Mathematics9 Date _____

Unit 4: Scale Factors & Similarity

4.2B Scale Diagrams

Scale Diagram: A proportional representation (enlargement or reduction) of an actual object or original image

Scale: comparison (ratio) between the diagram size and the actual size
- often scale is written as 1: __
* diagram : actual

Ex. The scale diagram below uses a scale of 1: 14. What is the actual length & width? __ : 1

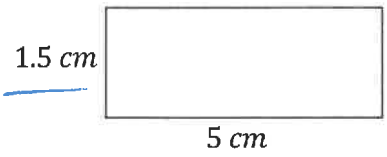

diagram actual

$$\frac{\text{Length}}{\frac{1}{14} = \frac{5\text{ cm}}{l}}$$

$$l = \frac{14 \cdot 5}{1} = 70\text{ cm}$$

$$\frac{\text{width}}{\frac{1}{14} = \frac{1.5\text{ cm}}{w}}$$

$$w = \frac{14 \cdot 1.5}{1}$$

$$w = 21\text{ cm}$$

Determining Scale Factor & Scale

Ex. An actual Canadian quarter has a diameter of 23.88 mm. The scale drawing shown is a reduction with diameter 1.4 cm.

* same units

a) Determine the scale factor to the nearest hundredth.

1.4cm = 14mm

$$\text{scale factor} = \frac{\text{diagram}}{\text{actual}} = \frac{14}{23.88} = 0.59$$

Scale factor

b) Determine the scale (write as 1:____).

Scale diagram : actual

14 : 23.88

÷14 ÷14

1 : 1.71

or

$$\frac{14}{23.88} = \frac{1}{x}$$

$$x = \frac{23.88(1)}{14}$$

$$x = 1.71$$

Practice: pg.55 #2-4, 6a, 7a, 7b, 8, 11