**MATH 9 Chapter 7**   **Review**

Write neatly please and show all your work.   Remember: $scale = \dfrac{drawing\ size}{actual\ size}$
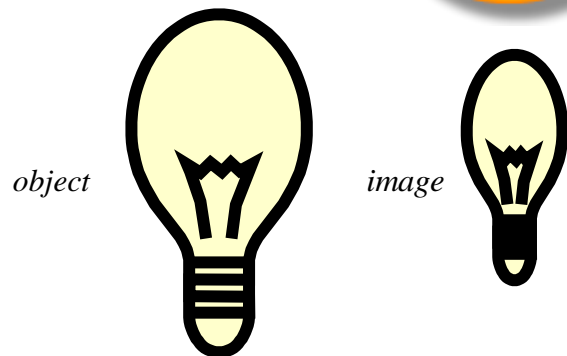
LEARNING OUTCOME: CONTENT AND CALCULATIONS

1. Determine the scale factor of the following shapes, with the object on the left and its image on the right. Use the measurement of one of the sides in your calculations. Indicate the measurements used.
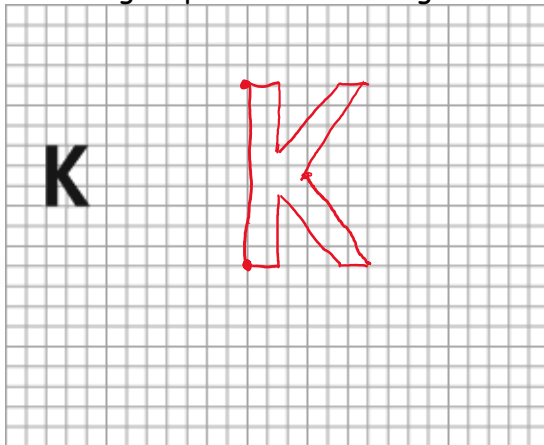
    a)

    object   *image*

    b)
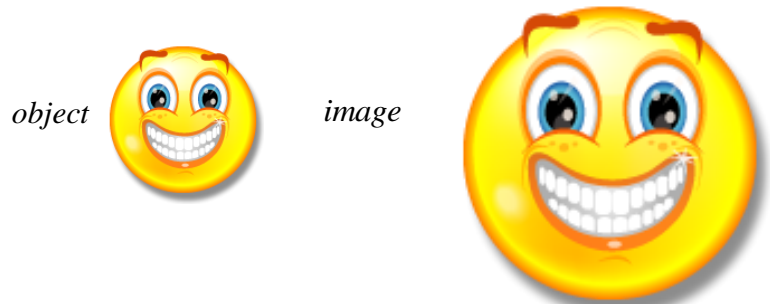
    object   *image*

2. Which shape in question number 1 is a REDUCTION? How do you know?

    b)   because   scale factor < 1

3. Use the grid provided to enlarge the letter K by a factor of 3.

4. Complete the table.

Object Length	Image Length	Scale Factor
12 m	8 m	$8/12 = 0.\overline{66}$
14 cm	500 cm	$500/14 = 35.7$
8 in	20 in	2.5

$$\frac{x}{8} = 2.5$$

$$x = 8 \times 2.5$$

5. The scale diagram of a basketball court uses a scale of 1:280. The length of the court measures 10 cm in the diagram. What is the actual length of the court, in metres?

$$\frac{1}{280} = \frac{10}{x}$$

÷10

×10

$2800 ÷ 100$

$= 28 \text{ m}$

$$x = 280 \times 10 = 2800 \text{ cm}$$

6. The actual distance of the Trans Canada Highway is 7871 km. What is the distance, to the nearest tenth of a centimetre on a map with a scale of 1 cm : 60 km?

×131.183

$$\frac{1}{60} = \frac{x}{7871}$$

÷131.183

$x = 131.183 \text{ cm}$

131.2 cm

7. The wheelbase of a car is the distance between the front and back axles. Determine the actual wheelbase of the car in this scale drawing.
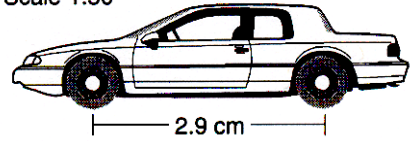
Scale 1:50

$$\frac{1}{50} = \frac{2.9}{x}$$

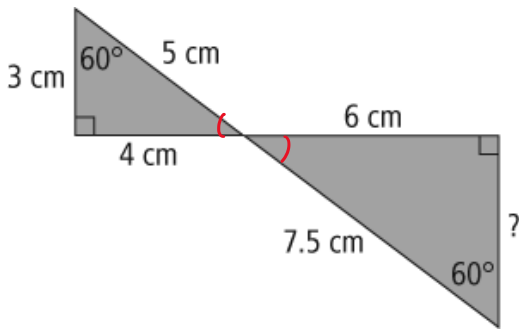(÷2.9 shown above the 2.9, ×2.9 shown below)

$$x = 50 \times 2.9$$
$$= 145 \text{ cm}$$

2.9 cm

8. In the similar triangles below, solve for the missing side.

60°   5 cm

3 cm

4 cm

6 cm

7.5 cm

60°

?

$$\frac{4}{6} = \frac{3}{x}$$

(×1.3 shown above, ÷1.3 shown below)

$$x = 4.5 \text{ cm}$$

LEARNING OUTCOME: REASONING AND ANALYZING

9.   Using the map below, estimate the driving distance between Fort McMurray and Calgary. After finding your estimate, do you think your estimate is smaller or larger than the actual distance between the two cities. Explain.

LEARNING OUTCOME: UNDERSTANDING AND SOLVING

10.   An observer stands 18 m from the door of a house, and 2.6 m from the street. The observer is 1.3 m tall. Calculate the height of the house.

x

$18 + 2.6$

$= 20.6$

1.3

2.6

$\div 2$

$\dfrac{x}{1.3} = \dfrac{20.6}{2.6}$

$\times 2$

$\boxed{x = 10.3\,m}$
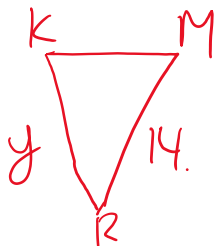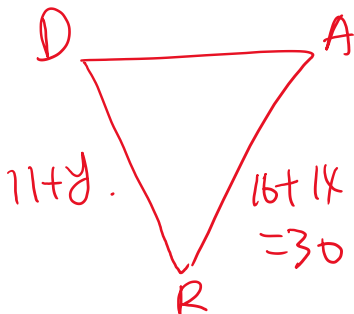
1.3 m

18 m   2.6 m

LEARNING OUTCOME: COMMUNICATING AND REPRESENTING

11.   There are two triangles in this picture. Name them and then determine if the two triangles are similar. Justify your answer.

D   A
11   16
K   M
y   14
R
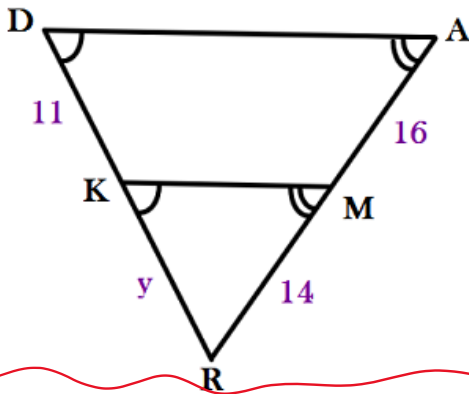
$\angle R = \angle R$, so all 3 corresponding angles are equal.

$\triangle DAR \sim \triangle KMR$

D   A   K   M
$11 + y$ $16 + 14$ y 14
              $= 30$ R
R

$\dfrac{14}{30} = \dfrac{y}{11+y}$
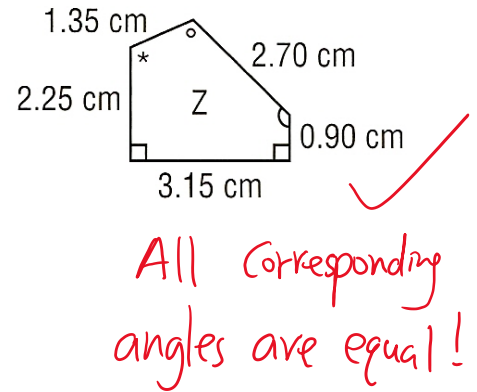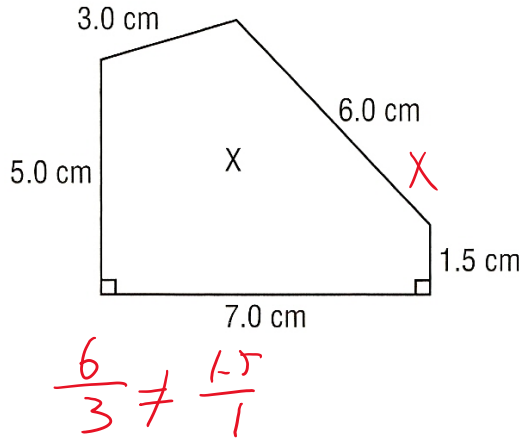
$\dfrac{7}{15} \times \dfrac{y}{11+y}$

Cross multiply

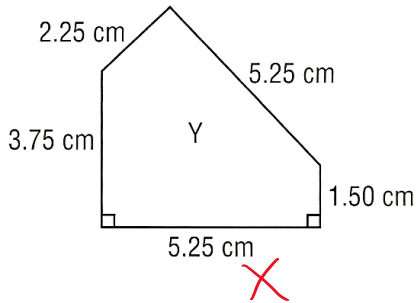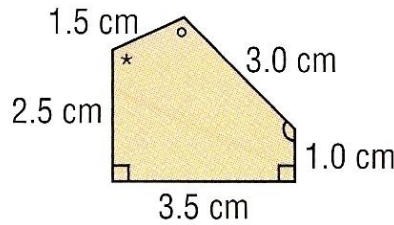$7(11 + y) = 15(y)$

$77 + 7y = 15y$

$77 = 8y$

$y = \dfrac{77}{8}$

12. Which pentagon is similar to the shaded pentagon? Justify your answer.

1.5 cm   ○
*   3.0 cm
2.5 cm
          1.0 cm
3.5 cm

2.25 cm
          5.25 cm
3.75 cm   Y
          1.50 cm
5.25 cm
✗

$$\frac{5.25}{3} \neq \frac{2.25}{1.5}$$

3.0 cm
          6.0 cm
5.0 cm   X   ✗
          1.5 cm
7.0 cm

$$\frac{6}{3} \neq \frac{1.5}{1}$$

1.35 cm   ○
          2.70 cm
2.25 cm   Z
          0.90 cm
3.15 cm
✓

All corresponding
angles are equal!

LEARNING OUTCOME: CONNECTING AND REFLECTING

13. The local hotel is renovating its main conference room and both meeting rooms. They want the main conference room to have hardwood flooring and the meeting rooms to be carpet. The cost of carpet is $25 per square metre and the cost of hardwood flooring is $30 per square metre. The budget for the materials if $20,000. Is this enough money for the project? **Note: The scale for the diagram is 1 cm = 12 m.** Show all calculations and explain.
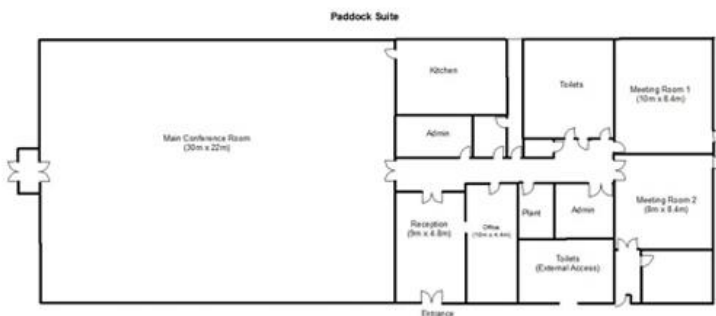
Determine the dimensions
and figure out the area.
Area × $/m² for both
rooms. Add them together
and see if it's less than
$ 20,000.