



S2

CFE Level 3

Working at Home Workbook

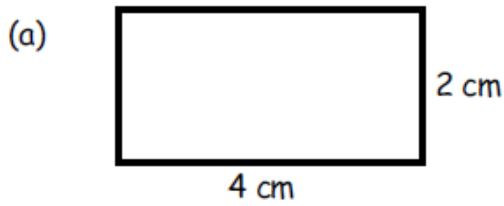
Scale Drawings

<b>Learning Intention. To be able to -</b>
Enlarge or reduce the size of a shape
Calculate the real length of an object from a scale drawing
Create a fairly basic scale drawing
Make scale drawings using a protractor
Create scale drawings involving bearings

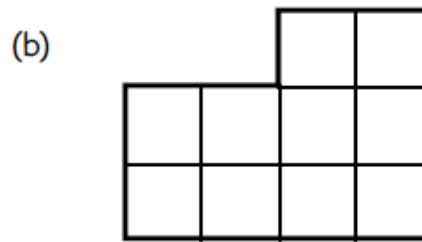
**Enlarge or reduce the size of a shape**

Questions 1

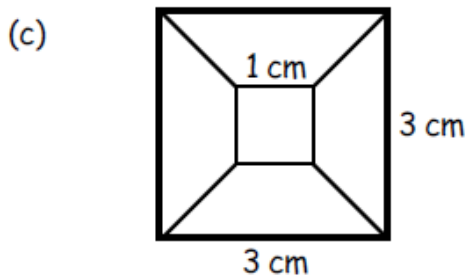
Make enlargements or reductions of the following using the given scale:



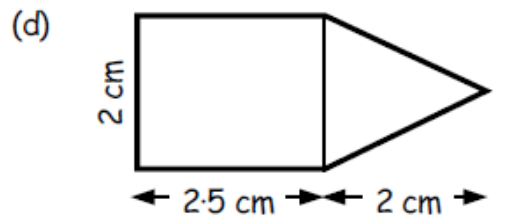
make a **three times** enlargement.



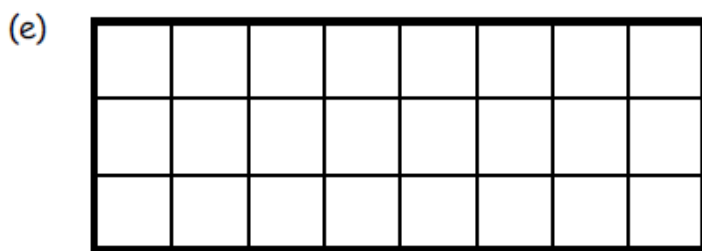
make a **four times** enlargement.



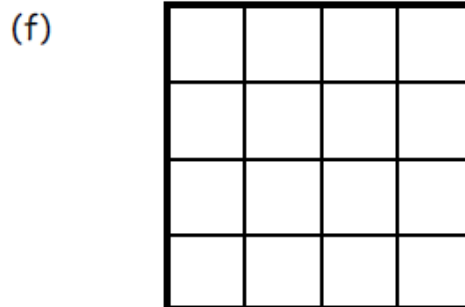
make a **three times** enlargement.



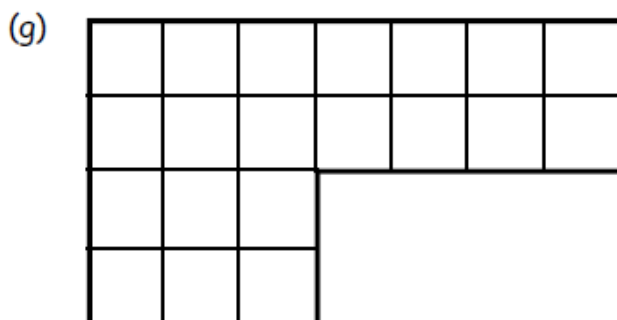
make a **four times** enlargement.



reduce this shape to **half** its size.



**half size**



make this **half size**.

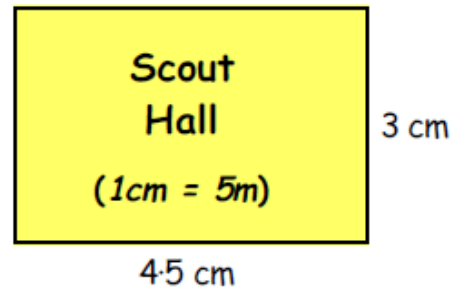
Calculate the real length of an object from a scale drawing

Questions 2

1. This scale drawing of a scout hall is drawn to a scale of :-

$1\text{cm} = 5\text{m}$

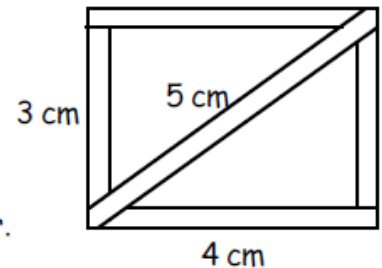
- (a) Calculate the **REAL** width of the hall.
- (b) Now calculate the **REAL** length of the hall.



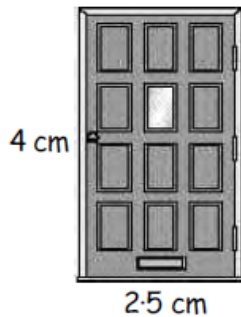
2. This drawing of a garden gate is done using a scale :-

$1\text{cm} = 20\text{cm}$

- (a) Calculate the **REAL** width of the gate (... x 20)
- (b) Calculate the **REAL** height of the gate.
- (c) Calculate the real length of the diagonal support bar.



- 3.



This door has been drawn to a scale of :-

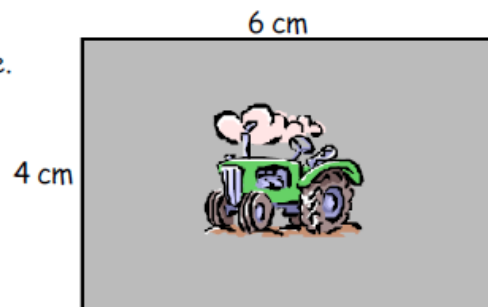
$1\text{cm} = 50\text{cm}$

- (a) Calculate the real height of the door.
- (b) Calculate the real width of the door.

4. Farmer Giles' field is in the shape of a rectangle.

The scale is :-  $1\text{cm} = 15\text{metres}$ .

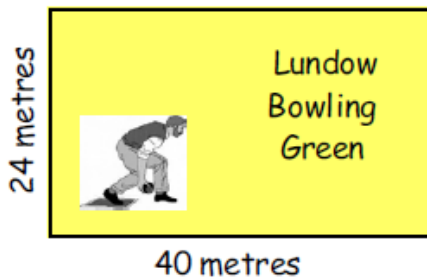
- (a) Calculate the real length and the real breadth of the field.
- (b) Calculate the **perimeter** of the field.



**Create a fairly basic scale drawing**

Questions 3

1.



This is a sketch of Lundow Bowling Green.  
 You are going to make an accurate scale drawing of the bowling green using a scale of  
***1cm = 4 metres***

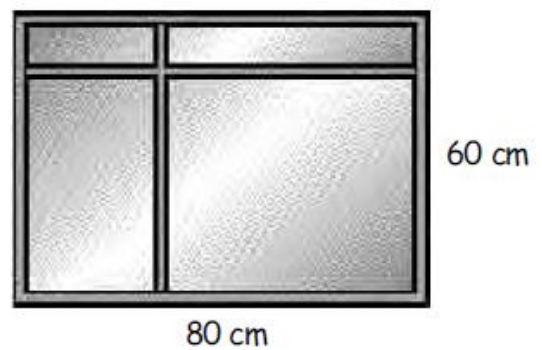
- (a) If 4 metres is represented by 1 centimetre in the scale drawing  
 => 40 metres (length) will be represented by  $(40 \div 4) = ?$  centimetres  
 Start your scale drawing by drawing a line ? centimetres long.
- (b) Also => 24 metres (breadth) will be represented by  $(24 \div 4) = ?$  cm.  
 Now finish your scale drawing by drawing the width ? centimetres long  
 and completing the rectangle.

2.

This window frame measures 80 centimetres by 60 centimetres.

Make a scale drawing of the window frame using a scale :-

***1cm represents 10cm***

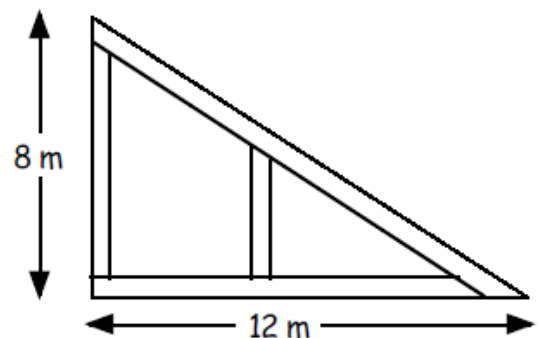


3.

Shown is a wooden roof support. It is in the shape of a right angled triangle.

Make a neat scale drawing of the support using a scale of :-

***1cm = 2 metres***

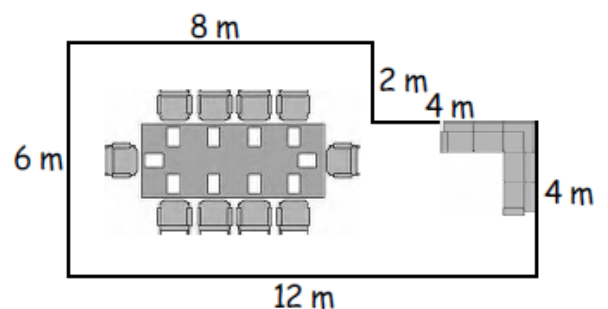


4.

This "L-Shaped" board-room is 12 metres long and 6 metres wide.

Make a neat scale drawing of the room using a scale of :-

***1cm = 2 metres***



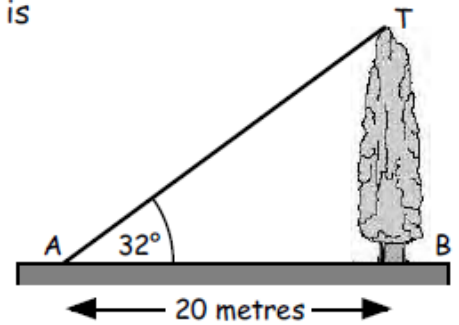
**Make scale drawings using a protractor**

Questions 4

1. (a) Make a scale drawing to show this tree as it is viewed from point A.

scale :-  $1\text{cm} = 2\text{ metres}$

- start by drawing the line representing AB
- draw a feint line straight up from B
- use your protractor to measure out  $\angle A = 32^\circ$
- complete the drawing



- (b) Measure, in centimetres, the height of the tree in your drawing.  
 (c) Calculate the height of the **real** tree.

2.

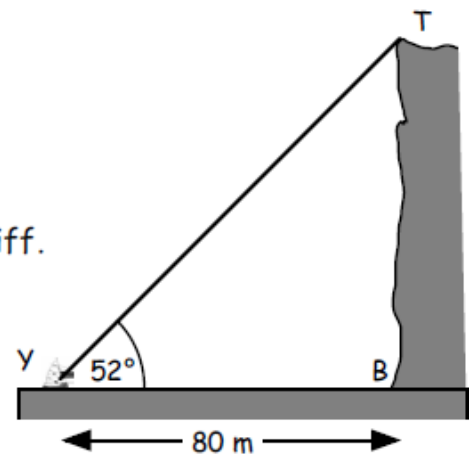
A yacht is 80 metres from the foot of a cliff.

The angle of elevation of the top of the cliff from the yacht is  $52^\circ$  (see sketch).

- (a) Make a scale drawing of the yacht and the cliff.

scale :-  $1\text{cm} = 10\text{ metres}$

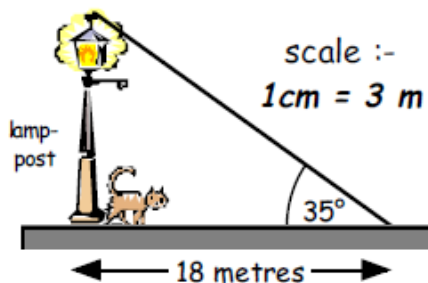
- (b) Calculate the **real** height of the cliff.



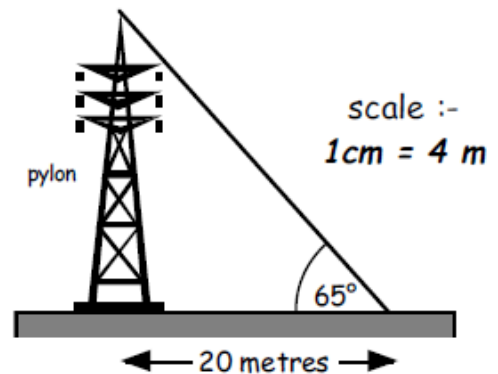
3.

- (i) Make a scale drawing using the given scale.  
 (ii) Calculate the **real** height of the given object.

(a)



(b)



## Create scale drawings involving bearings

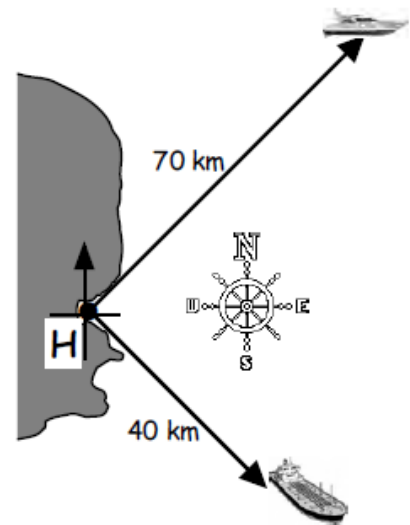
### Questions 5

1. A speedboat and an oil-tanker leave harbour (H) at the same time.  
The speedboat travels 70 kilometres north east.  
The tanker sails 40 kilometres south east.

(a) Make a scale drawing of the two journeys.

scale  $1\text{ cm} = 10\text{ km}$

- start by marking a point on your page to show H
- draw in the north-south and east-west lines thru' H
- use your protractor to show the  $45^\circ$  from north
- use your ruler to show the speedboat's journey
- repeat for the tanker's trip



- (b) Measure the distance between the two boats in centimetres.  
(c) Now calculate the **real** distance between them in kilometres.

2. Two jet planes leave Charles de Gaulle Airport in Paris.  
One flies West for 120 kilometres.  
The other flies South East for 200 kilometres.

(a) Make a scale drawing of the two flights.

scale  $1\text{ cm} = 20\text{ km}$

- (b) Measure the distance between the two planes, in centimetres.  
(c) Now calculate the real distance between the two planes, in kilometres.

