Learning Outcomes Covered:

7C: I can determine the scale factor of a scale diagram.

7D: I can determine the length of missing sides of a scale diagram.

CONTENT Assessment Questions:

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? $\frac{9}{6}$

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.   Also determine if
    it is an enlargement or a reduction.

	Diameter of original circle	Scale factor	Diameter of scale diagram	Enlargement or Reduction
a)	8 cm	6	48 cm	Enlargement
b)	40 mm	$\frac{3}{8}$	$40 \times \frac{3}{8} = 15\,mm$	Reduction
c)	3.5 cm	.9	$3.5 \times 0.9 = 3.15\,cm$	Reduction

3. Here is scale diagram of a picnic table.   You may need a ruler.

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

4. Determine the corresponding length of a 280 cm long fishing rod if the scale factor is $\frac{1}{50}$.

$$\frac{scaled}{original} = \frac{1}{50} \xrightarrow{\times 5.6} = \frac{x}{280} \qquad x = 5.6\,cm$$

$\times 5.6$
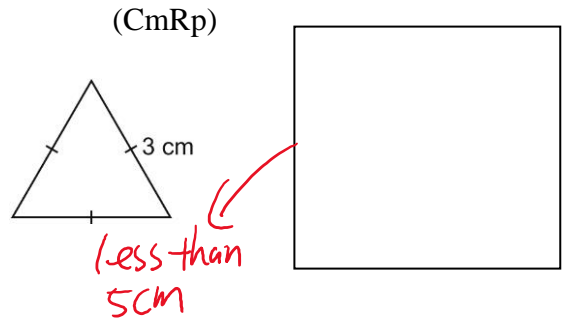
CURRICULAR COMPETENCIES Questions:

1. Is it possible to draw an enlargement of an equilateral   (CmRp)

    triangle with side length 3 cm using a scale factor of $\frac{5}{3}$

    in the box provided? Justify your answer.

$$\frac{5}{3} = \frac{x}{3} \qquad x = 5\,cm$$

$$\therefore No!$$

3 cm

less than 5cm

2. The dimensions of a photo of a mountain bike are 15 cm by 12 cm. An enlargement of the photo
    is to be made into a poster with dimensions 4.0 m by 3.2 m. Mr. H's tutee estimated that the
    scale factor is about 4. Do you agree or disagree with his estimate. Justify your answer with
    words and calculations.   (RA)

$$4.0m = 400\,cm$$

$$Scale\ factor = \frac{400}{15} = 26.67 \neq 4.$$

$$Disagree\ !$$

3. This is a model of an mp3 player with a scale factor of 0.   2 cm *y*
    The inside part (the screen) is made out of glass screen and the
    outside part is made out of aluminum. Glass costs $3.25 per   *x*
    square centimetre and aluminum costs $2.80 per square   1.4 cm
    centimetre. How much would it costs to create the front side of   1.4 cm 4 cm
    this mp3 player? Show all calculations.   (CnRf)   *z*
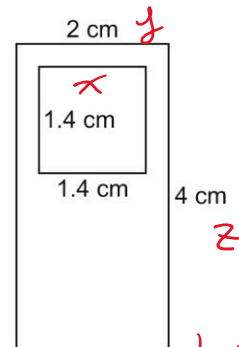
$$Scale\ factor = 0.5 = \frac{1}{2}$$

$$\frac{1}{2} = \frac{1.4}{x} \qquad \frac{1}{2} = \frac{2}{y} \qquad \frac{1}{2} = \frac{4}{z}$$

$$x = 2.8\,cm \qquad y = 4\,cm \quad z = 8\,cm.$$

$$C = 2.8 \times 2.8 \times 3.25 \quad \text{← glass}$$

$$+ (4 \times 8 - 2.8 \times 2.8) \times 2.8 \quad \text{← body}$$

$$= 25.48 + 67.65$$

$$= \$93.13$$

ONGOING LEARNING ACTIVITIES:

CORE: Curricular Competencies: Page 323: 11, 12; Page 329: 8, 19
        Content: Page 323: 4, 7, 8; Page 329: 5, 7, 13, 20
ADVANCED: Page 324: 16; Page 331: 21