..... into Dale Road, then ... . into Read Street. The restaurant is the **1st building on the** .... .

Describe how to make each of these journeys in words :-

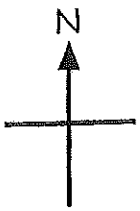
b Travel from the Police Station to the Bank.

c Travel from the School to the Golf Club.

d Travel from the Bank to the Windmill.

Exercise 3

1. In which direction would Amy end up facing if she was looking :-



   a North and turned 90° clockwise ?

   b South and turned 90° anti-clockwise ?

   c West and turned 180° ?

2. How many degrees would Nick have turned through if he was facing :-

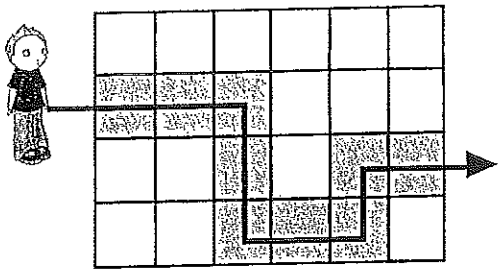
   a South and turned clockwise to face West ?

   b East and turned anticlockwise to face West ?

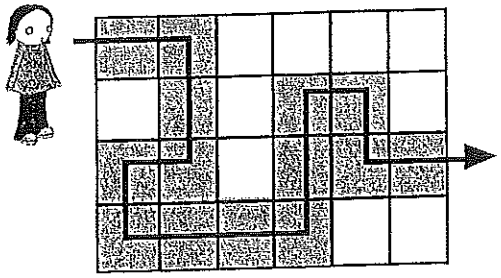
   c North and turned clockwise to face West ?

3. Using compass points guide each child through the maze :-

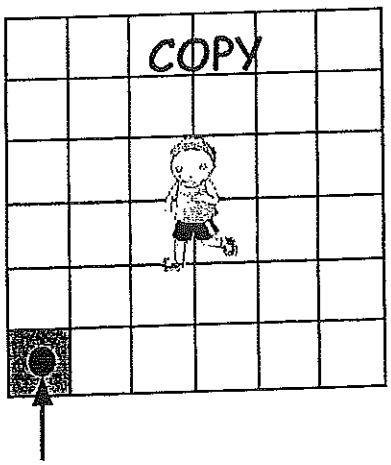
a



b



4. a Draw a 6 by 6 grid like the one shown :-



   b Draw the path through the maze following these instructions :-

   Go North 4 boxes.

   Go East 2 boxes.

   Go South 3 boxes.

   Go East 3 boxes.

   Go North 2 boxes.

   Go West 1 box.

   Go North 2 boxes and then step out of the maze.

Exercise 4

1. Five toys are shown in a coordinate grid.
The **hoop** is at position B e.

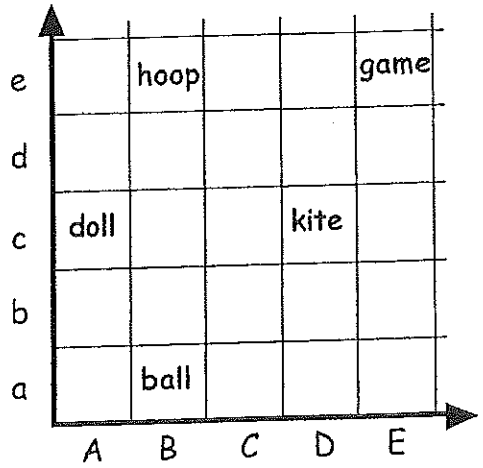
Write down the position of the :-

a kite

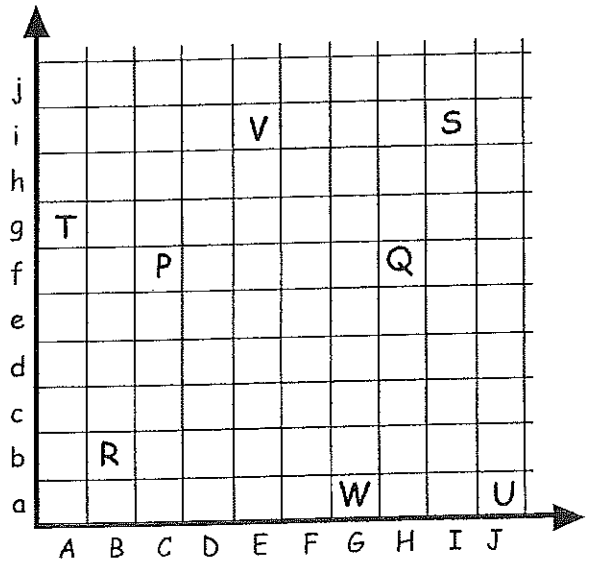
b ball

c doll

d game.



2.



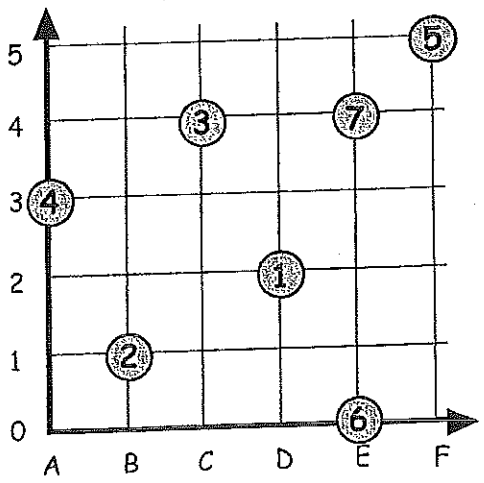
This coordinate grid shows the positions of some capital letters.

Write down the position of each capital letter.

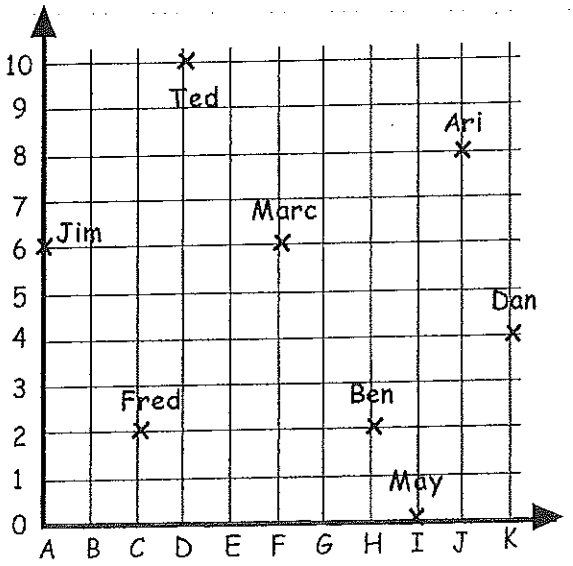
3. The coordinate grid shows the position of eight places of interest :-

Place of interest (1) has position D 2.

Write down the position of the other places of interest.



4. Ten children playing hide and seek are shown on a coordinate grid .



Dan has position K4.

Write down the position of :-

a Ted b Fred

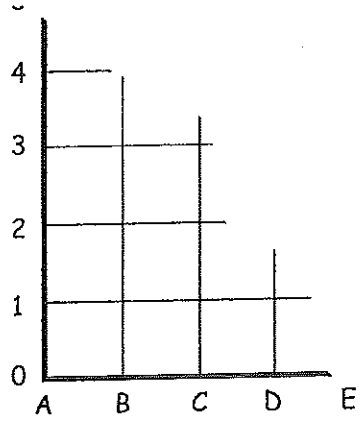
c Marc d May

e Ben f Ari

g Write down the position of the other child.

Exercise 5

Make a coordinate grid for each question.
(You are told the size of each).
Plot each point and join them up in order.



1. Letters across - A - L.

Numbers upwards - 0 - 12.

Set 1 - F3 D5 D8 F10.

Set 2 - F3 I3 K5 K8.

Set 3 - K8 I10 F8.

What **mathematical** shape is this ?

2. Letters across - A - P.

Numbers upwards - 0 - 10.

Set 1 - B2 B9.

Set 2 - B5 F5 F9 B9.

Set 3 - L2 L9.

Set 4 - I9 O9

Paul Thomson has written his initials in the coordinate code.

Write **your** initials using coordinate code.

3. Letters across - A - M.

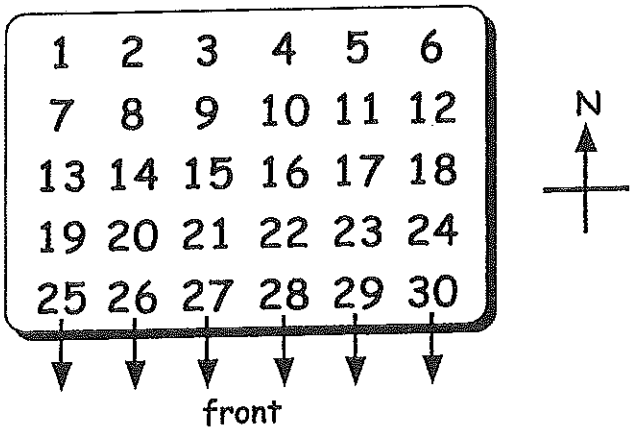
Numbers upwards - 0 - 12.

Set 1 - H12 D5 L5 C12 H2 H12.

What object is this ?

Revision Exercise

Thirty Soldiers (numbered 1 to 30) are lined up in a parade ground facing forward.



1. Which soldier is :-

   a just in front of number 2

   b just behind number 22

   c just to the left of 23

   d 3 back and 2 right from 27

2. a Number 15 was looking at 21. He made a quarter turn anti-clockwise What number would number 15 now be facing ?

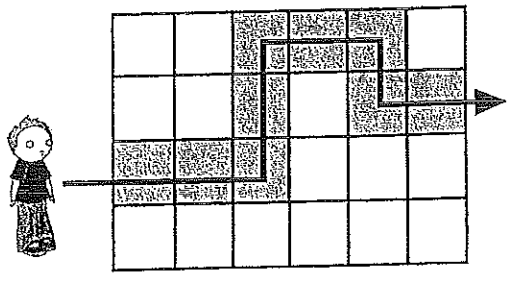
   b Number 23 was looking across at number 22. He then turned to face 17. Describe the turn he must have made in words.

3. a Number 20 was looking East. He made a 90° **anti-clockwise** turn. What number does 20 now face ?

   b Number 24 turned from facing number 30 to face number 18. How many degrees did number 24 turn through ?

4. a Write instructions to go through the maze using left, right, up down etc.

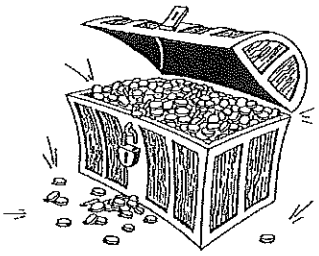
   b Repeat the instructions using points of the compass.

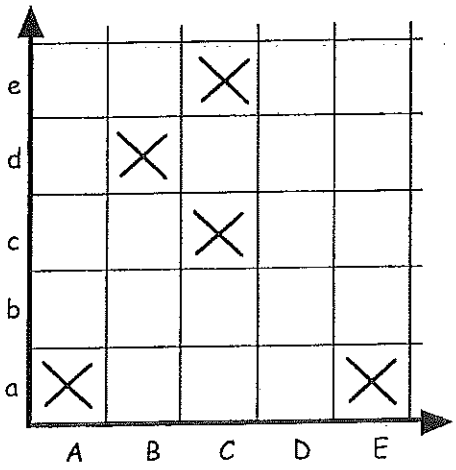


5. X marks the spot for the treasure.

Five treasure chests are shown on a coordinate grid.

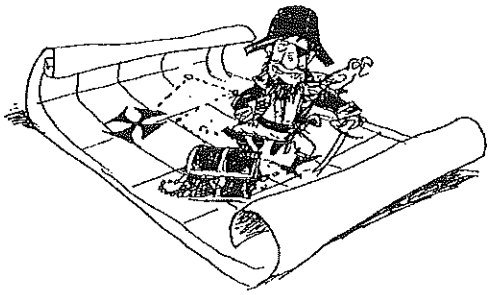
Write down the position of each treasure.

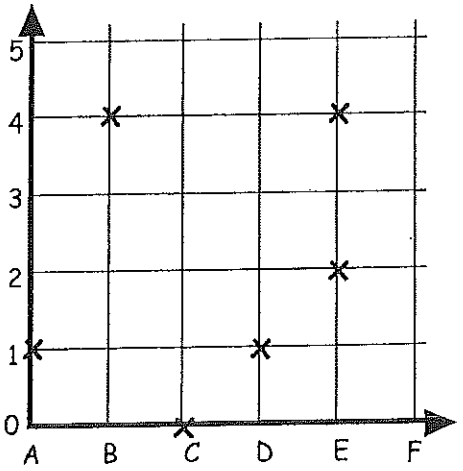




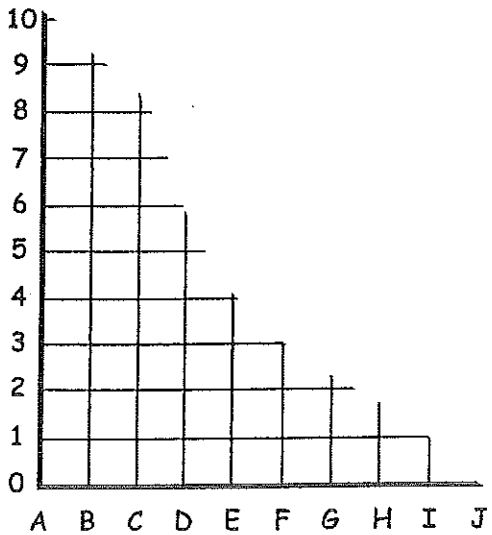
6. Six treasure chests are shown on this coordinate grid.

Write down the position of each treasure.





7.



Letters across - A - S.
Numbers upwards - 0 - 20.

Show the following points on your grid and join them up :-

Set 1 - C4 E0 O0 S4 C4.

Set 2 - I4 I19 A5 J5.

Set 3 - I14 S6 J4 I14.

What object is drawn ?

Chapter 12

Coordinates

Exercise 1

1. Six classrooms in a school are shown on the coordinate grid map.

   Write down the coordinates of :-

   (a) the Maths room M.

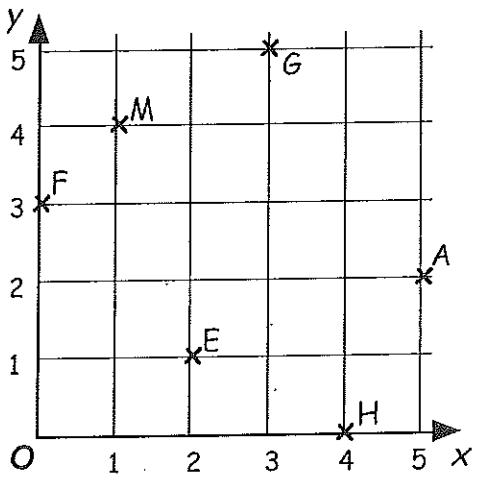
   (b) the English room E.

   (c) the Geography room G.

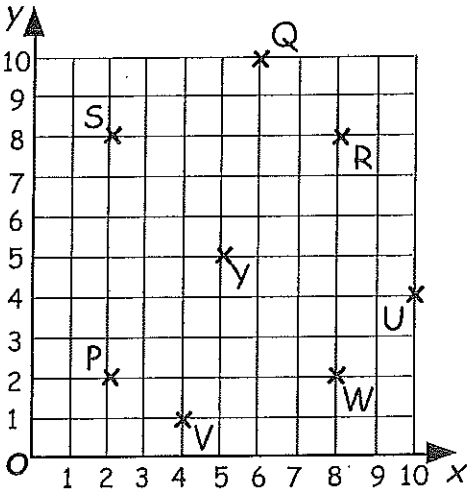
   (d) the History room H.

   (e) the French room F.

   (f) the Art room A.



2.



(a) Which point has coordinates :-

(i) (4, 1) (ii) (10, 4)

(iii) (2, 8) (iv) (5, 5) ?

(b) Write down the coordinates of :-

(i) Q (ii) R

(iii) P (iv) W.

(c) When four of the points are joined a square is formed.

(i) Which four points ?

(ii) Write down their coordinates.

3. (a) Draw up a coordinate grid like the one in question 2 on squared paper, Make the horizontal and vertical axes both go up from 0 to 10.

   (b) Mark with a small neat cross the position of the following points :-

   A(1, 1), B(9, 1), C(9, 6), D(5, 10), E(1, 6).

   (c) Join point A to point B; point B to point C; point C to point D; point D to point E, point E back to point A.

   (d) What shape have you formed ?

4. (a) Draw a new grid (from 0 to 10 in each axis).

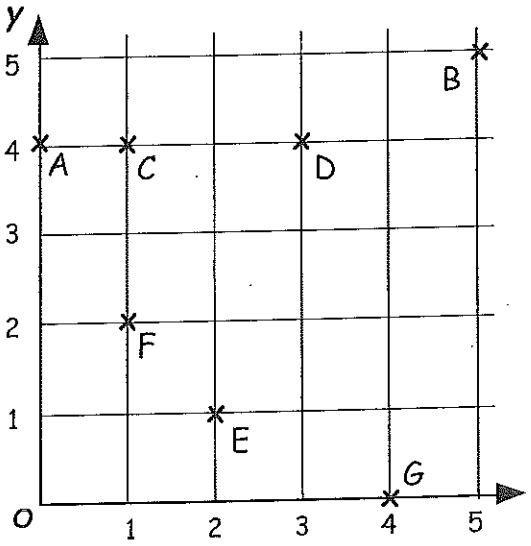
   (b) Mark with a dot the following points and join them up in order.

   G(2, 1) H(4, 1) I(4, 4) J(6, 4) K(6, 5) L(4, 5) M(4, 7) P(8, 7) Q(8, 9) R(2, 9) G(2, 1).

   (c) When the points are joined, what letter of the alphabet is formed ?

Exercise 2

1. Look at the coordinate grid.



   (a) Which point has an *x*-coordinate of 2 ?

   (b) Which point has a *y*-coordinate of 5 ?

   (c) What is the *x*-coordinate of D ?

   (d) What is the *y*-coordinate of F ?

   (e) Which point has its *x*-coordinate the same as its *y*-coordinate ?

   (f) Which point lies on the *x*-axis ?

   (g) Which point lies on the *y*-axis ?

   (h) Which 3 points have the same *y*-coordinate ?

   Write down their coordinates.

   (i) Which 2 points have the same *x*-coordinate ?

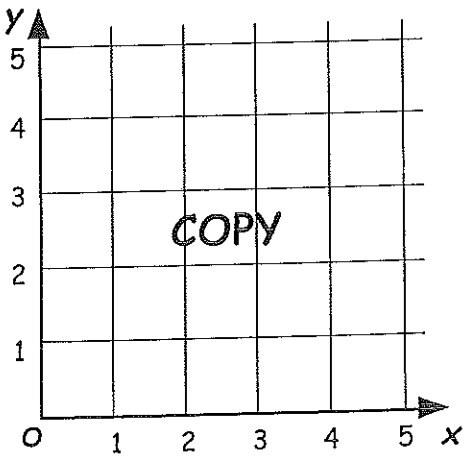
   Write down their coordinates.

   (j) From G to E is "2 LEFT and 1 UP".

   Give instructions in the same way which will take :-

   (i) D onto B (ii) E onto C.

2. Draw a 5 by 5 coordinate grid as shown.



   (a) Plot the points P(2,3), Q(3,1) and R(4,3).

   (b) S is a point to be put on the grid so that figure PQRS is a rhombus (diamond). On your diagram plot the point S and write down its coordinates.

   (c) Join P to R and join Q to S. You now have the two diagonals of the rhombus.

   Write down the coordinates of the point X where the two diagonals meet.

3. Draw a 10 by 10 coordinate grid.

   (a) Mark with a dot the following points and join them up in order.

   A(5, 1) B(2, 2) C(2, 4) D(3, 6) E(5, 7) F(7, 6) G(8, 4) H(7, 2) back to A.

   (b) When the points are joined, what is the name of the shape you have formed ?

Exercise 3 (Two more for fun)

Plot the following points in order and join them up as you move from one point to the next.

1. **An Alien Mask**

   The *x* axis should go from 0 to 20. The *y* axis should go from 0 to 30.

   Face

   (8,4) (11,4) (17,16) (17,20) (16,23) (15,25)

   (14,26) (12,27) (7,27) (5,26) (4,25) (3,23)

   (2,20) (2,16) (2,4)

   Left Eye

   (4,19) (6,19) (8,17) (9,14) (9,13) (8,13) (6,14) (4,19)

   Right Eye

   (15,19) (13,19) (11,17) (10,14) (10,13) (11,13) (13,14) (15,19)

   Left Nose

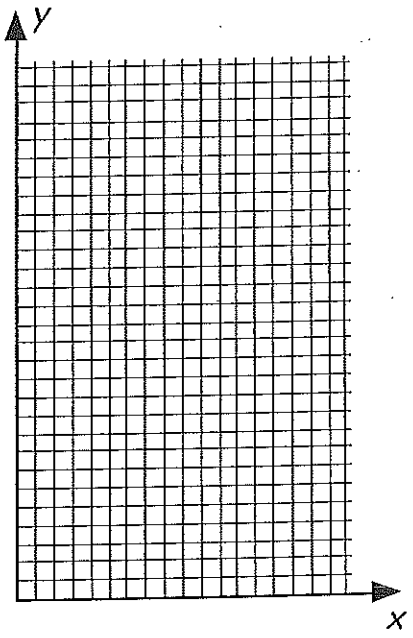
   (8,10) (9,10) (9,9)

   Right Nose

   (10,10) (11,10) (10,9)

   Mouth

   (8,7) (11,7)



2. **A Diplodocus**

   The *x* axis should go from 0 to 25. The *y* axis should go from 0 to 20.

   Plot these coordinates and join them up like dot to dot as you go.

   (24,18) (24,17) (22,16) (20,11) (19,6) (19,2) (17,2) (17,6) (16,5) (15,2)

   (13,2) (14,5) (14,6) (11,6) (9,2) (7,2) (9,6) (7,6) (4,4) (2,3) (0,2) (1,3)

   (3,5) (5,9) (9,11) (17,11) (21,17) (23,18) (24,18)

   Back Leg (12,6) (12,2) (10,2) (10,4)

4. Draw neat pictures, in the same style as shown in question 3, to represent :-

   (a) 0·13 (b) 1·26 (c) 3·81 (d) 2·03

5. What does the "6" stand for in these numbers :-

   (a) 36·89 (b) 61·32 (c) 78·46 (d) 1·69 ?

6. Arrange the following numbers in order, smallest first :-

   0·87, 1·91, 0·78, 1·09, 1·11, 0·09.

7. What number is :-

   (a) $\frac{1}{10}$ up from 0·7 (b) $\frac{7}{10}$ down from 1·9 (c) $\frac{3}{10}$ up from 5·2

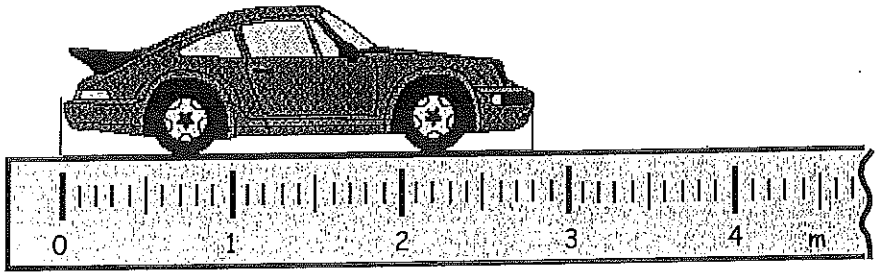
   (d) $\frac{1}{100}$ up from 0·23 (e) $\frac{5}{100}$ down from 6·27 (f) $\frac{15}{100}$ up from 2·47

   (g) half way between :- (i) 0·2 and 0·6 (ii) 0·2 and 0·3 ?

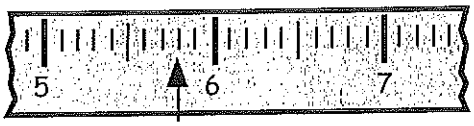
8. Craig is 1·5 metres tall and Paul is 1·8 metres tall.
   What is their average height ?

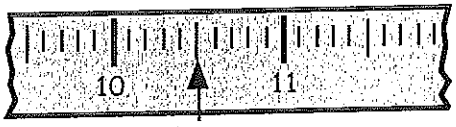
Exercise 2

1. Write down the length of this car in metres :-

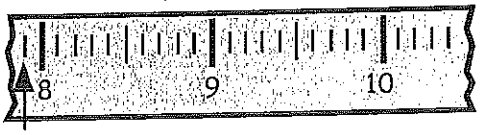


2. To what decimal numbers are the arrows pointing ?

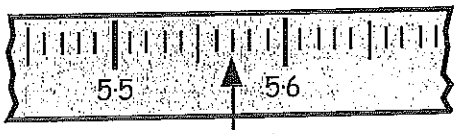
(a)


(b)


(c)

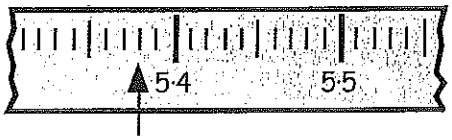

(d)


(e) (Hint : 2 decimal places)


(f)


3. Look at these diagrams. What number is the arrow pointing to in each case ?

(a)



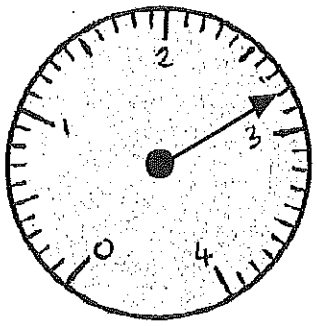
(b)

(c)

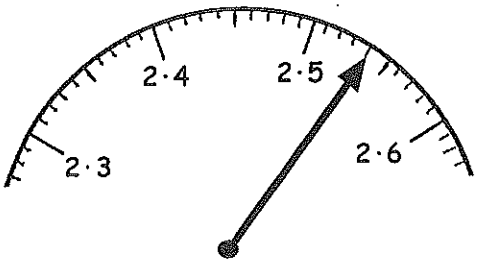
NOT (4·23)

(d)

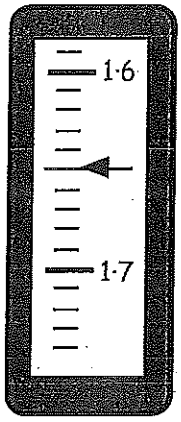
(e)



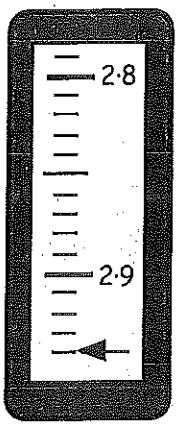
(f)



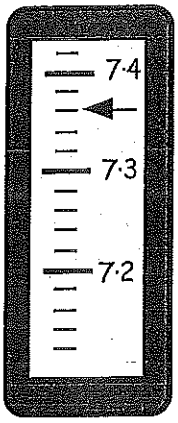
(g)



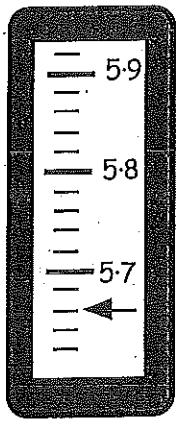
(h)



(i)



(j)



4. What number lies half way between :-

(a) 0·2 and 0·3 (b) 1·64 and 1·78 (c) 4·68 and 5 ?

Exercise 3

1. When each decimal is rounded to the nearest whole number, which of the two numbers in the brackets is the correct answer :-

(a) 8·1 (8 or 9) ? (b) 12·8 (12 or 13) ?

(c) 20·6 (20 or 21) ? (d) 0·4 (0 or 1) ?

(e) 1·49 (1 or 2) ? (f) 22·61 (22 or 23) ?

(g) 8·51 (8 or 9) ? (h) 9·09 (9 or 10) ?

Chapter 12

Exercise 1

1. Would you use a **ruler**, **tape measure** or a **car odometer** to measure :-

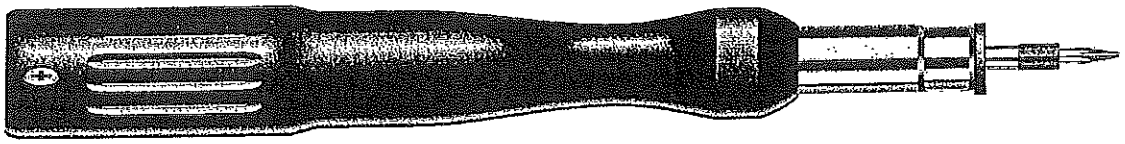
   a your teachers height b the length of a £5 note

   c the length of your bedroom d the distance from Glasgow to Carlisle ?

2. **Estimate** the lengths of parts **a**, **b** and **c** in question 1.

3. **Estimate** the length of each line or object below to **the nearest centimetre** :-

   a _____ b _____

   c 

4. Use a ruler to measure each line or object in question 3.

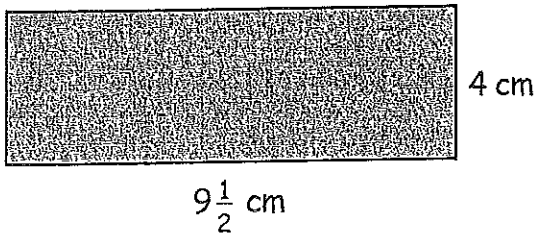
Exercise 2

1. Use a ruler to accurately draw a line of length :-

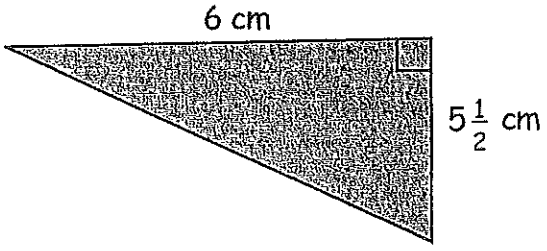
   a 4 centimetres b 7 centimetres c $5\frac{1}{2}$ centimetres

2. Make **accurate** drawings of each shape below :-

   a

   b

3. a Draw accurately a square with side 5 centimetres.

   b Measure and write down the length of each diagonal line. (corner to corner).

Exercise 3

1. **Remember, 1 metre = 100 cm.** How many **centimetres** are in :-

   a 2 metres **b** 5 metres **c** 10 metres **d** $5\frac{1}{2}$ metres ?

2. **Remember, 100 cm = 1 metre.** How many **metres** are in :-

   a 600 cm **b** 300 cm **c** 1200 cm **d** 2500 cm ?

3. **Copy** and complete :-

   a 1 metre 45 centimetres = 1 m 45 cm = ... **cm**

   b 3 metre 28 centimetres = ... m ... cm = ... **cm**

   c 1 metre 1 centimetre = ... m ... cm = ... **cm**

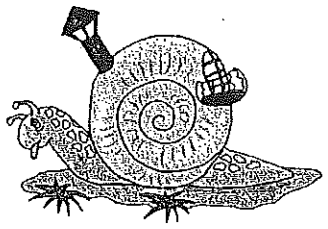
   d 10 metres 5 centimetres = ... m ... cm = ... **cm**

   e 325 cm = 3 m 25 cm = 3 metres ... centimetres

   f 502 cm = ... m ... cm = ... metres ... centimetres

   g 4004 cm = ... = ...

4. Simon Slug crawls 4 metres and 65 centimetres along the garden path.
   Stella Snail crawls 310 centimetres along the path.

   a How many **centimetres** did Simon crawl ?

   b How many **metres and centimetres** did Stella crawl ?

   c How much **further** did Simon crawl than Stella ?

Exercise 4

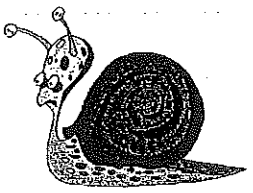
1. Put these lengths in order, **smallest** first :-

   $1\frac{1}{2}$ m, 1 m 25 cm, 130 cm, 90 cm, 1 m.

2. Four pieces of pipe, each of length 1 m 30 cm, are joined together.

   What is the total length of pipe ?

3. Cecil Snail crawled 750 centimetres in the morning and 3 metres 5 centimetres in the afternoon.



How far had Cecil crawled that day :-

a in metres and centimetres b in centimetres ?

4. 

Jim the joiner bought a plank $3\frac{1}{2}$ metres long.

He needs the plank to be $2\frac{3}{4}$ metres long.

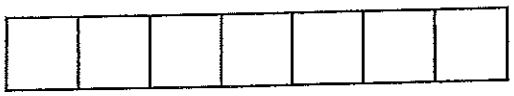
How many centimetres will he have to cut off the plank ?

5. The width of a book is 8 centimetres.
A shelf has length 1 metre 12 centimetres.

How many books will fit on the shelf ?

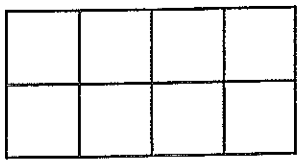
Exercise 5

1. Write down the area of this figure in .....cm^2 :-

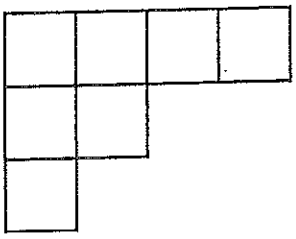


2. Write down the area **(in ...cm^2)** of each figure below :-

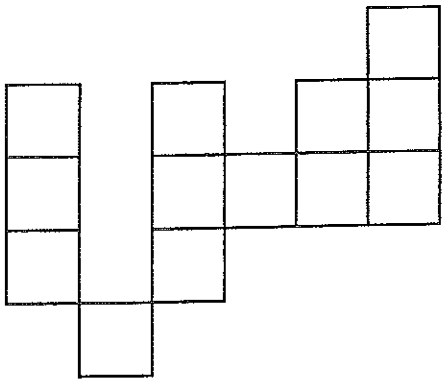
a



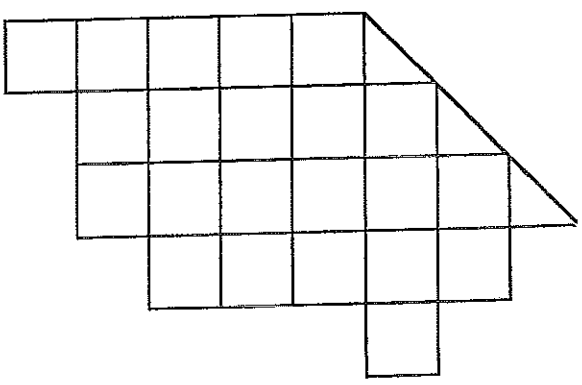
b



c

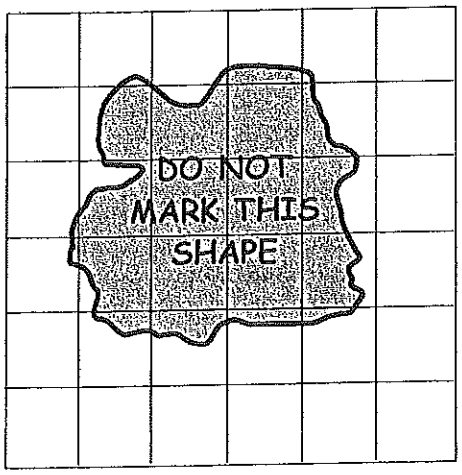


d

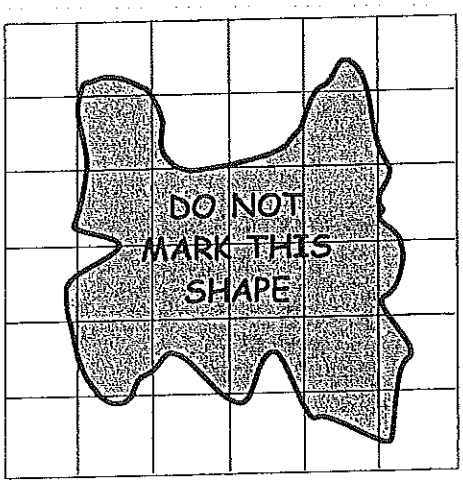


3. Estimate the areas of these shapes :-

a

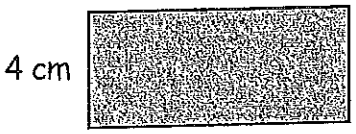


b



Exercise 6

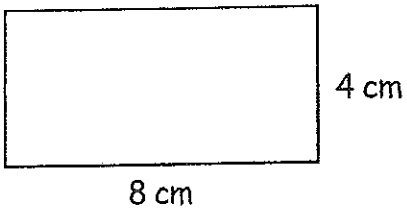
1. Make a neat full size drawing of this rectangle and complete the calculation to find the area :-



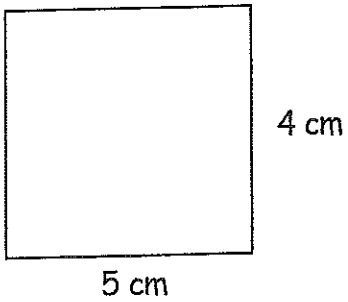
$A = L \times B$
$A = 6 \times 4$
$A = \ldots\ldots \text{ cm}^2$

2. Calculate each area (in cm^2) :-
(Remember to show formula and calculation)

a

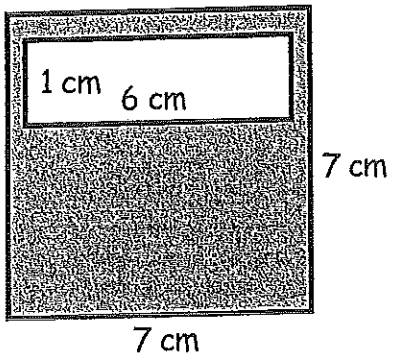


b



3. A square with side 7 centimetres has a rectangle 6 cm by 1 cm cut from it.

Calculate the shaded area.



Revision Exercise

1. Would you use a **ruler**, **tape measure** or **car odometer** to measure :-

   a the length of a pencil **b** the length of a car

   c the distance from Glasgow to Aberdeen ?

2. Estimate the length of each line to the nearest centimetre :-

   a _____ **b** _____

   c the long line down the right hand side of the page. ⟶

3. Use a ruler to measure accurately each line in question 2.

4. Use a ruler to draw a line with length :-

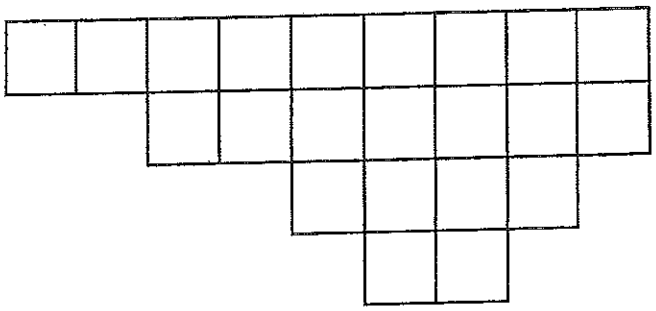
   a 4 cm **b** 1 cm **c** 10 cm **d** $5\frac{1}{2}$ cm

5. Change :- a 200 cm to m b 1 m to cm c $3\frac{1}{2}$ m to cm

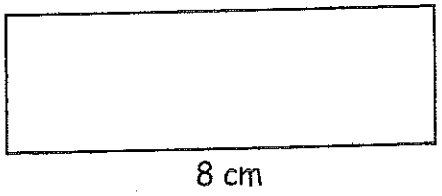
6. Put these lengths in order, largest first :-

   1 m 8 cm, 109 cm, 1 m 11 cm, 97 cm.

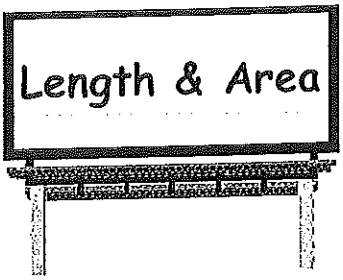
7. Write down the area **(in square centimetres)** of this figure :-



8. Use your formula to calculate the **area** of the rectangle shown :-



Chapter 14



Exercise 1

1. Use your ruler to measure the length of these lines in centimetres :-

(a)

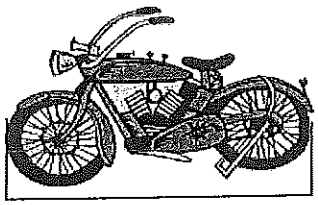
(b)

(c)

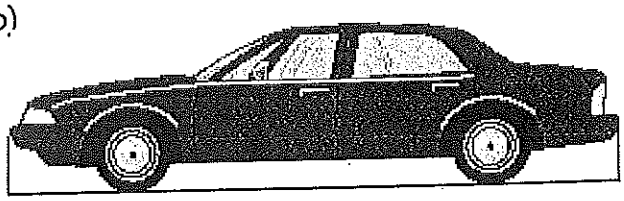
(d)

2. Measure the length of these toys in millimetres.

(a)

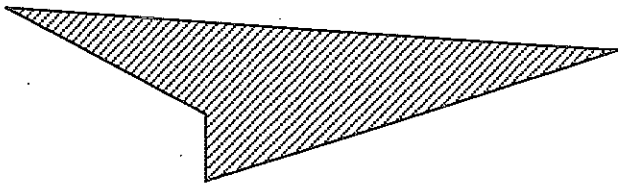


(b)



3. (a) Measure the four sides of this shape in centimetres.

(b) Calculate the difference between the longest and the shortest side.



4. How many **millimetres** is the sloping line longer than the horizontal line ?

5. Measure this line and write down its length in :-

(a) millimetres.

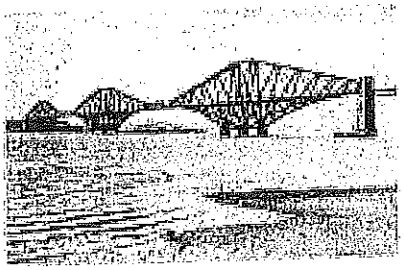
(b) centimetres.

(c) centimetres and millimetres.

6. Use your ruler to draw a RECTANGLE measuring 3·5 cm by 8·5 cm and measure the length of its diagonals.

Exercise 2

1. Write down how many :-
   (a) millimetres there are in 1 centimetre.
   (b) millimetres there are in 1 metre.
   (c) metres there are in 1 kilometre
   (d) centimetres there are in 1 metre.
   (e) centimetres there are in 1 kilometre.



2. How many millimetres are there in :-
   (a) 5 cm (b) 3 cm 2 mm (c) 17·5 cm (d) half a centimetre ?

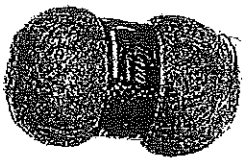
3. How many centimetres are there in :-
   (a) 60 mm (b) 400 mm (c) 7000 mm (d) 4 mm ?

4. How many centimetres are there in :-
   (a) 5 m (b) 250 m (c) 6 m 50 mm (d) 0·2 m ?

5. How many metres are there in :-
   (a) 900 cm (b) 3000 cm (c) 20 cm (d) 75 cm ?

6. How many metres are there in :-
   (a) 7 km (b) 9·3 km (c) 4 km 750 m (d) 0·4 km ?

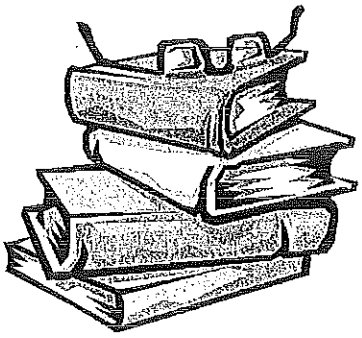
7. How many kilometres are there in :-
   (a) 3000 m (b) 200 m (c) 15 800 m (d) 900 000 m ?



8. A ball of wool is 1400 cm long. How long is this in metres ?

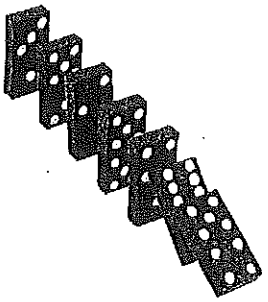
9. Put these four lengths in order, **smallest** first :-
   3 m 80 cm 3·08 m 360 cm 3·7 m

Exercise 3



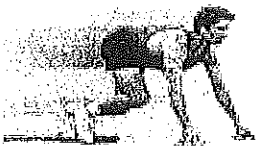
1. Hazel placed 4 books on top of each other.
   The books were 38 mm, 45 mm, 52 mm and 69 mm thick.
   (a) How high did the four books reach ?
   (b) Write this height in centimetres.


2. Jan had a bar of toffee 7 cm long. She bit off 35 mm from one end.
   (a) Change 7 cm to mm.
   (b) Now write down the length of the bar of toffee which was left (in mm).



3. Craig is making a trail with dominoes each 38 mm long.
   He uses 9 dominoes in his trail.
   What is the full length of the trail, in centimetres ?

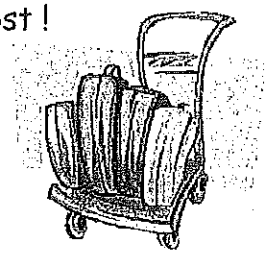
4. A pile of eight cassettes is stacked.
   The total thickness of the pile is 76 cm.
   If each cassette is the same size, find how thick one cassette is, in millimetres.



5. Alf came 2nd in the 100 metre race. A video "close-up" showed that he had run 96·7 metres when the winner had crossed the line.
   How many centimetres was Alf behind the winner ?

6. A tazo is 2·8 cm in diameter. I place 100 tazos in a straight line.
   How far will the line of tazos stretch, in metres ?

7. Seb is running in the 5 km race.
   He has already covered 3600 metres.
   How many **kilometres** has Seb still to run ?

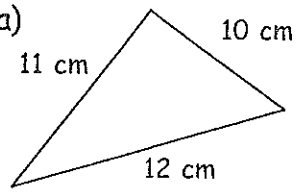


8. Mrs Jolly is off on holiday.
   625 km by air, 38 km by boat and 4·2 km by car - but now she's lost !
   Before she set off, her husband, Professor Jolly, had looked up the details of her journey on the Internet..... 668 km from home to the holiday house !
   How many metres is she now away from her holiday house ?

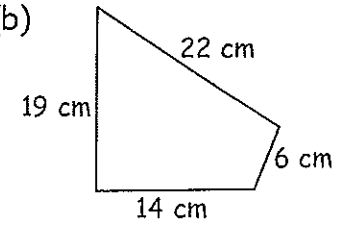
Exercise 4

1. Calculate the perimeter of each of the following shapes :-

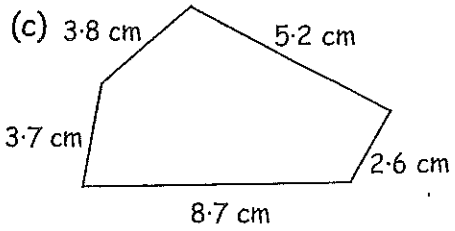
(a)



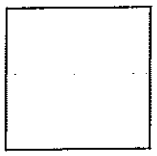
(b)



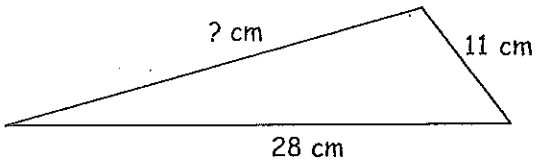
(c)



2. Calculate the **perimeter** of this square.



3.

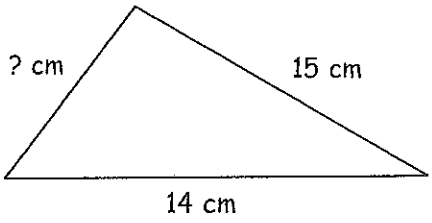


This triangle has a perimeter of 61 cm.

Calculate the length of the missing side.

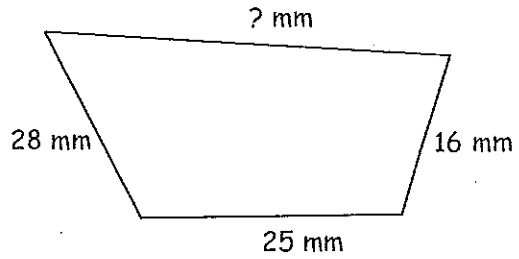
4. Calculate the length of the missing side in these two shapes :-

(a)



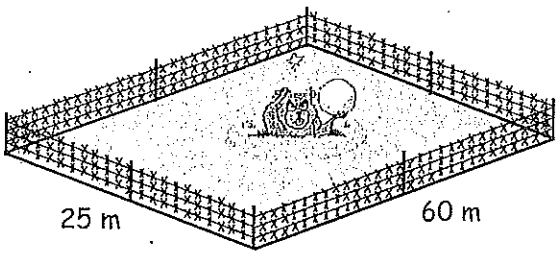
perimeter = 40 cm

(b)



perimeter = 106 mm

5.



Gophers are kept in a rectangular patch.

The patch is surrounded by 4 strands of electric wire.

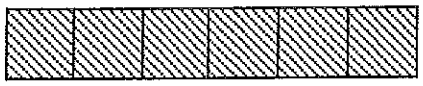
Electric wire costs £1·50 per metre.

Calculate the total cost of the wire.

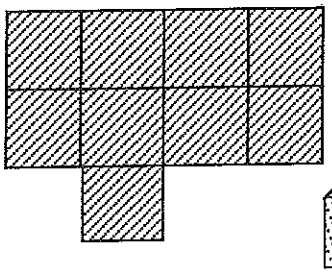
Exercise 5

1. Write down the areas (using cm^2) of each of the following shapes :-

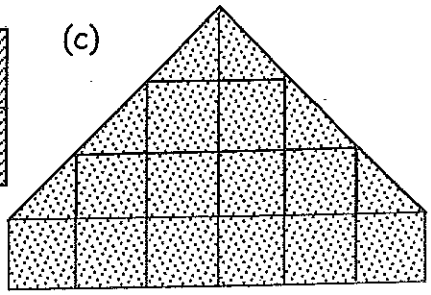
(a)



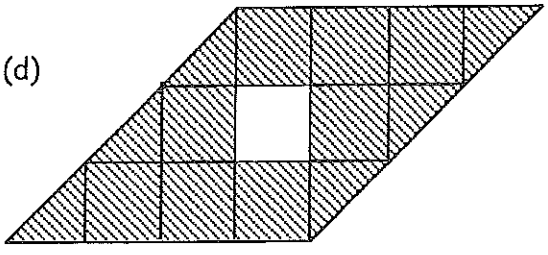
(b)



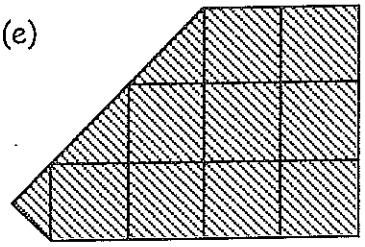
(c)



(d)



(e)

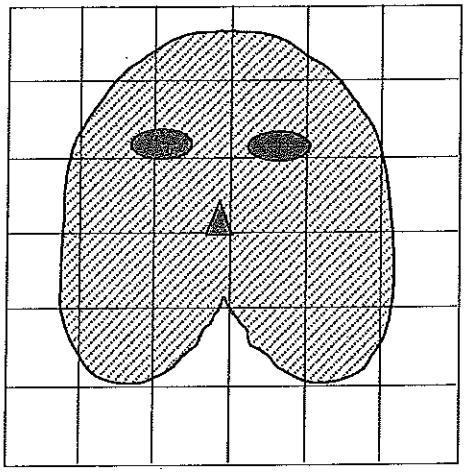


2. Estimate the areas of these 2 shapes as follows :-

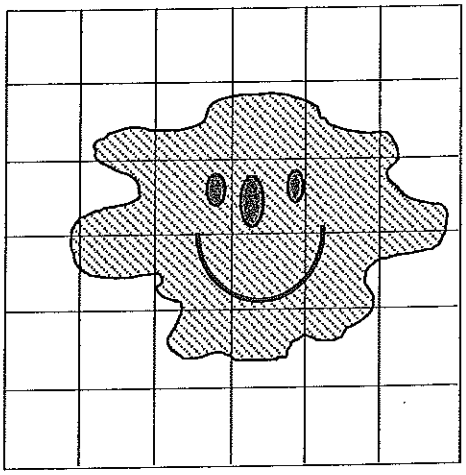
If more than $\frac{1}{2}$ a box is covered —> **count it** as 1 cm^2

If less than $\frac{1}{2}$ a box is covered —> **do not count it** at all.

(a)



(b)



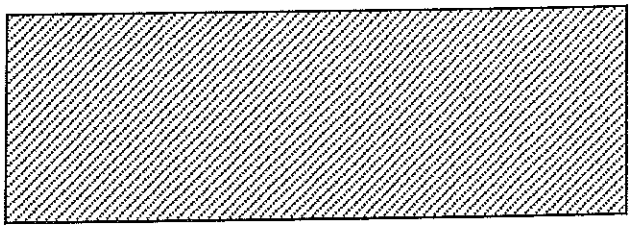
Exercise 6

1. Here is a sketch of a rectangle.

Use the formula

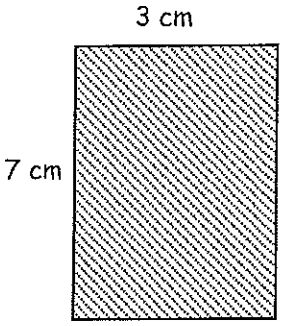
$$A = L \times B$$

to calculate its area (in cm^2).

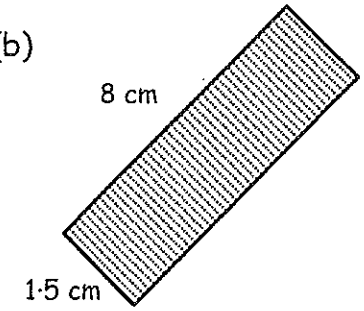


2. Calculate the area of each of the following shapes, using the correct formula :-

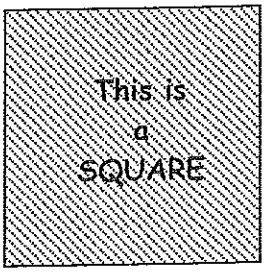
(a)



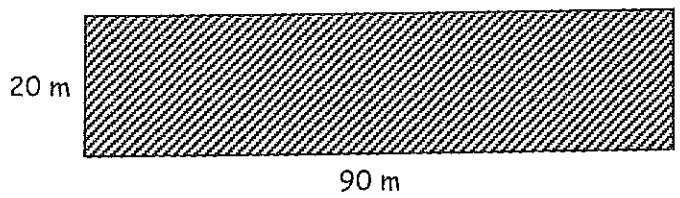
(b)



(c)

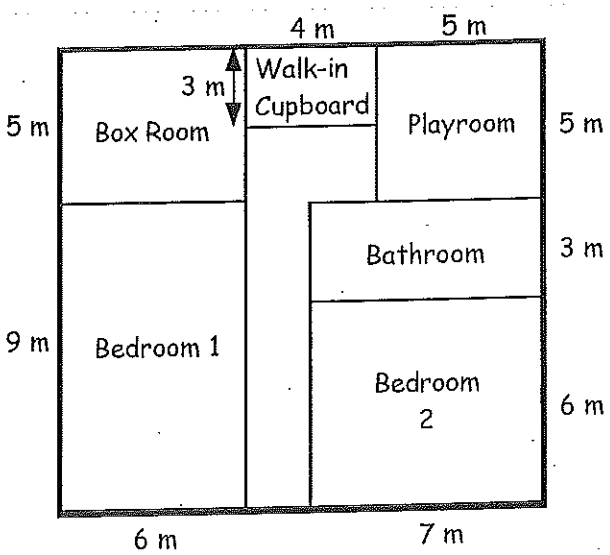


3. Calculate the area of this rectangular field :-



4. This plan shows the upper floor of a 2 storey house.

Calculate the area of each of the 6 rooms in m^2.



Area (Bedroom 2)	= L × B
	= 7 m × 6 m
	= ..... m^2.

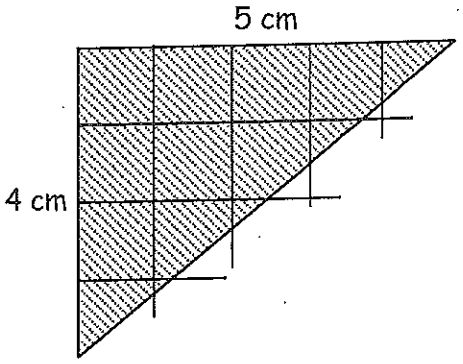
Exercise 7

1. (a) Make an accurate drawing of this right angled triangle.

(b) Complete the figure by drawing a rectangle around it.

(c) Calculate the area of the rectangle.

(d) Now write down the area of the triangle.

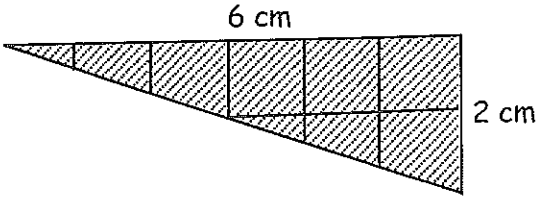


2. (a) Make an accurate drawing of this right angled triangle.

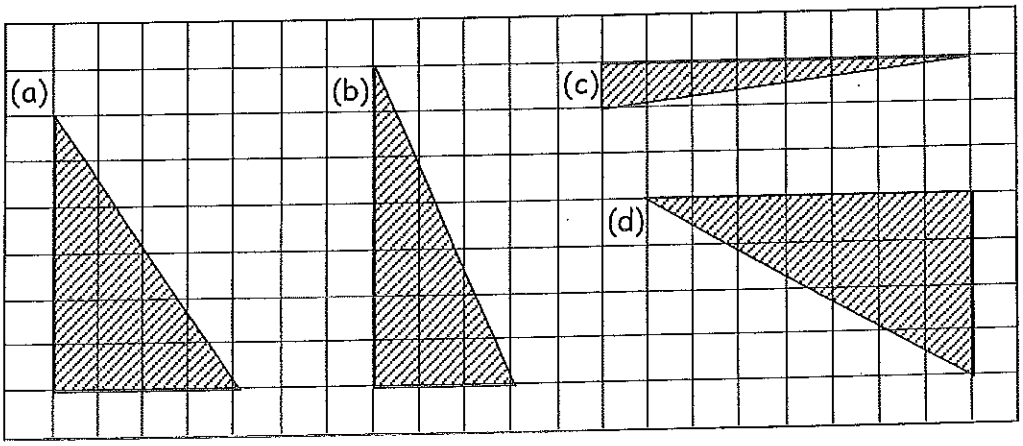
(b) Complete the figure by drawing a surrounding rectangle.

(c) Calculate the area of the rectangle.

(d) Now write down the area of the triangle.



3. Imagine a rectangle around each of these right angled triangles and calculate the area of each triangle.

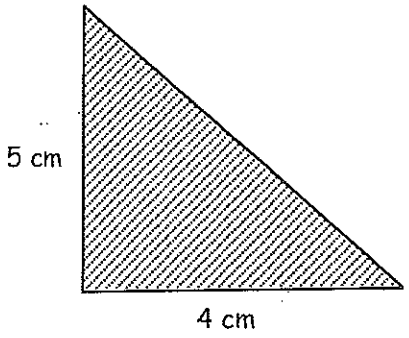


4. For these right angled triangles :-

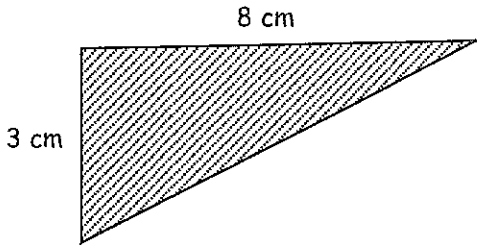
(i) Make an **accurate** drawing. (ii) Draw the surrounding rectangle.

(iii) Find the area of the rectangle. (iv) Calculate the area of the triangle.

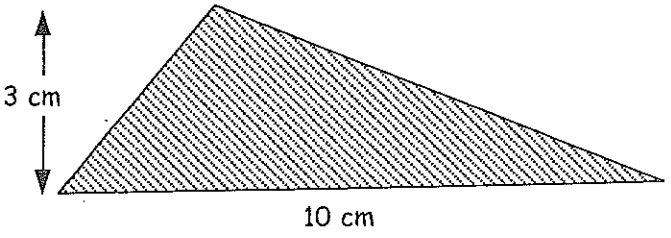
(a)



(b)



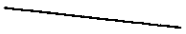
5. **Calculate** the area of this triangle :-



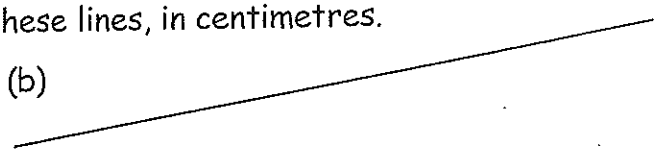
Revision Exercise

1. Using your ruler, measure the length of these lines, in centimetres.

(a)



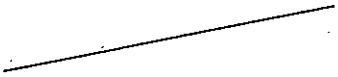
(b)



2. Write down the lengths of the following lines in :-

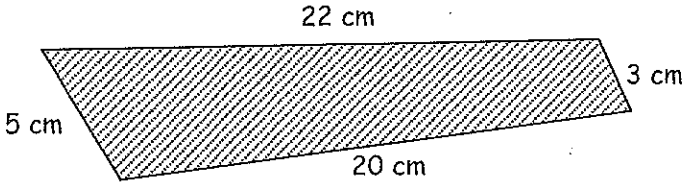
(i) millimetres (ii) centimetres (iii) centimetres and millimetres.

(a)



(b)

3. Calculate the perimeter of this shape :-



4. Change :-

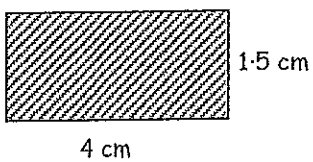
(a) 3·7 m to cm (b) 36 cm to mm (c) 4·9 km to m (d) 6 m 20 cm to cm.

5. Cheryl saws 70 cm off a 3 metre plank of wood.

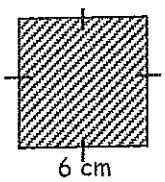
What length of wood (in cm) remains ?

6. Calculate the area of these shapes :-

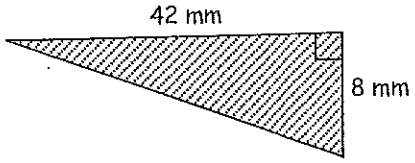
(a)



(b)



(c)



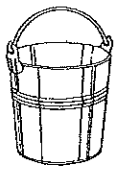
Chapter 15

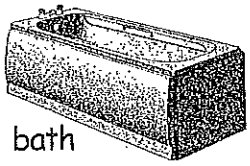
Volume & Weight

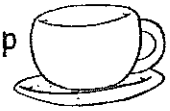
Exercise 1

1. Which would hold more water, a bucket or a glass ?

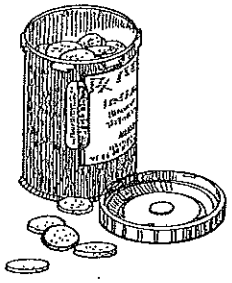
2. Put these in order, starting with the one which takes up the **least** space :-


bucket


bath

cup 

3. Lucy has an allergy. She takes **2 tablets, 3 times** a day.



a How many tablets does she take each day ?

b How many tablets would she take in a week ?

4. The recipe shown makes **ten** cherry muffins.

Recipe
for 10 cherry muffins

30 cherries (chopped)
Half Cup Water
3 Heaped Tablespoons Butter
1 Cup of Milk
6 Teaspoons Sugar
1 Teaspoon Salt
10 millilitres of golden syrup
3 Cups Self-raising Flour
2 eggs

a How much butter is used for 10 muffins ?

b What piece of cutlery is needed to measure out the sugar ?

c Amy needs to make **twenty** muffins.
How many cherries does she need ?

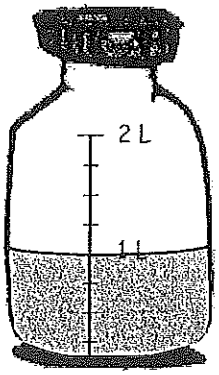
d Nick uses 6 eggs to make a batch of muffins.
How many muffins did Nick make ?

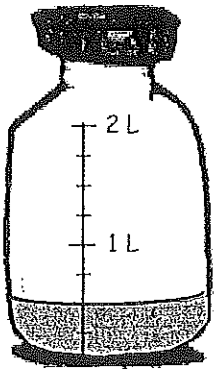
e How much syrup is needed for 30 muffins ?

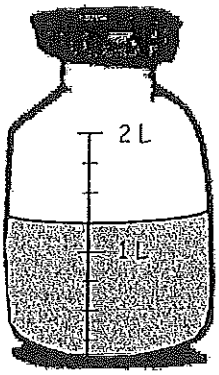
f How many cups of flour are needed for a batch of 50 muffins ?

Exercise 2

1. How many litres are in each bottle ?

a 

b 

c 

2. From the list opposite, write down which items normally hold :-

Bath	Thimble
Cup	Aquarium
Cola Can	Pond

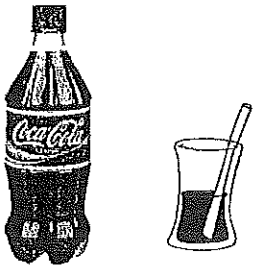
a more than a litre

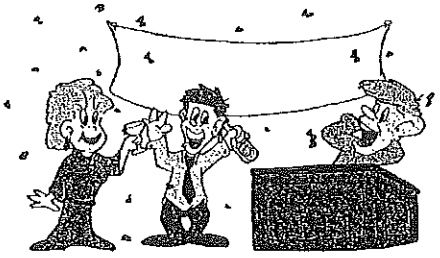
b less than a litre.

3. Nick has a **two litre** bottle of cola.

He fills a **half litre** glass from the bottle.

How much cola is left in the bottle ?



4. 

Ben makes 6 litres of punch for a party.

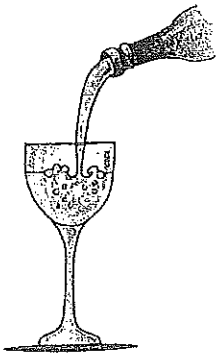
After the party there is only **three quarters of a litre** left.

How much punch was drunk at the party ?

5. A glass holds a **quarter of a litre** of wine.

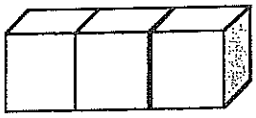
How many glasses can I pour from a bottle which holds :-

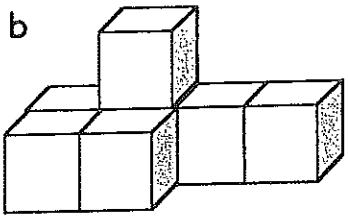
a 1 litre b $\frac{3}{4}$ litre c $1\frac{1}{2}$ litres.

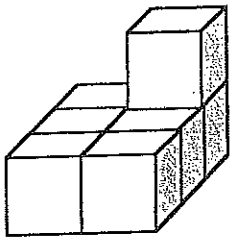


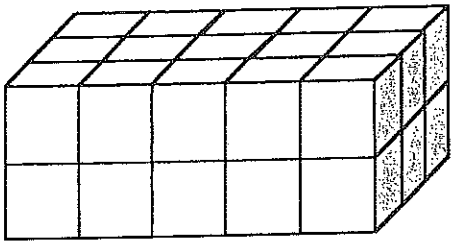
Exercise 3

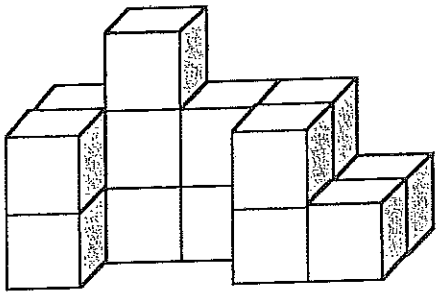
1. Count the number of cubic centimetres in each shape below :-

a 

b 

c 

d 

e 

2. Look at question 1.

   a Which has the largest volume ?

   b Which has the smallest volume ?

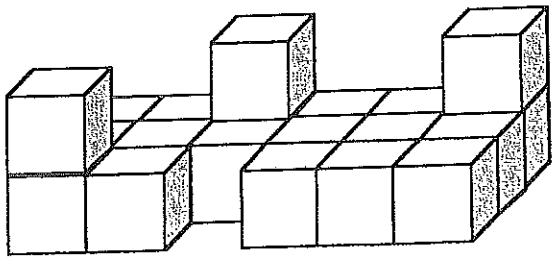
   c Which shapes have the same volume ?

   d How many cubic centimetres would be needed altogether to build **ALL** the shapes in question 1 ?

3. Ben has 24 cubic centimetre bricks in a box.

   Ben builds the shape shown.

   How many bricks would be left over ?



Exercise 4

1. Which is heavier, a tea bag or a bag of sugar ?

2. List these in order of weight, starting with the lightest :-

house, brick, pebble, garden slab

3. From the list, write down which items normally weigh :-

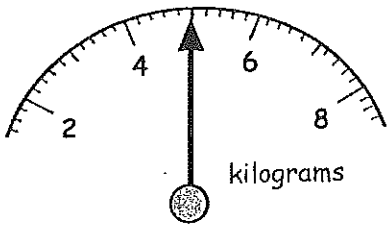
chocolate	truck
computer	watch
pebble	teacher

a more than a kilogram

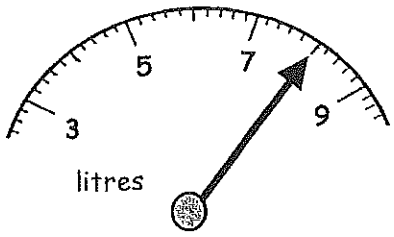
b less than a kilogram.

4. Write down the reading on each of these scales :-

a



b



Exercise 5

1. Write these weights in **grams** :- **(remember 1 kg = 1000 g)**

a 3 kg	b 6 kg	c 10 kg
d 5 kg 300 g	e 8 kg 25 g	f 1 kg 40 g
g 7 kg 8 g	h half kilogram	i 100 kg 10 g

2. Write each in **kilograms** or **kilograms <u>and</u> grams** :-

a 2000 g	b 7000 g	c 30 000 g	d 5800 g
e 2050 g	f 20 200 g	g 4550 g	h 11 011 g

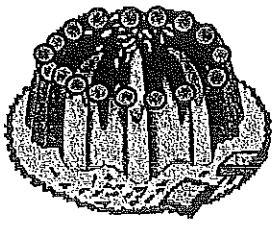
3. Lucy has 3 boxes.

- one weighs 1200 grams
- one weighs 1 kilogram 50 grams
- the last one weighs half a kilogram.

What is the total weight of the 3 boxes in grams ?

4. Mrs. Tee buys two and a half kilograms of sugar.
She uses 800 g in a cake recipe.

How much sugar does she have left ?



5. A sack holds 20 kilograms of potatoes.
A bag can hold 2 kg 500 g.

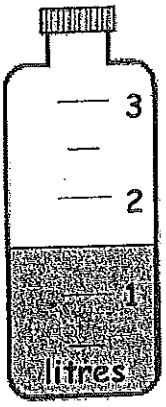
How many bags can I fill from the sack ?

Revision Exercise

1. Put these in order, starting with the one which holds the most :-

mug, basin, pond, bottle

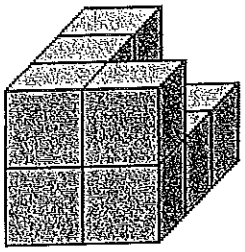
2. How many litres are in this bottle ?



3. A **half litre** is poured out of a **4 litre** bottle of juice.

How much juice is left in the bottle ?

4. How many cubic centimetre blocks are in the diagram shown ?



5. Write :-

a 9 kg in grams

b 1 kg 500 g in grams

c 2 kg 20 g in grams

d $\frac{1}{4}$ kilogram in grams

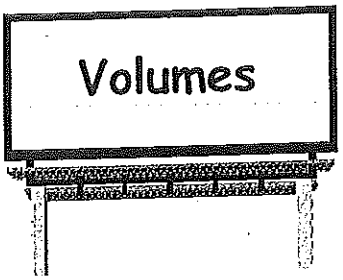
e 3000 grams in kg

f 10 300 grams in kg.

6. A large bag of potatoes weighs 6 kg 250 g.
A medium bag weighs half a kilogram **less**.

How much does a medium bag weigh ?

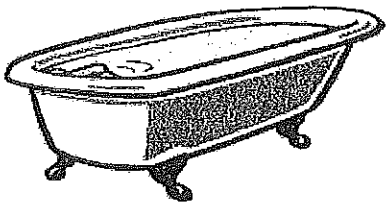
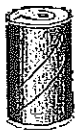
Chapter 17



Exercise 1

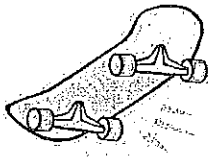
1. Which of these household items holds most liquid when full ?



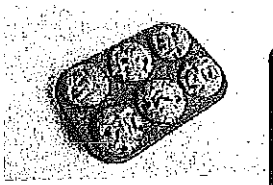



2. Put these items in order, starting with the one which holds the least.
   (a) Mug, Kettle, Spoon, Bucket (b) Barrel of beer, Cola can, 2 litre bottle.

3. Put these items in order, starting with the one which takes up the most space.
   (a) Loaf of bread, tin of beans, a garden pea, fridge.
   (b) Bicycle, truck, car, skateboard, jumbo jet.

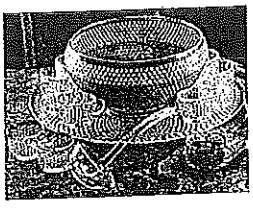


4. Shown is a recipe to make 6 scones.
   (a) How much sugar is used ?
   (b) Which piece of cutlery is used to measure out the butter ?
   (c) What does the recipe use less of - salt or sugar ?
   (d) If I have enough ingredients to make 18 scones, how much flour do I have ?
   (e) I want to make 24 scones for a tea party.
   List the total ingredients that I need.

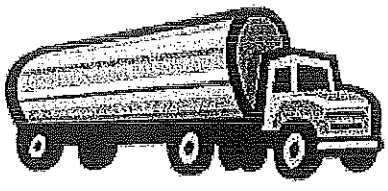


3 cups of self-raising flour
2 teaspoons of sugar
4 tablespoons of butter
half cup of milk
half cup of water
half teaspoon salt

5. A punch bowl can hold 16 ladlefuls.
   A ladle can hold 10 spoonfulls.
   How many spoonfulls can the bowl hold ?



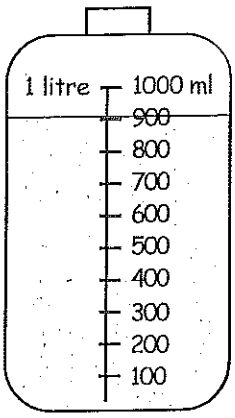
6. It takes 2 tankers three trips each to fill a large vat of milk.
   Each tanker carries 50 barrels of milk.
   (a) How many barrels of milk does the vat hold ?
   (b) If it takes 40 cows to fill a barrel, how many cows would it take to fill a vat ?

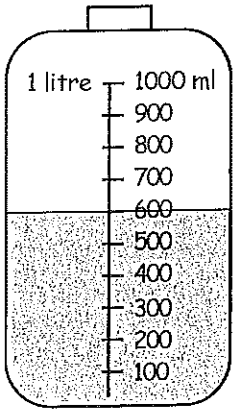


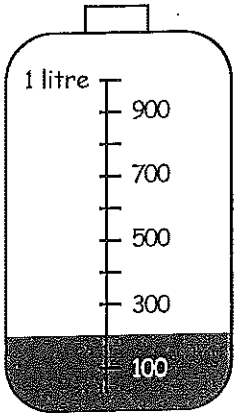
Exercise 2

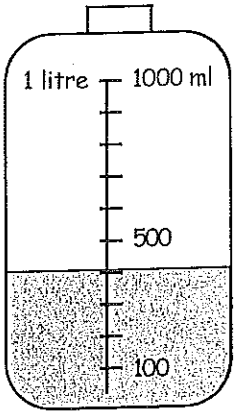
1. Copy and complete :- "One litre is equal to ..... millilitres".

2. What is the volume of coloured water, (in millilitres), in each bottle ?

(a) 

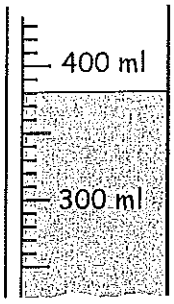
(b) 

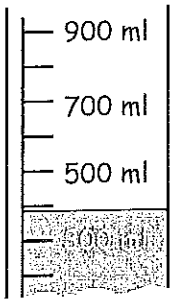
(c) 

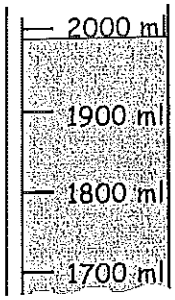
(d) 

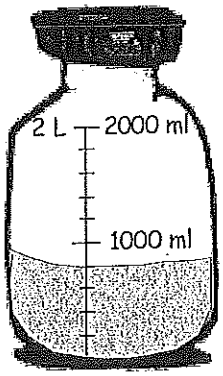
3. (a) Which bottles contain less than half a litre ?
   (b) How many millilitres do I need to top-up the bottle in Q2(c) to one litre ?
   (c) If I pour all four bottles into a 2 litre jug would the water overflow ? (Explain your answer).

4. Write each of these volumes to the nearest 100 ml :-

(a) 

(b) 

(c) 

(d) 

Exercise 3

1. Change the following number of litres to millilitres :-

(a) 1 litres	(b) 2 litres	(c) 6 litres	(d) 10 litres
(e) 2·5 litres	(f) 4·7 litres	(g) 0·3 litres	(h) 0·05 litres

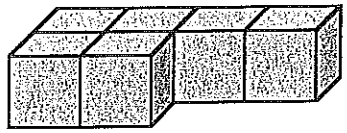
2. Change from millilitres to litres :-

(a) 3000 ml	(b) 9000 ml	(c) 20 000 ml	(d) 50 000 ml
(e) 1500 ml	(f) 9400 ml	(g) 100 000 ml	(h) 5810 ml

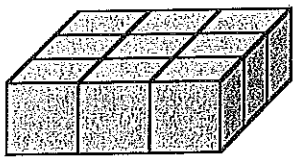
Exercise 4

State the volume of each of the following shapes, (in cm^3) :-

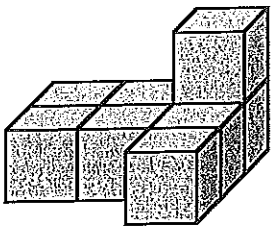
1.



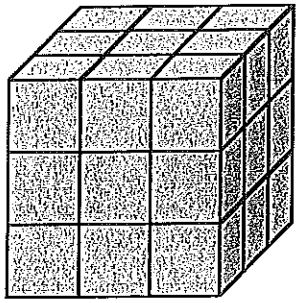
2.



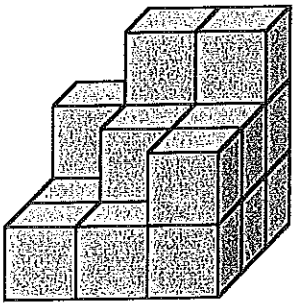
3.



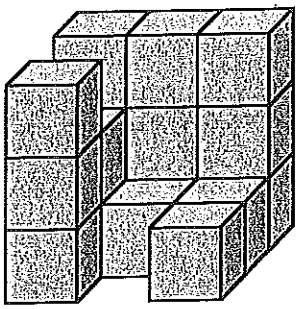
4.



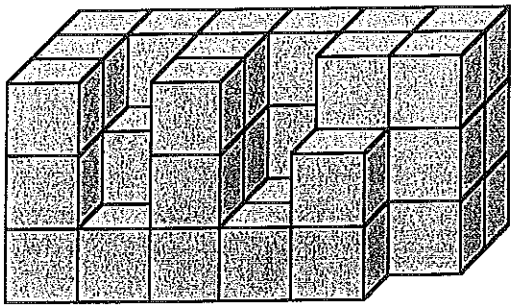
5.



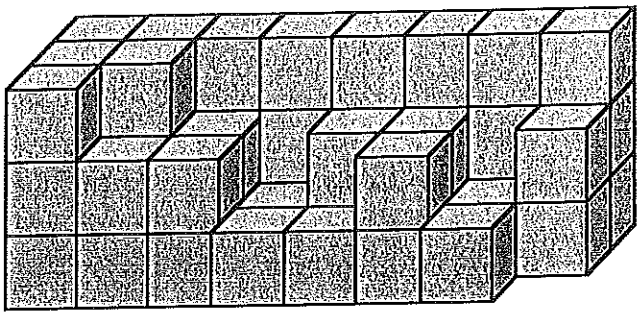
6.



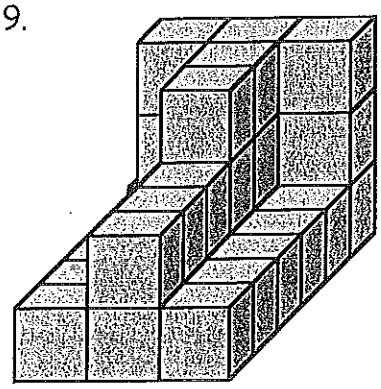
7.



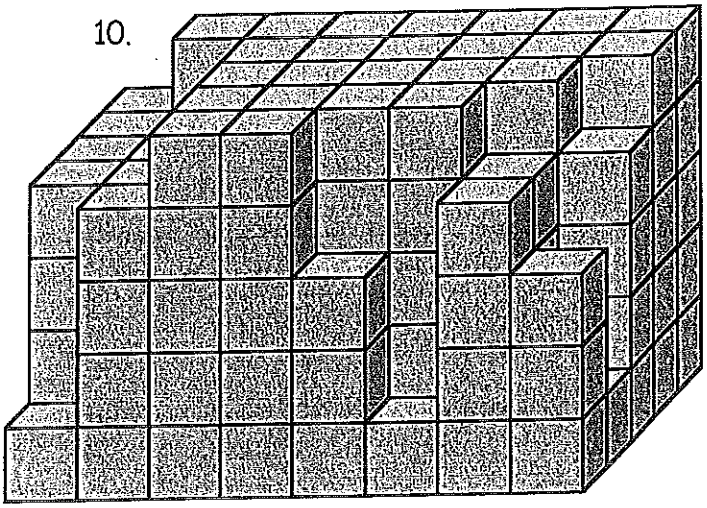
8.



9.



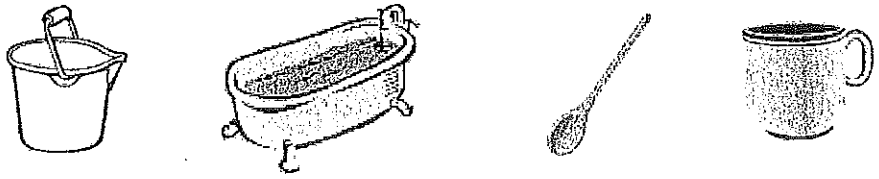
10.



11. How many **more** cubes would you need to be able to complete the cuboid shape from shape 10 ?

Revision Exercise

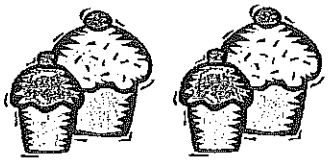
1. Put these shapes in order, starting with the one that has the greatest volume.

   (a) 

   (b) Tin of soup, bottle of wine, medicine spoon, basin.

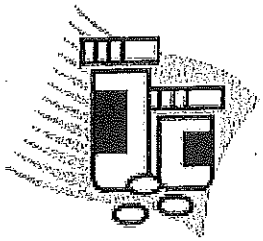
2. A recipe needs 50 grams of butter to make 4 fairy cakes.

   How many grams of butter is need to make 12 fairy cakes ?



3. Ben has to take 2 tablets three times a day for one week to cure his cough.

   How many tablets will Ben take in the week ?

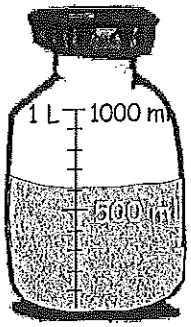


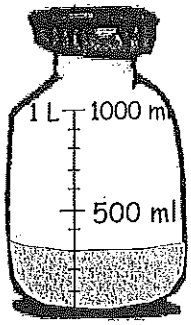
4. A large basin can hold 8 jugfulls.
   A jugfull can hold 9 cupfuls.
   A cup can hold 100 millilitres.

   (a) How many millilitres does the jug hold ?

   (b) How many litres does the basin hold ?

5. What is the volume of liquid in each bottle ?

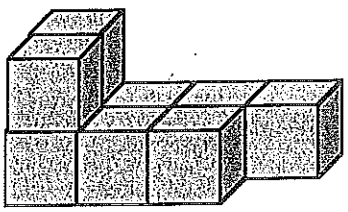
   (a) 

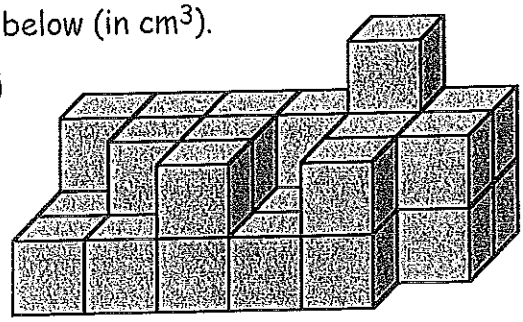
   (b) 

6. Look at the diagram in question 5 (a).

   How much more liquid would you need to make it up to one litre.

7. Write down the volume of each shape below (in cm^3).

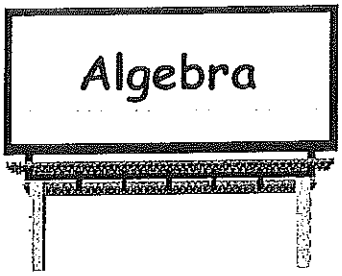
   (a) 

   (b) 

8. (a) Change to millilitres :- (i) 5 litres (ii) 10 litres (iii) 5·1 litres

   (b) Change to litres :- (i) 3000 ml (ii) 50 000ml (iii) 400 ml

Chapter 7



Exercise 1

1. Copy each of the following and find what ? stands for each time :-

   (a) 3 + ? = 8 => ? = ...

   (b) 12 - ? = 9 => ? = ...

   (c) ? x 4 = 12 => ? = ...

2. Find the value of ? in each of the following :-

   (a) 9 + ? = 17 (b) 7 + ? = 7 (c) 23 + ? = 32

   (d) 10 - ? = 9 (e) ? - 5 = 10 (f) ? - 16 = 10

   (g) 4 x ? = 28 (h) ? x 7 = 42 (i) ? ÷ 4 = 6

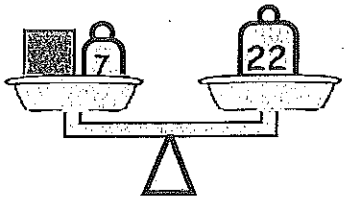
3. In each of the following, the dots ..... stand for +, -, x or ÷.
   Decide which symbol is needed each time here :-

   (a) 7 ..... 3 = 4 (b) 14 ..... 3 = 17 (c) 6 ..... 2 = 12

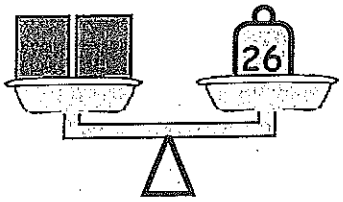
   (d) 12 ..... 3 = 4 (e) 5 ..... 1 = 5 (f) 25 ..... 5 = 5

4. Look at the scales shown below and find the weight of each box :-

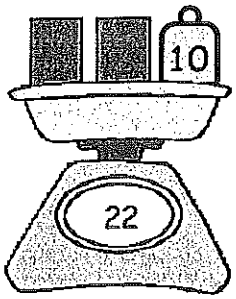
   (a)



   (b)



   (c)



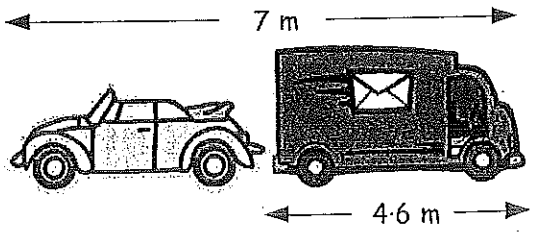
5. Use the signs +, -, x or ÷ to find :-

   (a) 17 using all of the numbers (1, 3, 6)

   (b) 23 using all of (1, 2, 3, 4)

   (c) 50 using all of (2, 2, 10, 15)

6. Form an equation and find the length of the car.



7. Gary and Bob weigh a total of 112 kilograms.
   Gary weighs 61 kilograms.

   (a) Make up an equation to show this information.

   (b) Solve the equation to find Bob's weight.

Exercise 2

1. Copy each equation and solve it to find the value of x :-

   (a) $x + 7 = 12$ (b) $x + 12 = 14$ (c) $11 + x = 23$

   (d) $8 - x = 3$ (e) $x - 2 = 5$ (f) $x - 12 = 14$

   (g) $4 \times x = 12$ (h) $5 \times x = 35$ (i) $20 \div x = 5$

2. Copy each of the following and find the missing values each time :-

   (a) $y + 3 = 12$ (b) $p - 13 = 11$ (c) $6 \times k = 42$

   (d) $w \div 6 = 6$ (e) $g \times 8 = 72$ (f) $w \div 10 = 20$

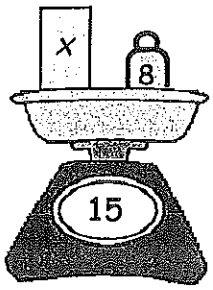
   (g) $q \times 7 = 0$ (h) $36 \div h = 9$ (i) $24 \div q = 1$

3. For each of the following :-

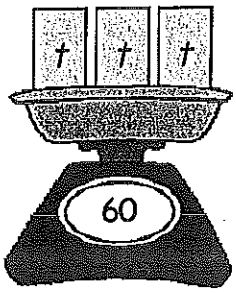
   (i) make up an equation using the letter shown

   (ii) solve the equation to find the value of the letter.

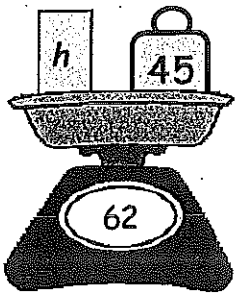
(a)



(b)

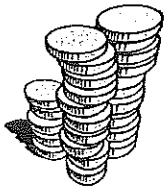


(c)



4. (a) Brad had some money in his pocket.
   When he put a further £3·50 in his pocket he then had a total of £9.

   Make up an equation and solve it to find
   how much money Brad had originally.

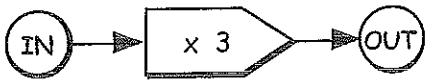


   (b) Barry shared equally 24 sweets between himself and his three friends.

   Make up an equation and solve it to find how many sweets each person will get.

Exercise 3

1. Look at the function machine.



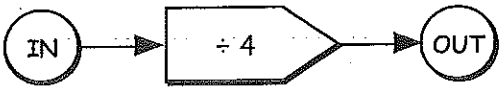
   (a) What comes out when you put in the number :-

   (i) 7 (ii) 10 (iii) 50 (iv) 1·2 (v) 0 ?

   (b) What number must have been put in to produce the answer :-

   (i) 6 (ii) 30 (iii) 3000 (iv) 6·3 (v) 9 ?

2. Here is a new function machine.



(a) What comes out of this machine when you put in the number :-

(i) 8 (ii) 20 (iii) 4 (iv) 28 (v) 4·8 ?

(b) What number must have been put in to produce the answer :-

(i) 10 (ii) 30 (iii) 50 (iv) 1·2 (v) 1000 ?

3. The instructions on how long to cook a roast states :-

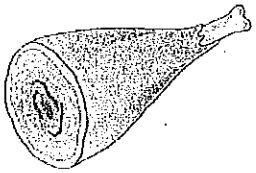
" for each kilogram, cook for 1 hour, then add 1 hour".

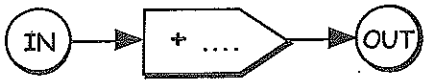
This can be shown in the table :-

Weight (kg)	1	2	3	4	5	6
Time (hours)	2	3	...	...	...	...

(a) Copy the table and complete it.

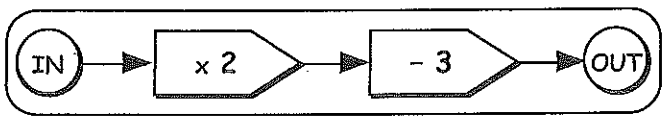
(b) Copy and complete this function machine to show your rule.



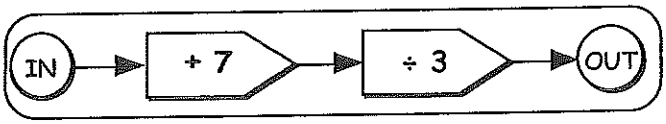
(no. of kg) 

(no. of hours)

4. Shown are two combined function machines.



Machine A



Machine B

What numbers come out of the machines when the following are put in :-

(a) 5 in machine A (b) 2 in machine B (c) 10 in machine A

(d) 14 in machine B (e) 50 in machine A (f) 29 in machine B ?

5. If the number 23 comes out of machine A in question 4, what number was put in ?

6. RENT-a-CABIN rent out cabins that cost £15 to hire plus £10 for each hire day.

(a) Copy and complete this table using a function machine to help you show "RENT-a-CABIN"' charges.

No. of days hired	1	2	3	4	5	6
Total hire cost	...	£35	£45	...	...	...

(b) How much would it cost to hire a cabin for two weeks ?

Revision Exercise

1. What number does "?" stand for each time :-

   (a) 6 + ? = 11 (b) 12 - ? = 4 (c) 27 + ? = 36 (d) ? - 12 = 11

   (e) 21 ÷ ? = 7 (f) 5 x ? = 30 (g) ? x 7 = 42 (h) ? ÷ 3 = 30

2. Which symbol (+ - ÷ x) is missing in each of these :-

   (a) 6 ..... 2 = 8 (b) 5 ..... 3 = 15 (c) 17 ..... 12 = 5 (d) 15 ..... 5 = 3

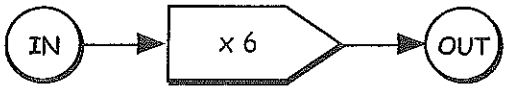
3. Solve each equation :-

   (a) x + 4 = 11 (b) y - 4 = 11 (c) h x 4 = 24 (d) k ÷ 8 = 7

4. Bob is 28 years old. Jenny is * years old.
   Jenny and Bob's combined age is 53.

   Make up an equation using * and solve it to find Jenny's age.

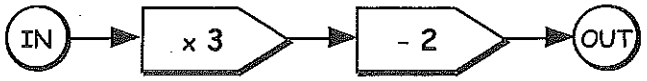
5. Look at the number machine.



   (a) What number comes out when 7 is put into the machine ?

   (b) What number was put in if 30 comes out of the machine ?

6. Look at this combined number machine.



   (a) What number comes out when 8 is put into the machine ?

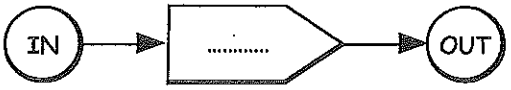
   (b) What number was put in if 31 comes out of the machine ?

7. A bar stool has 4 legs.

No. stools	1	2	3	4	5	6
No. legs	4	8	...	...	...	...

   (a) Copy the table showing the total number of legs.

   (b) Make up a function machine to show how to calculate the number of legs, given the number of stools.



8. A Car Hire company charges £20, plus £10 per day.

No. Days	1	2	3	4
Cost (£)	£30	£40		

   (a) Copy and complete the table to show the total charges.

   (b) Make up a function machine to show how you would calculate the charges.

   (c) Use the function machine to find the total cost of car hire for two weeks.