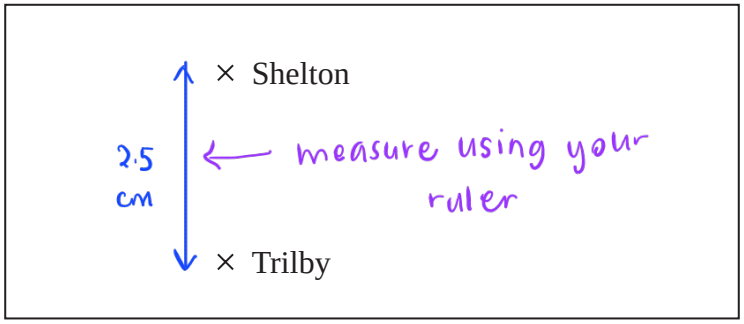
1 The diagram shows two places on a map.



Scale: 1 centimetre represents 20 kilometres 1 cm = 20 km

(a) What is the actual distance, in kilometres, from Shelton to Trilby?

distance = 20 km × 2.5 (1) ← multiply our measurement with the scale

= 50 km (1)

50 kilometres

(2)

On a scale drawing, the scale is given as 1 : 1200

(b) How many metres does 5 centimetres represent on this drawing?

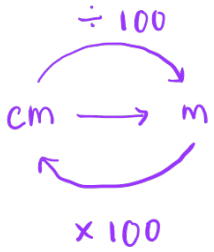
1 m = 100 cm

1 : 1200 = 1 cm : 1200 cm

5 cm = 1200 × 5 (1)

= 6000 cm ÷ 100 ← convert to metre

= 60 m (1)



60 metres

(2)

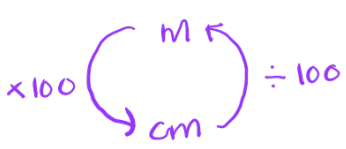
(Total for Question 1 is 4 marks)

2 Change $1\,m^2$ into cm^2

$1\ m = 100\ cm$

$1\ m^2 = (100\ cm)^2$

$= 10000\ cm^2$ (1)



10 000 ..... cm^2

(Total for Question 2 is 1 mark)

3 On a scale drawing, a building has length 12.4 cm and width 9.4 cm.
The real length of the building is 62 metres.

Work out, in metres, the real width of the building.

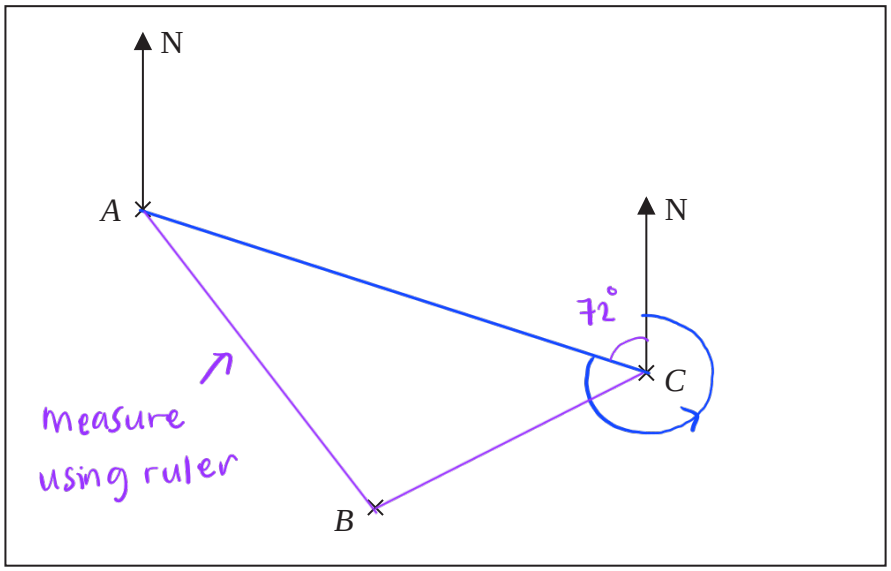
Find scale factor: (1)
to get from 12.4 to 62,
you have to multiply by
$\frac{62}{12.4} = 5$.

s.f. is 5. use s.f. to convert the second measurement: (1)
$9.4 \times 5 = 47$

47 (1) metres

(Total for Question 3 is 3 marks)

4 The accurately drawn map shows the positions of three points, *A*, *B* and *C*, in a field.



Scale: 1 cm represents 150 metres

Parveen walks in a straight line from *A* to *B*.
She then walks in a straight line from *B* to *C*.

Susan walks in a straight line from *A* to *C*.

Parveen walks more metres than Susan.

(a) How many more?

1 cm = 150 m

measure by ruler

A to B : 5 cm x 150 = 750 m

B to C : 4 cm x 150 = 600 m

A to C : 7 cm x 150 = 1050 m (1)

Parveen walks 750 m + 600 m = 1350 m

Susan walks 1050 m

Difference : 1350 m - 1050 m : 300 m (1)

300 (1) ..... metres

(3)

(b) Find by measurement the bearing of *A* from *C*.

angle for whole circle → 360° - 72°

= 288° (1)

288 ° .....

(1)

(Total for Question 4 is 4 marks)

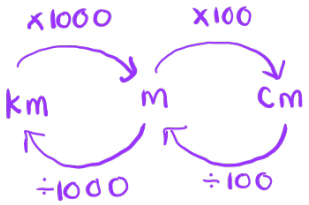
5 Aleksy is using a map.

The map has a scale of 1 : 25 000

On the map a road has a length of 6 cm.

(b) Work out the length, in kilometres, of the real road.

CONVERSION



1 cm : 25 000 cm
×6 ×6
6 cm : 150 000 cm (1)

$= \frac{150\,000 \text{ cm}}{100\,000 \frac{\text{cm}}{\text{km}}}$ (1)

= 1.5 km (1)

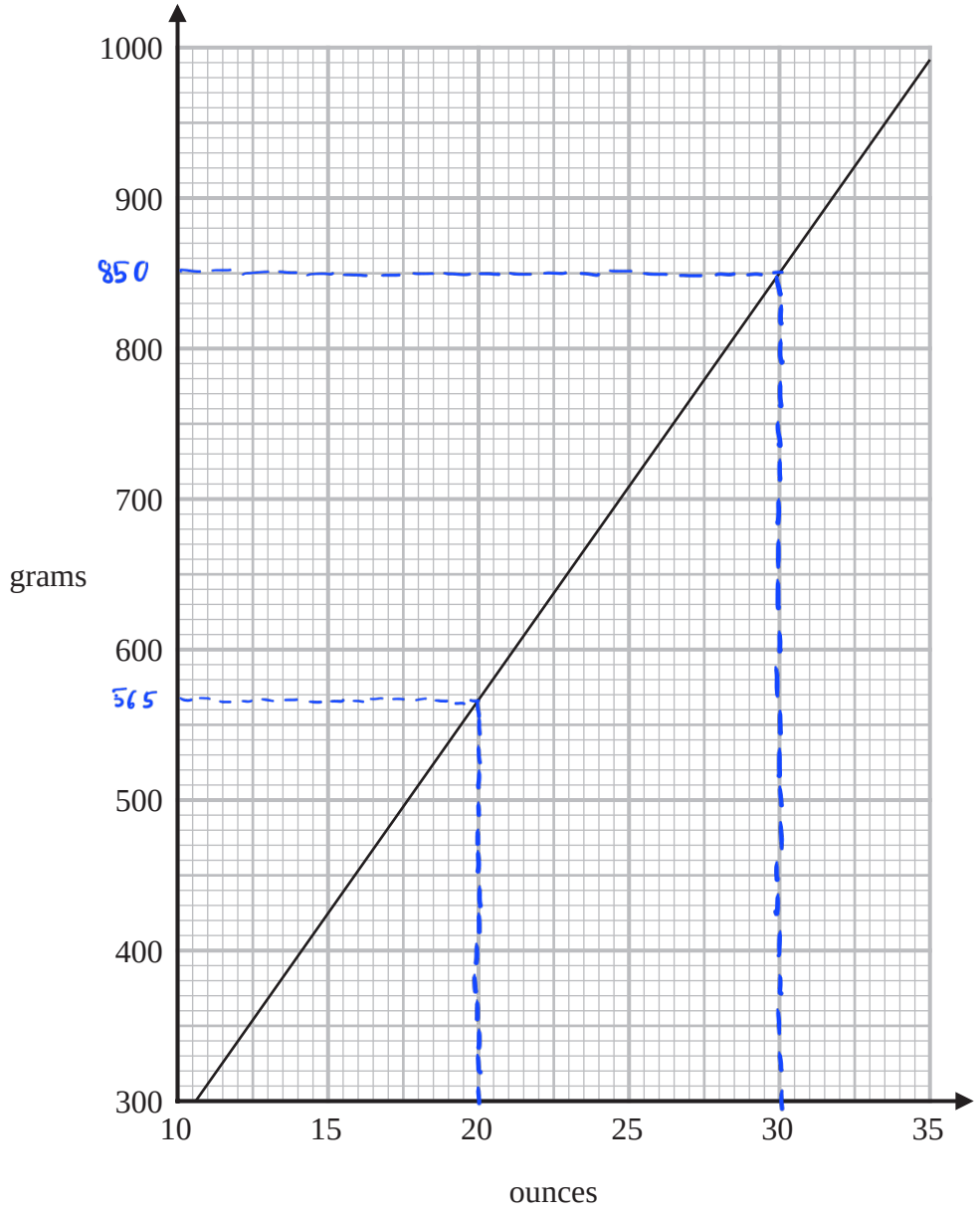
$$\begin{array}{r} {}^{3} \\ 25\,000 \\ \times \quad 6 \\ \hline 150\,000 \end{array}$$

1.5 kilometres

(3)

(Total for Question 5 is 3 marks)

6 You can use this graph to change between ounces and grams.



(a) Change 850 grams to ounces.

Tips : Look for the intersection of the line for the change

30 (1) ..... ounces

(1)

(b) Change 80 ounces to grams.

Finding scale factor :

$\frac{80 \text{ ounces}}{20 \text{ ounces}} = 4$ (1)

$4 \times 565\ g = 2260\ g$ (1)

2260 ..... grams

(2)

(Total for Question 6 is 3 marks)

7 Here is a list of ingredients for making 10 scones.

Ingredients for 10 scones
80 g butter
350 g self-raising flour
30 g sugar
2 eggs

Martin has

100 g butter
1 kg self-raising flour
50 g sugar
4 eggs

Martin wants to make 25 scones.
He has not got enough of some of the ingredients.

Work out how much more of each of these ingredients he needs.

Finding scale factors of the scone :

$\frac{25}{10} = 2.5$

To make 25 scones, she needs :

Butter : 80 g x 2.5 = 200 g (1)

Self raising flour : 350 g x 2.5 = 875 g (1)

Sugar : 30 g x 2.5 = 75 g

Egg : 2 x 2.5 = 5 eggs

Finding the amount of ingredients she needs more :

Butter : 200 - 100 = 100 g (1)

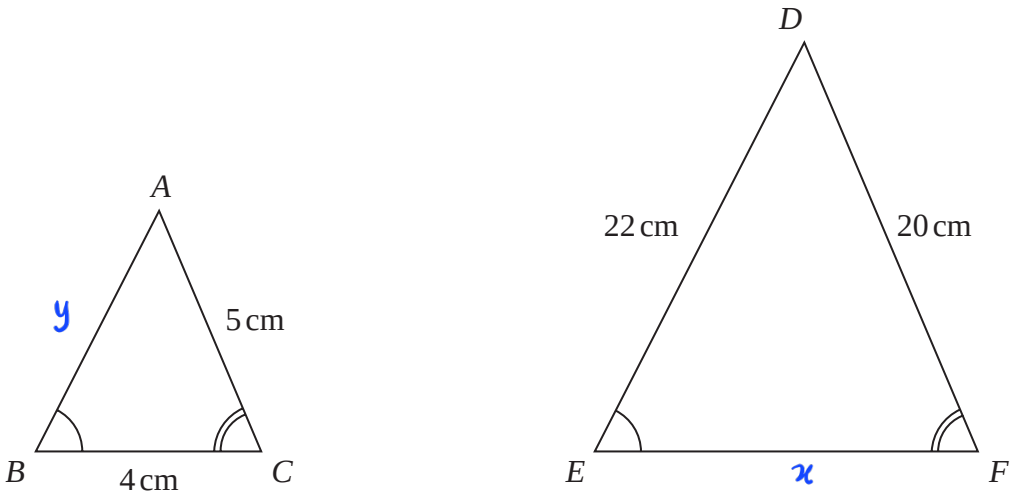
Sugar : 75 - 50 = 25 g

Self raising flour is enough

Egg = 5 - 4 = 1 egg (1)

(Total for Question 7 is 4 marks)

8 Triangle *ABC* and triangle *DEF* are similar.



(a) Work out the length of *EF*.

Finding scale factor :

$\frac{DF}{AC} = \frac{20\text{ cm}}{5\text{ cm}} = 4$ (1)

$\frac{EF}{BC} = \frac{x}{4\text{ cm}} = 4$

$x = 4\text{ cm} \times 4 = 16\text{ cm}$ (1)

16 cm

(2)

(b) Work out the length of *AB*.

$\frac{AB}{DE} = \frac{y}{22\text{ cm}} = \frac{1}{4}$

$y = \frac{1}{4} \times 22\text{ cm}$ (1)

$= 5.5\text{ cm}$ (1)

5.5 cm

(2)

(Total for Question 8 is 4 marks)