SCALE DRAWING

We use scale drawings to show an accurate plan of something.

Look at the scale drawing on the next page. It shows you the layout of a house.

The scale used is 1cm to 1m
Every 1cm used on the plan shows 1cm in real life.

A. First measure the length and width of all the rooms in cm. Then you can work out the real life length and width using the scale **1cm to 1m.**

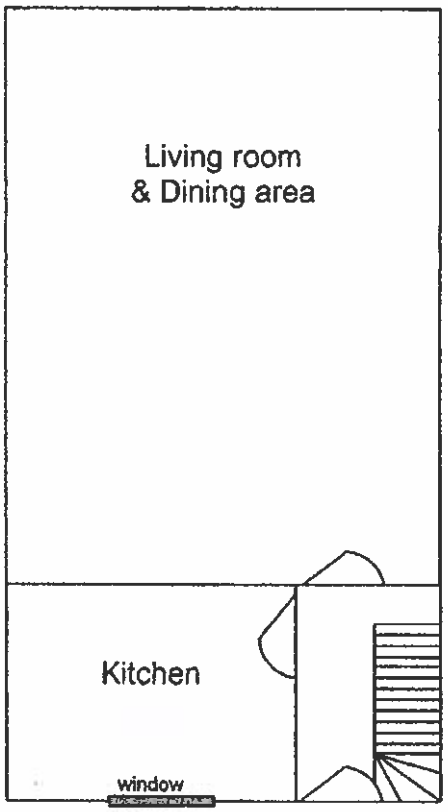
The first one is done for you: in the plan the kitchen measures 4cm long and 3cm wide so in real life it will be

	actual length	*actual width*
Kitchen	4m	3m
Living room	.....	.....
Bedroom 1	.....	.....
Bedroom 2	.....	.....
Bedroom 3	.....	.....
Hall (downstairs)	.....	.....

If you feel comfortable with this mark in these things on the plan.

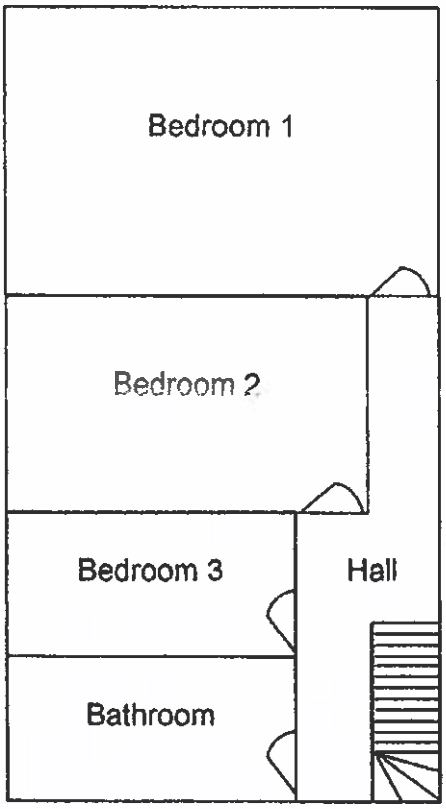
A table in the living room 1.5m by 1.5cm

A window in each room (all measuring between 1m and 2.5m). One is done for you in the kitchen.



Ground floor

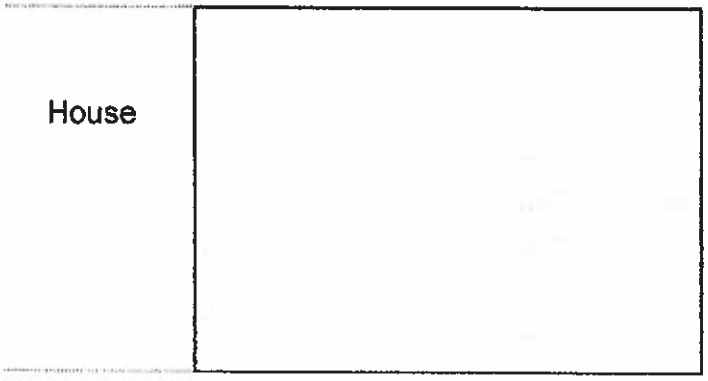
Scale 1cm = 1m



First floor

Scale 1cm = 1m

Now look at this scale drawing of Pauline's back yard.
The scale is still 1cm to 1m.



How long is Pauline's yard in real life?
How wide is Pauline's yard in real life?
Plan her yard, drawing in and labelling these things (remember 100cm in 1m).

- 2 steps from the house each 50cm (0.5m) wide
- A shed 1m wide and 2m long
- 2 flower beds 1m long and 0.5m wide
- 1 cherry tree 2m by 1.5m
- Plant pots 1 diameter 50cm
  2 diameter 30cm
  1 diameter 75cm

B. The scales we use may change.
Fill in these tables to work out the real measurements.
A few are done for you.

1)

	1cm	*to*	*2m*	
	2cm	:	____	
	4cm		____	
drawing	5cm		____	real life
	10cm		20m	measurement
	$\frac{1}{2}$cm		____	
	$\frac{1}{4}$cm		____	

2)

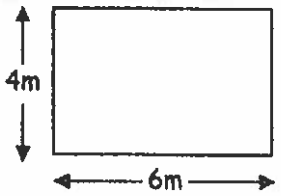
	1cm	*to*	*5m*	
	2cm	to	____	
	4cm	to	20m	
	10cm	to	____	
drawing	50cm	to	____	real life
	0.5	to	____	measurement
	0.2	to	1m	
	0.1	to	____	

3)

	1cm	*to*	*50cm*	
	2cm	to	____	
	3cm	to	1m 50cm	
	8cm	to	____	
drawing	15cm	to	____	real life
	0.5cm	to	____	measurement
	0.1cm	to	____	
	0.3cm	to	____	
	0.9cm	to	____	
	50cm	to	____	

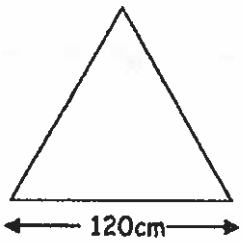
All these shapes have been drawn to scale.
The measurements (shown) show show the actual measurements.
Try and work out what scale has been used. (You will need to measure each shape first.)

4)



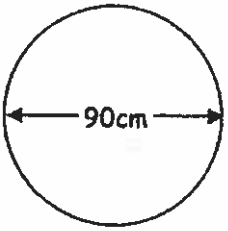
Scale 1cm to ___m
or 1cm : ___ cm

5)



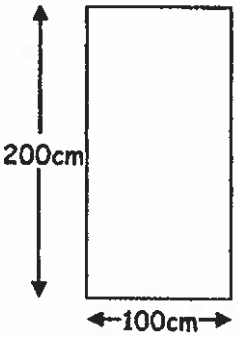
Scale 1cm : ___ cm

6)



Scale 1cm : ___ cm

7)



Scale 2cm : ___ cm
or 1cm : ___ cm

8) Tony and Karen have moved house. They want to put in some new kitchen units, their old appliances and a second hand table and chairs.

First they make a plan of the kichen (see page 43)
The scale is 1:20

So for every 1cm on the plan there are 20cm in real life.

- How long is the kitchen?
- How wide is the kitchen?
- How long is the window?

Next they plan what they want to fit in the kitchen.
Change these measurements into cm (10mm = 1cm)

Sink unit	1000mm	=	_____ cm
2 door unit	800mm	=	_____ cm
1 door unit	400mm	=	_____ cm
Drawers	500mm	=	_____ cm
1 door cupboard	500mm	=	_____ cm
Cooker	550mm	=	_____ cm
Washing machine	600mm	=	_____ cm
Table	1500mm long	=	_____ cm
	860mm wide	=	_____ cm

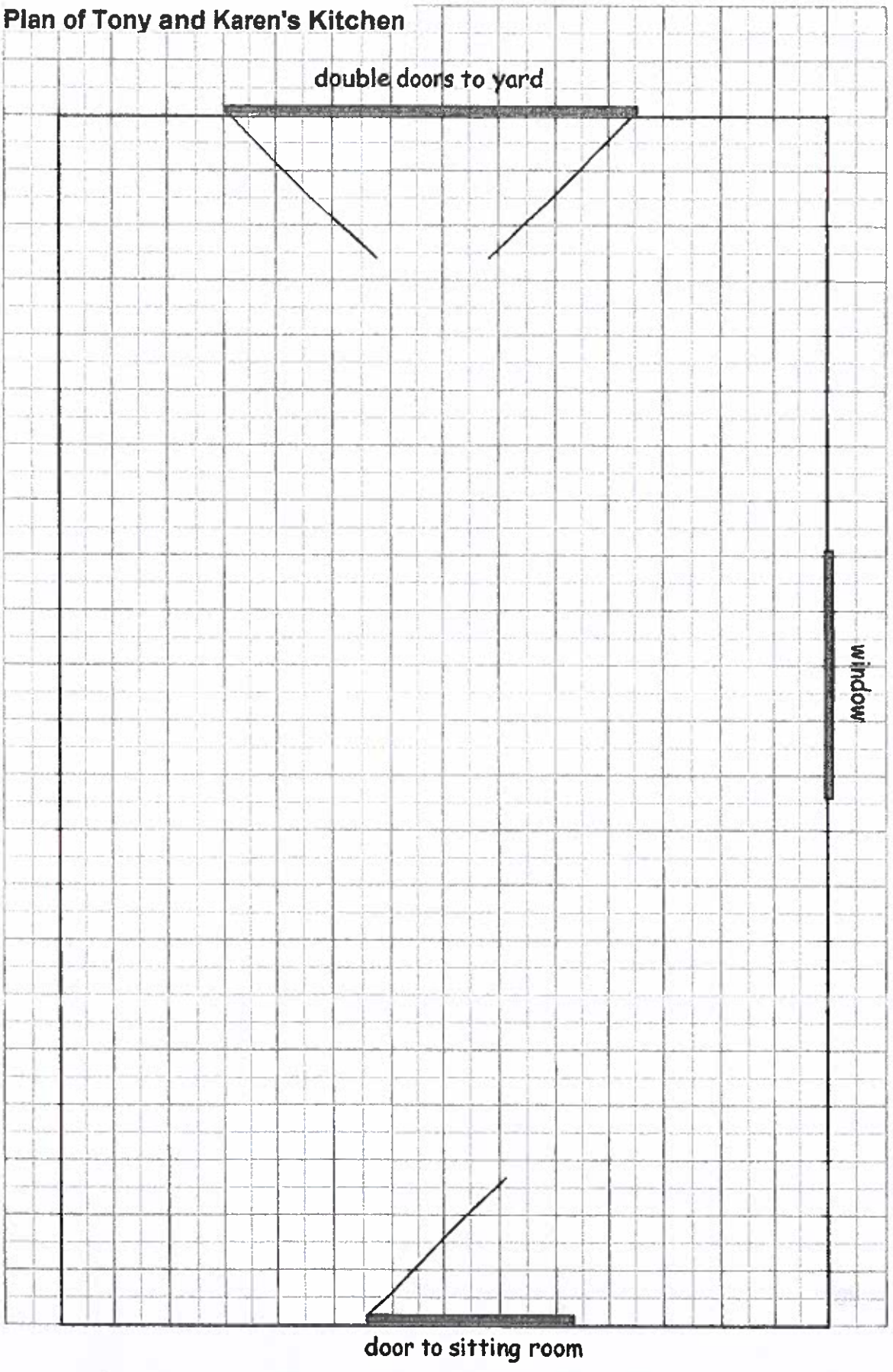
- Now sketch in all the units and appliances on the plan.
  Remember the scale is 1:20
  (Hint: draw in pencil in case you want to change it later.)

Here are some things you should remember when planning a kitchen.

* If possible the sink should be under a window
* The fridge should not be next to the cooker
* The washing machine should be near the sink (for water and drainage)
* Don't forget to leave room for chairs around the table

- Does it all fit in?

Plan of Tony and Karen's Kitchen



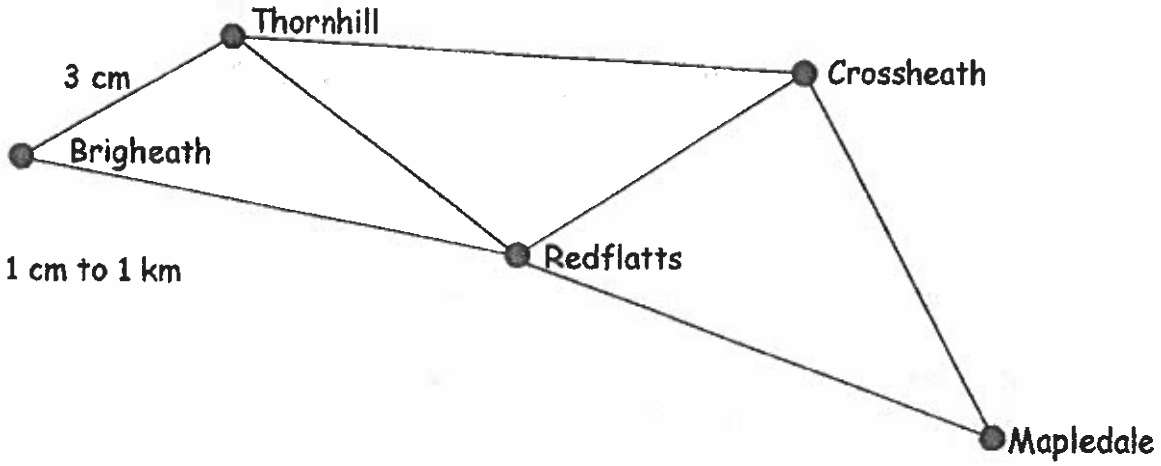
MAPS AND SCALES

Maps use different scales from room plans or models. They are less detailed and are usually a smaller scale (they show less information in each cm).

Look at this map.

The scale is 1 cm to 1 km.

For every 1cm on the map there is 1 km in real life.



A.

1). Fill in this grid to show the actual distances between these villages. The first one is done for you.

Brigheath

3km	Thornhill		
		Redflatts	
			Crossheath
			Mapledale

You will see maps in lots of different scales.
A large scale map (like a map of your street) will show more detail than a small scale map (like a map of your county)..

2) Put these scales in order of size - smallest first.

Map of Scotland	1cm to 20km
Plan of your street	1cm to 4m
Map of West Yorkshire	1cm to 500m (0.5km)
Map of the world	1cm to 500km
A-Z of London	1cm to 250m

A scale can be written in different ways.

As a statement using different units	1 cm to 500 m	
As a ratio, using the same units	1 cm : 50 000 cm or 1 : 50 000	1m=100cm 500m x 100=50 000cm

We can only write it as a ratio when using the same units

Here is another example

A statement using different units	1 cm to 1 km	
A ratio using the same units	1 cm : 100 000 cm or 1 : 100 000	1 km = 1000m 1m = 100cm

3) Try writing these scales as a ratio.

(a) 1cm to 2km = 1 : _____

(b) 1cm to 5km = 1 : _____

(c) 1cm to 400m = 1 : _____

Remember
1m = 100cm
1km = 1000m

4) Try writing these ratios as statements (cancel down the scale)

(a) 1 : 25 000 = 1cm to _____ m or _____ km

(b) 1 : 10 000 = 1cm to _____ m

(c) 1 : 500 000 = 1cm to _____ km

B. Now try these

1) A map has a scale of 1 : 25 000

(a) What is this in kilometres?

The distance between the shop and the pub is 2cm on the map.

(b) What is the actual distance?

The distance between the shop and the sports centre is 4cm on the map.

(c) What is the actual distance?

2) On a map the scale is 1cm to 2km.
What distance is represented by:

(a) 2cm?

(b) 5cm?

(c) 8cm?

(d) 2.5cm?

What distance on the map shows:

(e) 6 km?

(f) 14 km?

(g) 3 km?

(h) 11 km?

3) Fill in these conversions

1cm	**to**	**1 km**	=	1cm	:	_____ cm
2cm	to	____ km	=	2cm	:	_____ cm
5cm	to	____ km	=	5cm	:	_____ cm
10cm	to	____ km	=	10cm	:	_____ cm
2.5cm	to	____ km	=	2.5cm	:	_____ cm
7.5cm	to	____ km	=	7.5cm	:	_____ cm
1cm	to	200 m	=	1cm	:	_____ cm
2cm	to	____ m	=	2cm	:	_____ cm
5cm	to	____ m	=	5cm	:	_____ cm
½ cm	to	____ m	=	½ cm	:	_____ cm
2.5cm	to	____ m	=	2.5 cm	:	_____ cm
1cm	to	5 km	=	1cm	:	500 000 cm
2cm	to	____ km	=	2cm	:	_____ cm
0.5cm	to	____ km	=	0.5cm	:	_____ cm
0.1cm	to	____ km	=	0.1cm	:	_____ cm