Name: _____

# 4.2 Scale Diagrams

## Check Your Understanding

### Communicate the Ideas

**1.** Kira is going on a 150 km bike ride. On a map, this distance is 10 cm. Write the scale of the map

**a)** in words

**b)** as a ratio

You need the same units to write a ratio.

scale: 1 cm = _____ km

_____ : _____



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**10.** Julie wants to build a scale model of a volcano for the science fair.
The volcano is actually 2500 m tall. If she uses a scale of 1 : 100, how tall will her volcano be?
Will it fit into the classroom?

Sentence: _____

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**2.** How could you check that the larger image of the plane is proportional to the original image?

_____

_____

## Practise

**3.** Complete the proportions.

**a)** $\frac{1}{3} = \frac{\square}{36}$ (× _____)

**b)** $\frac{1}{\square} = \frac{7}{28}$ (÷ _____)

**c)** $\frac{1}{9} = \frac{\square}{90}$ (× _____)

**d)** $\frac{1}{\square} = \frac{4}{48}$

**e)** $\frac{1}{7} = \frac{\square}{1400}$

**f)** $\frac{1}{\square} = \frac{12}{1200}$

**4.** Find the scale factor.

**a)** $\frac{24}{12}$

Scale factor = 24 ÷ 12

= _____

**b)** $\frac{30}{200}$

Scale factor = 30 ÷ 200

= _____

**c)** $\frac{0.5}{25}$

**d)** $\frac{1.6}{3.2}$

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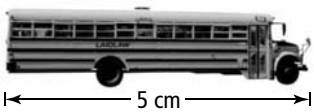
**5.** Find the actual length of each object.

**a)** The image of the school bus is 5 cm long. The scale is 1 : 300.

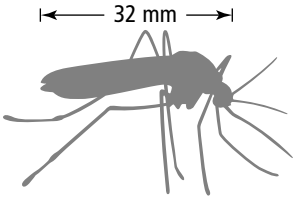



× _____

$$\frac{1}{300} = \frac{5}{\square}$$

× _____

**b)** The diagram of the mosquito is 32 mm long. The scale is 1 : 0.5.




× 32

$$\frac{1}{0.5} = \frac{\square}{\square}$$

× 32

**6.** A flying distance of 800 km is 5 cm on a map. What is the scale factor?

1 km = 100 000 cm

So, 800 km = _____ cm

Use the same units in your proportion.

$$\text{scale} = \frac{\text{diagram measurement}}{\text{actual measurement}}$$

÷ _____

$$\frac{5\text{ cm}}{\square\ \text{cm}} = \frac{1}{\square}$$

÷ _____

The scale factor is $\frac{\square}{\square}$.

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## Apply

**7.** The actual footprint of an adult male polar bear measures 30 cm across.

**a)** What is the scale factor?

$$\frac{\text{diagram measurement}}{\text{actual measurement}} = \frac{\square}{\square}$$

The scale factor is $\frac{\square}{\square}$.

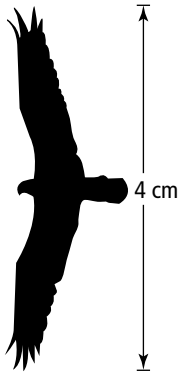
Write the fraction in lowest terms.

**b)** What is the length of the footprint in the diagram?

_____

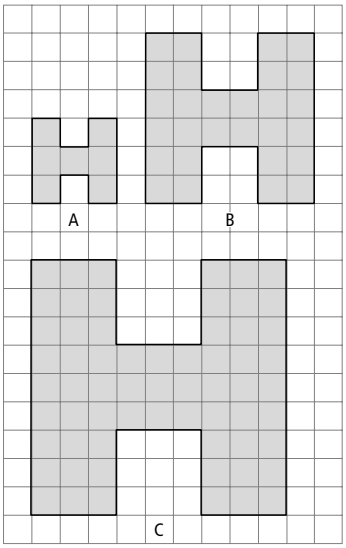
**c)** Use the scale factor from part a) to find the actual length of the footprint.

**8.** An eagle's wingspan is 4 cm long on a drawing. The scale is 1:50. Find the actual length of the eagle's wingspan.




Sentence: _____

**9.** Find the scale factor for each enlargement or reduction.




**a)** from A to B

**b)** from A to C

**c)** from B to A

**d)** from C to A