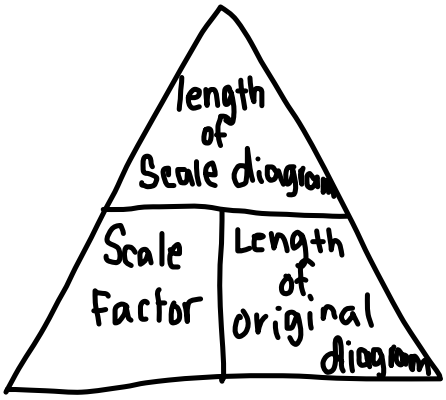
7.1 Scale Diagrams and Enlargements - Worksheet

1. The actual length of a needle is 6 cm. The length of the needle on a scale diagram is 9 cm. What is the scale factor of the diagram?

$S.F = \frac{\text{scale}}{\text{original}} = \frac{9}{6} = 1.5$

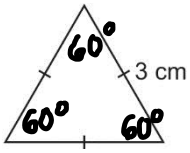
2. Scale diagrams of different circles are to be drawn. The diameter of each circle, and the scale factor are given. Determine the diameter of each circle on its scale diagram. Write the answers.

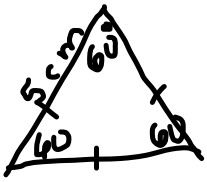
	Diameter of original circle		Scale factor	Diameter of scale diagram
a)	8 cm	×	6	48cm
b)	40 mm	×	$\frac{15}{4}$	150mm
c)	3.5 cm	×	5.8	20.3cm
d)	0.6 mm	×	20.5	12.3mm



3. Draw an enlargement of an equilateral triangle with side length 3 cm.

Use a scale factor of $\frac{5}{3}$.

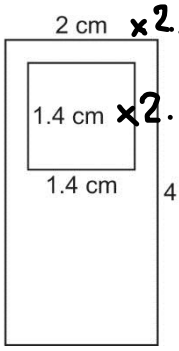




$180^\circ \div 3 = 60^\circ$

New side length = S.F × original length = $\frac{5}{3} \times 3 = 5cm$

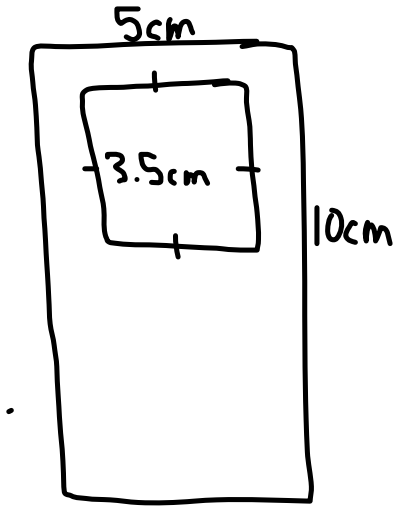
4. Draw a scale diagram of this model of an mp3 player. Use a scale factor of 2.5.



2 cm × 2.5 = 5

1.4 cm × 2.5 = 3.5

4 cm × 2.5 = 10



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5. The dimensions of a photo of a mountain bike are 15 cm by 12 cm.
An enlargement is to be made for a poster with dimensions 4.0 m by 3.2 m.
What is the scale factor of the poster to the nearest tenth?

L original W 4m = 400cm

L W Scale

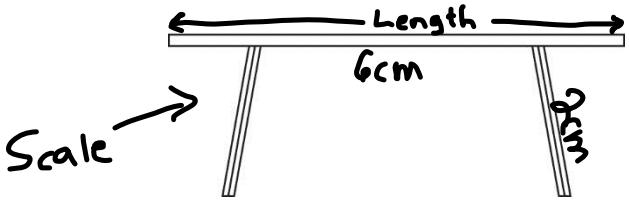
$S.F = \frac{Scale}{original} = \frac{400}{15} = 26.\overline{6}$

$S.F = \frac{Scale}{original} = \frac{320}{12} = 26.\overline{6}$

Scale Factor is 26.7

7.2 Scale Diagrams and Reductions - Worksheet

1. Here is scale diagram of a picnic table.



$S.F = \frac{Scale}{original} = \frac{6}{180} = 0.0\overline{3}$

$S.F = \frac{Scale}{Original} = \frac{2}{60} = 0.0\overline{3}$

The actual length of the picnic table is 180 cm with legs 60 cm.
What is the scale factor for this diagram?

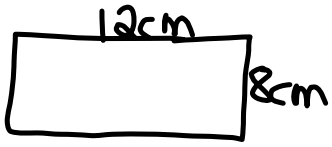
2. A rectangular playground has dimensions 24 m by 16 m.

L W
2400cm 1600cm

Draw a scale diagram of this playground with a scale factor of $\frac{1}{200}$.

Length of S.D = S.F x Length of O.D
$= \frac{1}{200} \times 2400$
$= 12cm$

Width of S.D = S.F x width of O.D
$= \frac{1}{200} \times 1600$
$= 8cm$



3. A reduction of each object is to be drawn with the given scale factor.
Determine the corresponding length in centimetres on the scale diagram.

a) Fishing rod length 280 cm, scale factor $\frac{1}{50}$ $280 \times \frac{1}{50} = 5.6cm$

KHDMDCM **b)** Boogie board length 1.5 m, scale factor 0.05 $1.5 \times 0.05 = 0.075m = 7.5cm$

c) Jogging route 10 km, scale factor 0.000 02

$10000m \times 0.000\,02 = 0.2m$ or $0.000\,2km$

4. The scale diagram below has a scale factor of 0.25.
What are the dimensions of the actual rectangle?

2cm

Scale Diagram

8cm

Original length = length of S.D ÷ S.F
= 8 ÷ 0.25
= 32cm

Original width = width of S.D ÷ S.F
= 2 ÷ 0.25
= 8cm