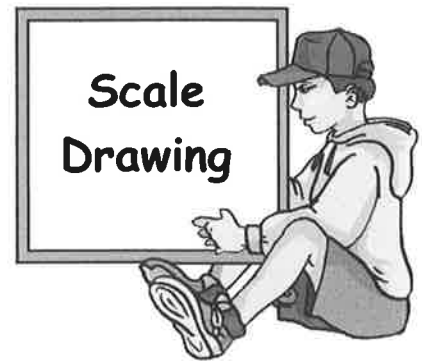


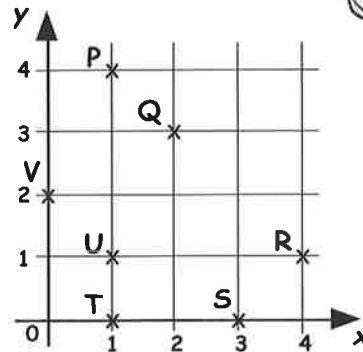
# CHAPTER 9



## Review 8

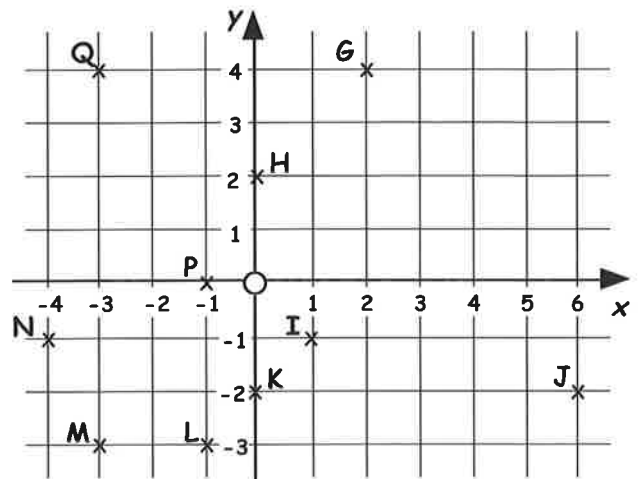
### Coordinates

1. Write down the coordinates of :-
  - a all the points from P to V
  - b the point that has the same x and y coordinate
  - c the point 3 along and 1 up from T.



2. Copy the coordinate grid above and plot the following points :-  
 $A(3, 1)$ ,  $B(4, 3)$ ,  $C(0, 1)$ ,  $D(0, 2)$ ,  $E(2, 2)$ ,  $F(1, 3.5)$ .

3.
  - a Write down all the coordinates from G to Q.
  - b Write down all the points that have the same y coordinate.
  - c Which point has the same x and y coordinate?
  - d HKJR are the vertices of a rectangle. State the coordinates of R.
  - e Given that HNKJ are the vertices of a parallelogram, find and write down the coordinates of point S.



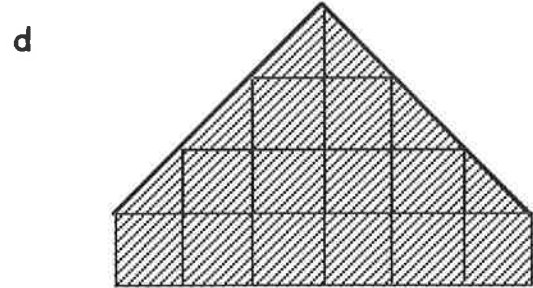
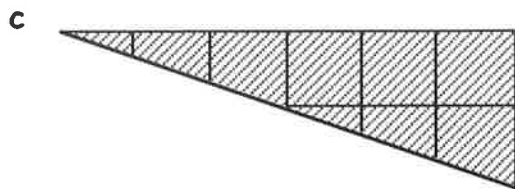
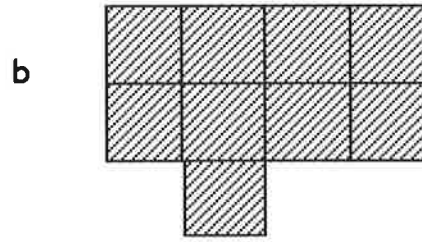
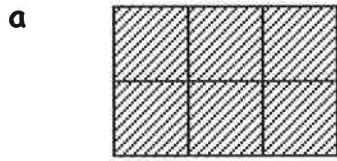
4.
  - a Draw a set of axes (from -5 to 5).
  - b Plot the triangle with vertices of  $P(0, 3)$ ,  $Q(3, 4)$  and  $R(4, -1)$ .
  - c Reflect triangle PQR over the :- (i) the y axis (ii) x axis.
5. Repeat question 5a and 5c for the quadrilateral with vertices :-  
 $M(-3, -4)$ ,  $N(-4, 2)$ ,  $O(1, 0)$  and  $P(3, -5)$ .

# Exercise 1

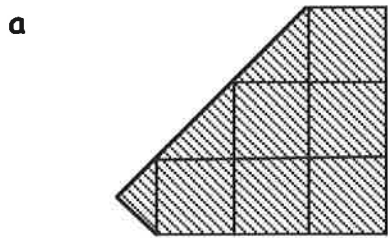
## Enlarging & Reducing Shapes

1. Make a **two-times enlargement** of these shapes.

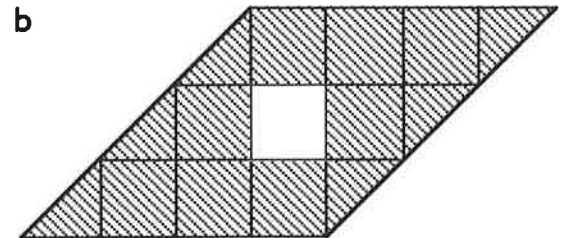
Each box represents a square 1 cm by 1 cm.



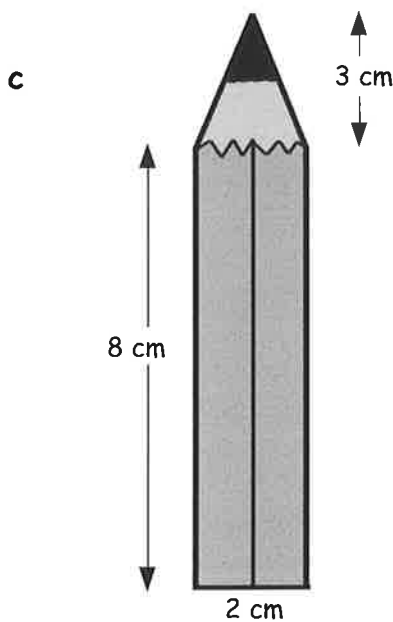
2. Make enlargements or reductions of the following using the given scale :-



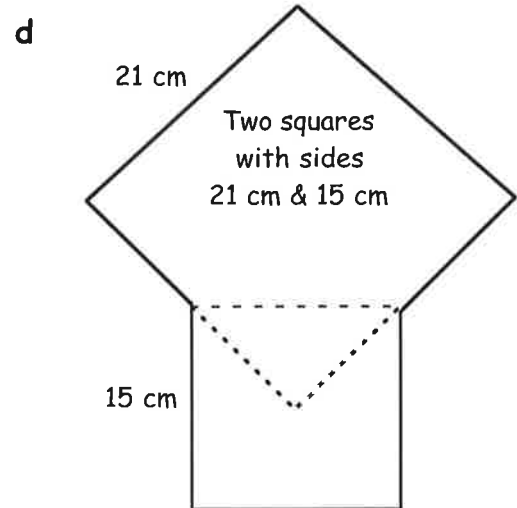
make a **three times enlargement**



make a **two times enlargement**



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



reduce this shape to **one third its size**

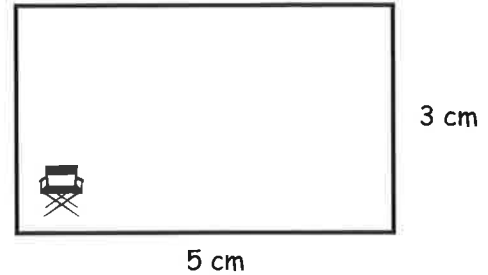
## Exercise 2

### Using a Scale Drawing to find a length

1. This scale drawing of a large room is made using a scale of :-

$$1 \text{ cm} = 4 \text{ m.}$$

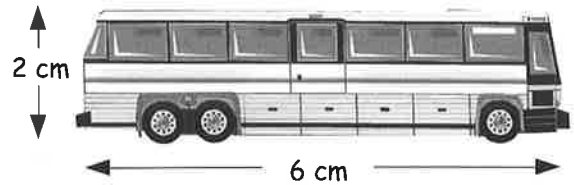
- a Calculate the **real** length of the room.  
b Now calculate its **real** breadth.



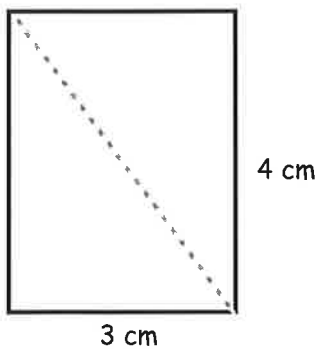
2. This bus has been drawn using the scale :-

$$1 \text{ cm} = 1.5 \text{ m.}$$

- a Calculate the **real** length of the bus.  
b Calculate its **real** height.



- 3.

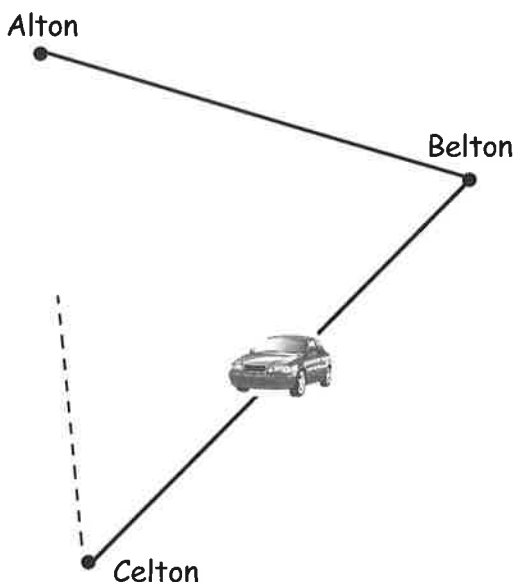


This picture frame is drawn to a scale of :-

$$1 \text{ cm represents } 9 \text{ cm.}$$

- a Calculate the **real** height of the frame.  
b Calculate the **real** width of the frame.  
c The real length of a diagonal is 45 cm.  
What is the length of the diagonal in the picture.

4. The map below shows three towns on a road map. Scale :- 1 cm represents 6 km.



- a Use your ruler to measure the distance from Alton to Belton.  
b Use the scale of the map to work out the **real** distance between the 2 towns.  
c Measure the distance between Belton and Celton and then use the given scale to calculate the **real** distance between them.  
d A road going directly from Alton to Celton is to be constructed.

Find the length of the new road in km.

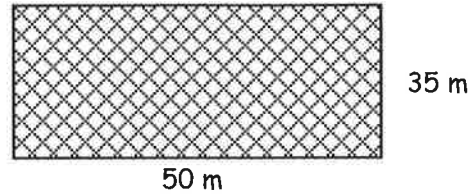
### Exercise 3

### Basic Scale Drawing

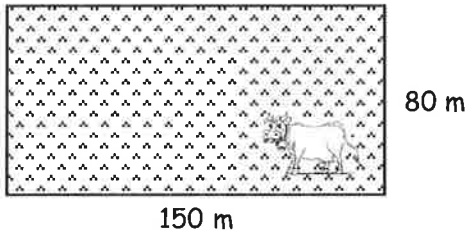
1. Here is a sketch of an assembly hall.

Make an accurate scale drawing of the hall using the simple scale of :-

$$1 \text{ cm} = 10 \text{ metres.}$$



- 2.



This is a sketch of a farmer's rectangular field.

Below are the instructions as to how to make an accurate scale drawing of the field using a scale of :-

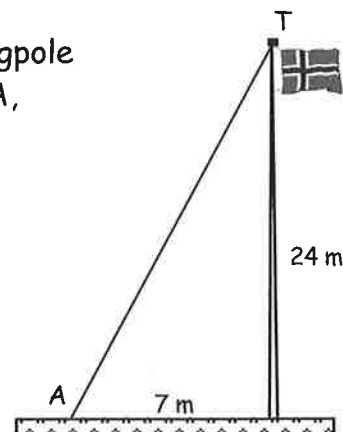
$$1 : 2000. \text{ (i.e. } 1 \text{ cm} = 2000 \text{ cm} = \dots \text{ m).}$$

- a Copy and complete the scale used.
- b If 20 metres is represented by 1 centimetre in the scale drawing  
=> 80 metres (length) will be represented by  $(80 \div 20) = 4$  centimetres.  
Start your scale drawing by drawing a vertical line 4 centimetres long.
- c Complete the scale drawing.
3. A village square has side length 60 metres.
- a Which of the following would be a suitable scale :-  
(i) 1 cm : 1 m      (ii) 1 cm : 10 m      (iii) 1 cm : 50 m.
- b Use your chosen scale to make a scale drawing of the village square.
4. Stalls are set up in a rectangular market area measuring 35 metres by 55 metres.  
Make a scale drawing of the market area using a scale :- **1 cm represents 5 m.**

5. a Make a scale drawing to show this 24 m tall flagpole with a support wire as it is viewed from point A, 7 metres from the base of the tower.

The scale is **1 cm = 2 m.**

- b Measure the length of the support wire on your scale drawing.
- c What is the real length of the wire ?



## Exercise 4

### Making a Scale Drawing using a Protractor

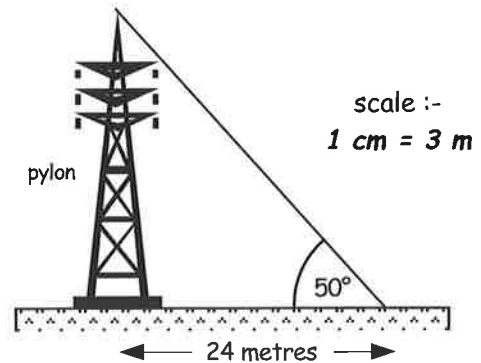
1. Eddie is standing 24 metres from a pylon.

The angle between Eddie's feet and the top of the tower is  $50^\circ$ .

- a Make a scale drawing of the sketch.

Scale :-  $1 \text{ cm} = 3 \text{ metres}$

- b Calculate the height of the real pylon.

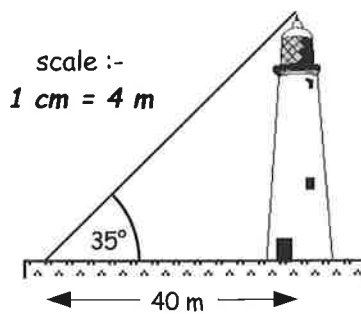


2. For each of the following :-

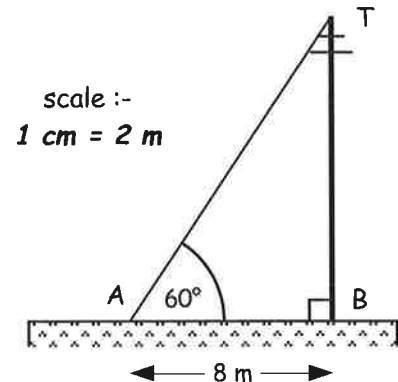
(i) Make a scale drawing using the given scale.

(ii) Calculate the real height of the given object.

a



b



## Exercise 5

### Scale Drawing involving Bearings

1. In what direction do you end up heading each time here :-

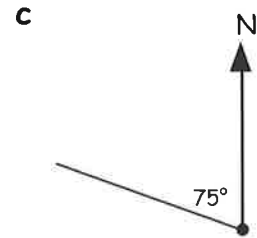
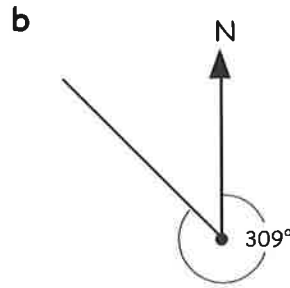
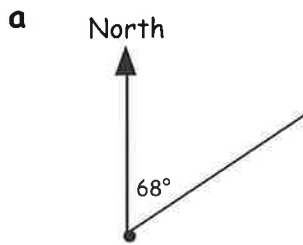
- a Walk North, then make a  $45^\circ$  turn anti-clockwise.  
 b Drive South West, then make a  $90^\circ$  turn clockwise.  
 c Fly East, then make a  $315^\circ$  turn anti-clockwise.  
 d Sail North East, then make a  $270^\circ$  turn anti-clockwise.



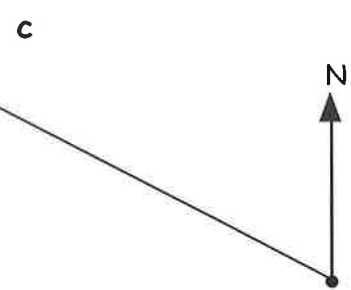
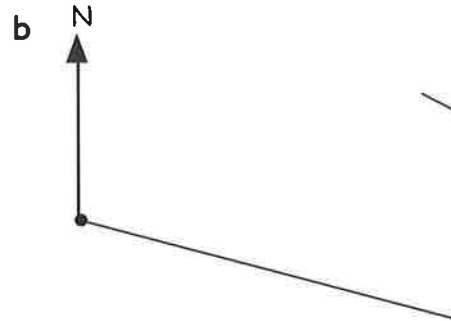
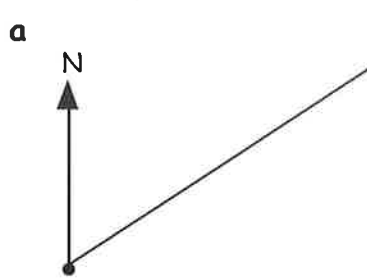
2. Write each of the following compass directions as a 3 figure bearing :-

- a West                      b North West              c South                      d South West  
 e East                        f North                      g North East              h South East.

3. For each of these directions, write down its 3 figure bearing :-



4. Using a protractor, measure and write the 3 figure bearing for these directions :-

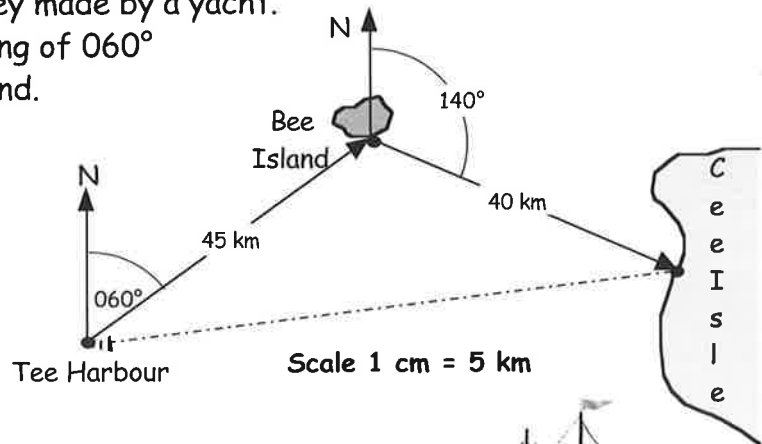


5. Similar to Qu 4, use a protractor to show a 3 figure bearing of :-

- a 045°      b 110°      c 255°      d 335°

6. This sketch highlights a journey made by a yacht. It sailed for 45 km on a bearing of 060° from Tee Harbour to Bee Island.

From there, it sailed on a bearing of 140° for 40 km to Cee Isle.

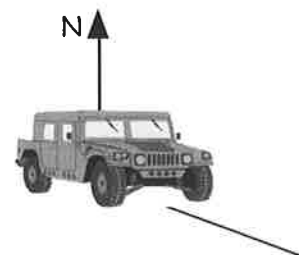


- Make a scale drawing showing the route taken by the yacht.
- Measure the distance from Tee Harbour to Cee Isle on your scale drawing.
- Calculate the distance the yacht had to travel to return to Tee Harbour from Cee Isle.



7. An army platoon begins a manoeuvre by leaving HQ and heading off on a bearing of 115°.

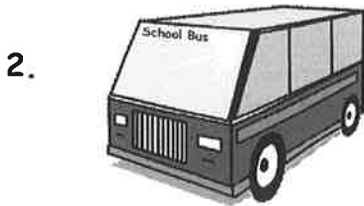
On what bearing must the platoon then set off in order to return directly to HQ?



## Revisit - Review - Revise 9



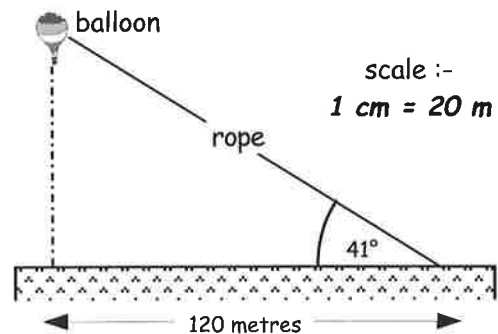
1. Write the 3 figure bearing representing :-  
 a South West                      b South East                      c North East.



A toy school bus has been made to a scale :- 1 cm to 1.5 m.  
 If the length of the toy bus is 6 cm, what is the length of the real school bus ?

3. On a scale drawing, two train stations are 4 cm apart.  
 The scale of the drawing is :- 1 : 100 000.  
 Calculate the real distance between the train stations, in kilometres.

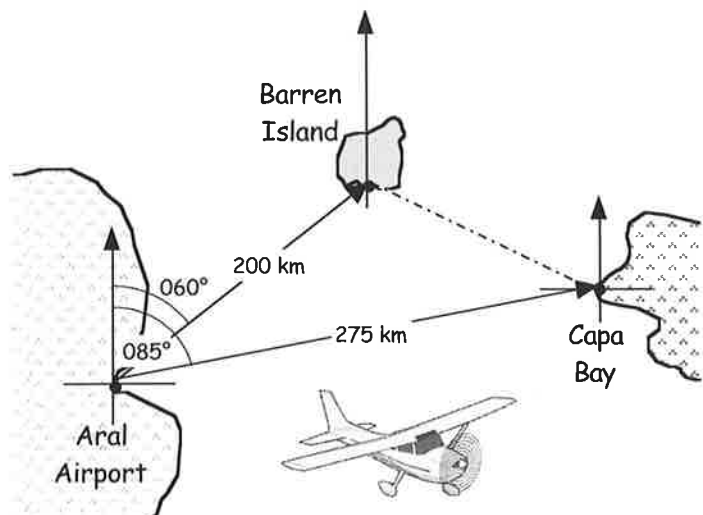
4. a Make a scale drawing of this balloon.  
 b Determine the real height of the balloon.



5. A helicopter leaves a pad on a 060° bearing.  
 On what bearing would the helicopter pilot then have to fly in order to return to the pad ? (a sketch should help)

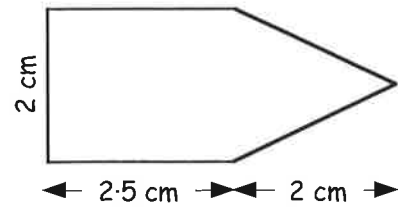
6. Two planes leaves Aral Airport.  
 One flies for 200 kilometres on a bearing of 060° to Barran Island.  
 The 2nd flies from to Capa Bay, 275 km away on a bearing of 085°.

- a Make a scale drawing showing the two stages of the trip.  
 scale 1 cm = 25 km.  
 b Measure the distance from Barran Island to Capa Bay in centimetres.

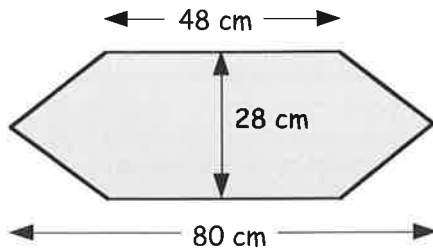


- c Calculate the real distance from Barran Island to Capa Bay, in kilometres.

7. Draw a neat **2 times** enlargement of this shape.



8.

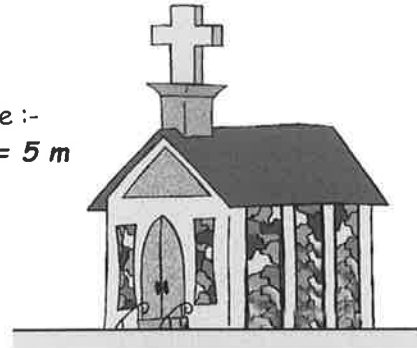


Make an accurate drawing of this shape but with its dimensions **one quarter** of those shown.

9. A church is to be drawn using a scale of **1 cm represents 5 metres**.

If the height in the scale drawing is **4.5 cm**, find the height of the **real** church.

scale :-  
1 cm = 5 m



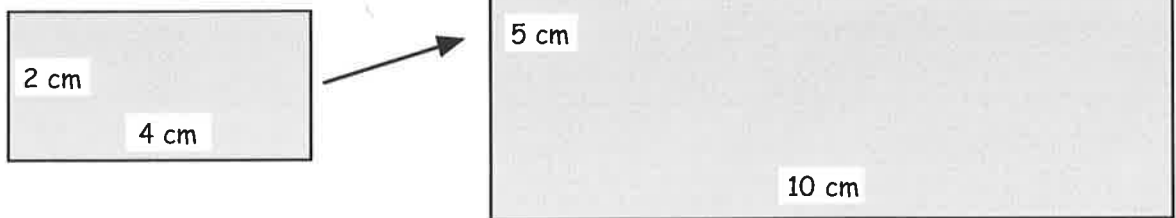
10.



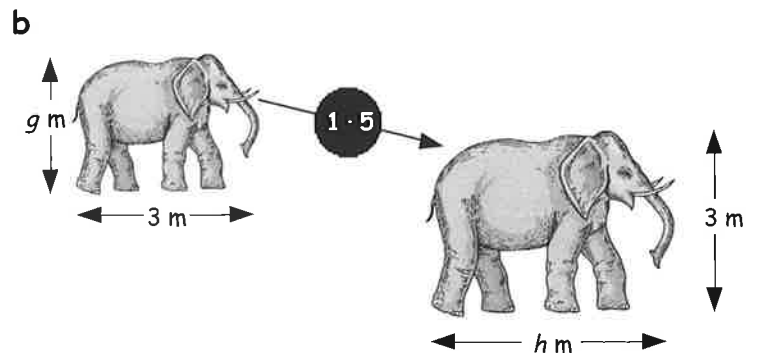
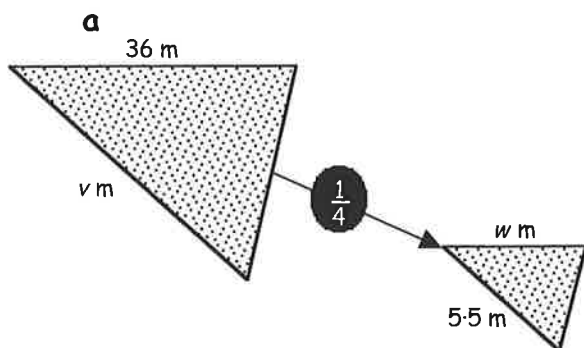
A model of a house is to be built  $\frac{1}{40}$  of its real size. The actual house is 12 metres tall.

What will the height of the model be, in centimetres ?

11. What is the **enlargement scale factor** in this diagram ?



12. The scale factors of each diagram below are shown. Find the values of  $v$ ,  $w$ ,  $g$  and  $h$ .





## Cumulative Ex 3



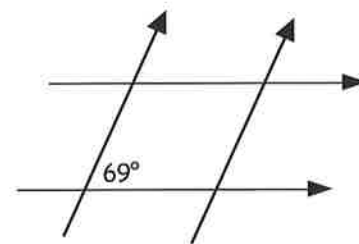
- Find :-
  - $5^3$
  - $\sqrt[5]{243}$
- For the set of numbers 4, 6 and 15 write down the :-
  - lowest common multiple (l.c.m.)
  - highest common factor (h.c.f.).
- Write down **all** the **prime** numbers between eighty and a hundred.
- Write as the **product** of **prime** factors
  - 45
  - 140.

- This table shows the connection between pairs of values.  
Write down a **formula** of the form  
 $y = \dots x + \dots$

|   |    |    |    |   |
|---|----|----|----|---|
| x | 2  | 4  | 6  | 8 |
| y | -5 | -3 | -1 | 1 |

- Solve for  $x$  :-
  - $4x - 1 = 6x + 11$
  - $5(4x - 1) = 35$
  - $6(2x - 1) - 7x = 14$
  - $4x - 11 < 33$
  - $3(3x + 2) < -3$
  - $\frac{2}{5}(3x - 1) < x$ .

- Copy the sketch shown and fill in **ALL** missing angles.



- Change to litres :-
  - 8600 ml
  - 50 ml
  - 3 ml
  - 10 million ml.

- Change to ml :-
  - 6 litres
  - 0.02 litres
  - 8.07 litres.

- Make an accurate drawing of triangle ABC with sides 8 cm, 5 cm and 7 cm.

- Change to a **mixed number** :-
  - $\frac{73}{8}$
  - $\frac{147}{9}$ .

- Rewrite as a **top-heavy fraction** :-
  - $2\frac{1}{5}$
  - $4\frac{7}{8}$ .

- Simplify fully (where possible) :-

- $\frac{2}{3} \times \frac{7}{8}$
- $\frac{1}{5} \times \frac{8}{9}$
- $1\frac{2}{3} \times 2\frac{1}{2}$
- $\frac{5}{8} \times \frac{4}{5} \times \frac{1}{4}$
- $\frac{6}{15} \div \frac{1}{9}$
- $\frac{7}{8} \div \frac{2}{3}$
- $7\frac{1}{4} \div 2$
- $7\frac{1}{2} \div 1\frac{1}{4}$ .

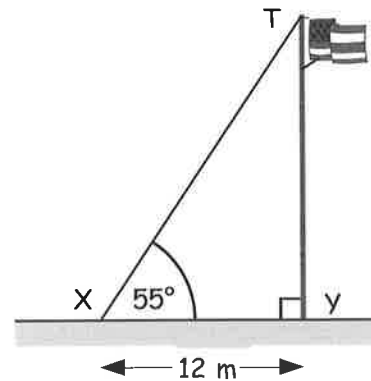
- The area of a rectangle is  $9\frac{1}{2}$  cm and has length  $4\frac{3}{4}$  cm. Find its breadth.

15. Write the 3 figure bearing for :-      a East      b North West.
16. A model house has been made to a scale :- 1 cm to 2.5 m.

If the length of the model house is 8 cm, what is the length of the real house ?

17. a Make a scale drawing of this flag pole.  
 b Determine the height of the real flag pole.

scale :- 1 cm = 3 m.

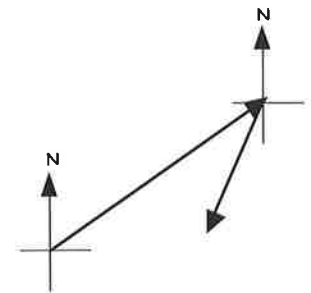


18. A soldier leaves HQ on a 115° bearing. What would be the return bearing ?

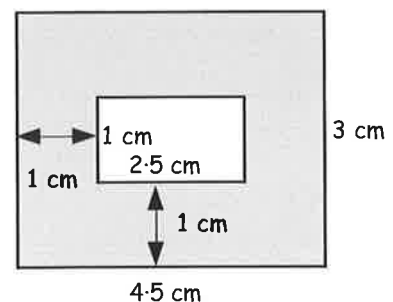
19. A Desert platoon leaves Arak.

- They hike 60 kilometres on a bearing of 070° to Sambuc.
- The next day they hike on a 200° bearing for 45 km to Mojit.

- a Make a scale drawing showing the two stages of the trip using a scale of 1 cm = 5 km.  
 b Measure the distance from Arak to Mojit in centimetres.  
 c Calculate the real distance from Mojit back to Arak.  
 d If they started their hike directly back to Arak from Mojit at an average speed of 5 km/hr, how long (to the nearest minute) would they take ?



20. Draw a neat 3 times enlargement of this shape.



21. This shape is not drawn to scale.

Make an accurate drawing of the shape, but with its dimensions one quarter of those shown.

