

# Section 7.2 Scale Diagrams and Reductions

Scale factor	Reduction or enlargement
a) 2	E
$\frac{6}{10} \leftarrow$ b) 0.6 $\rightarrow \frac{6}{10}$	R
c) $\frac{5}{2} = 2.5$	E
d) $\frac{1}{6}$	R

$\leftarrow$  S.F. less than 1  
 $\leftarrow$  S.F. greater than 1



Original diagram

Diameter of circle 3 cm  
height of heart 0.6 cm

Using height ♥

$$S.F. = \frac{R}{O} = \frac{0.4}{0.6} = 0.6$$



Scale diagram

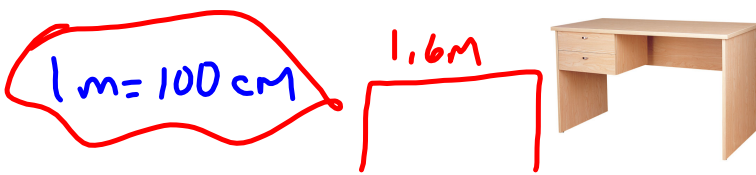
Diameter of circle 2 cm  
Height of heart is 0.4 cm

Using Diameter

$$\text{Scale Factor} = \frac{\text{Red.}}{\text{Original}}$$

$$= \frac{2}{3} = 0.6$$

The length of a desk is 1.6 m.



$$S.F = \frac{\text{reduction/enlarge}}{\text{original}}$$

$$\text{New } \underline{\hspace{1cm}} = S.F \times \text{original}$$

A. In a scale drawing that has a scale factor of  $\frac{2}{5}$  what is the length in cm?

$$\text{New length} = \frac{2}{5} \times 1.6$$

$$\text{New length} = 0.4 \times 1.6$$

$$= \underline{0.64m} = \underline{64cm}$$

B. In a picture the length is 36 cm. What is the scale factor for this picture?

$$\hookrightarrow 0.36m$$

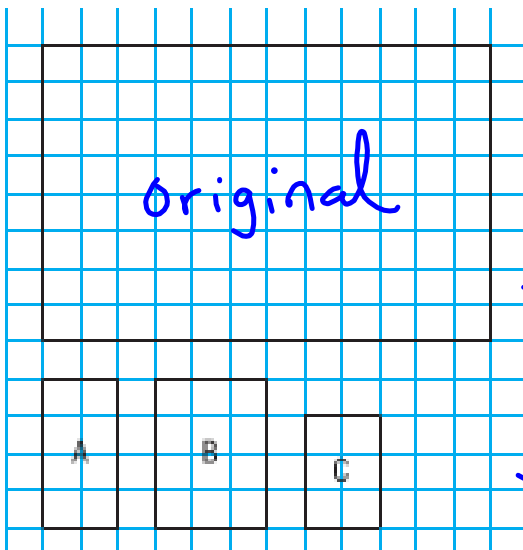
$$S.F = \frac{0.36}{1.6}$$

$$= 0.225$$

C. If on a billboard the length is 5.2 m. What is the scale factor?

$$S.F = \frac{5.2}{1.6} = 3.25$$

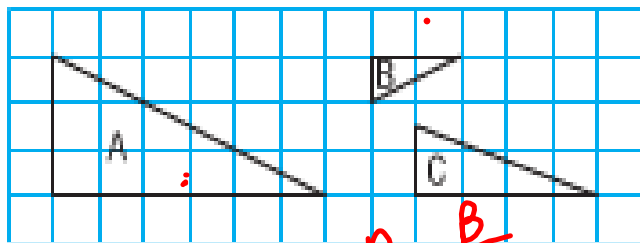
$\swarrow$  original



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	Long	Short
$\frac{A}{\text{original}} = \frac{4}{12} = 0.\dot{3}$	$\frac{2}{8} = 0.25$	
$\frac{B}{\text{original}} = \frac{4}{12} = 0.\dot{3}$	$\frac{3}{8} = 0.38$	
$\frac{C}{\text{original}} = \frac{3}{12} = 0.25$	$\frac{2}{8} = 0.25$	

9. Which two polygons have pairs of corresponding lengths that are proportional? Identify the scale factor for the reduction.



$\frac{A}{B}$     $\frac{B}{A}$    B to C   C to A  
 A to B   height | base  
 $\frac{B}{A}$

# Classwork

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5,6

[add 3rd column]

WATCH YOUR UNITS

9 Compare height and base

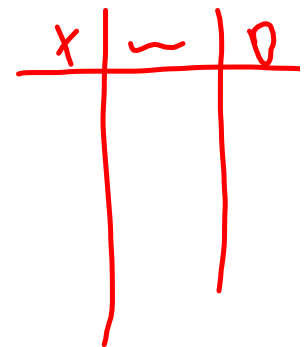
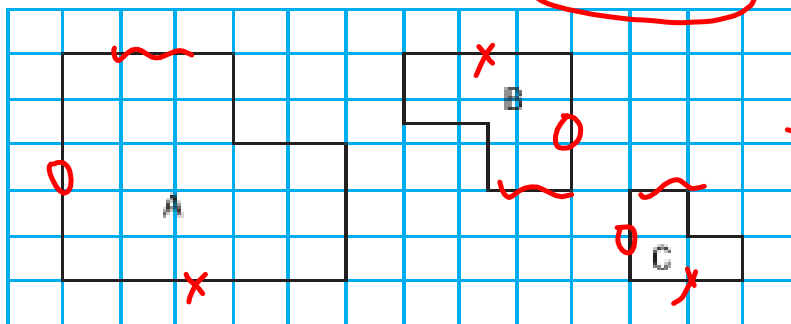
10 compare 3 sides

11, [a, c, e]

12 [use grid paper],

Quiz will be taken from these Questions

10. Which two polygons have pairs of corresponding lengths that are proportional? Identify the scale factor for the reduction.

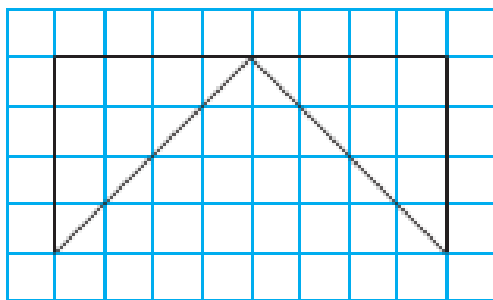


11. A reduction of each object is to be drawn with the given scale factor. Determine the corresponding length in centimetres on the scale diagram.

- a) A desk has length 75 cm.  
The scale factor is  $\frac{1}{3}$ .
- b) A bicycle has a wheel with diameter about 60 cm. The scale factor is  $\frac{3}{50}$ .
- c) A surfboard has length 200 cm.  
The scale factor is 0.05.
- d) A sailboat has length 8 m.  
The scale factor is 0.02.
- e) A canyon has length 12 km.  
The scale factor is 0.000 04.

12. Copy each diagram on 1-cm grid paper.  
 Draw a reduction of each diagram with the given scale factor.

a) scale factor  $\frac{3}{4}$



b) scale factor  $\frac{2}{3}$

