

# WA 10. 6.1 Assignment

8. If a house is 40 feet long, 35 feet wide, and the top of the roof is 27 feet above ground level, what will the corresponding dimensions be of a model built so that 1 foot is represented by  $\frac{1}{2}$  inch?

$$\frac{l''}{40'} = \frac{0.5''}{1'} \quad \left| \quad \frac{w''}{35'} = \frac{0.5''}{1'} \quad \left| \quad \frac{h''}{27} = \frac{0.5''}{1'} \right. \right.$$

$$l'' = 20'' \quad \left| \quad w'' = 17.5'' \quad \left| \quad h'' = 13.5'' \right. \right.$$

9. Theresa folds origami paper to make stacked boxes. The outer box is 12 cm by 8 cm by 4 cm. Theresa would like to make three smaller, similar boxes, each scaled down by  $\frac{1}{4}$  of the previous box. What are the dimensions of the three smaller boxes? 75%

$$\text{Box 2: } 9 \text{ cm} \times 6 \text{ cm} \times 3 \text{ cm}$$

$$\text{Box 3: } 6.75 \text{ cm} \times 4.5 \text{ cm} \times 2.25 \text{ cm}$$

$$\text{Box 4: } 5.0625 \text{ cm} \times 3.375 \text{ cm} \times 1.6875 \text{ cm}$$

## PRACTISE YOUR NEW SKILLS

1. The scale of a model airplane to the actual airplane is 2.45. If the model is 38 centimetres long, how long is the actual airplane?

$$\text{Scale factor} = \frac{45}{2} = 22.5$$

$$38 \text{ cm} (22.5) = 855 \text{ cm long}$$

2. Two triangles are similar. One has sides of 8 m, 5 m, and 6 m. If the longest side of the second triangle is 5 m, what are the lengths of the other two sides?

$$sf = \frac{5}{8} = 0.625$$

$$5 (0.625) = 3.125 \text{ m}$$

$$6 (0.625) = 3.75 \text{ m}$$

3. A pentagon has interior angles of  $108^\circ$ ,  $204^\circ$ ,  $63^\circ$ ,  $120^\circ$ , and  $45^\circ$ . Rudy wants to draw a similar pentagon with sides twice as long as the original. What size will the angles be?

All the same size angles

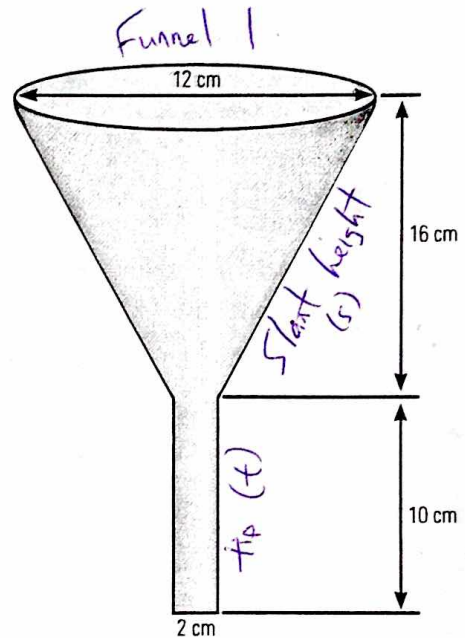
4. Michaela has a microscope that enlarges images between 40 and 1600 times. How large will an object that is 1.2 mm by 0.5 mm appear to be at each of these extremes?

$$\left. \begin{array}{l} 0.5 \text{ mm} (40) = 20 \text{ mm} \\ 1.2 \text{ mm} (40) = 48 \text{ mm} \end{array} \right\} 20 \text{ mm} \times 48 \text{ mm}$$

$$\left. \begin{array}{l} 1.2 \text{ mm} (1600) = 1920 \text{ mm} \\ 0.5 \text{ mm} (1600) = 800 \text{ mm} \end{array} \right\} 1920 \text{ mm} \times 800 \text{ mm}$$

5. Marie-Claude has a series of four nested funnels in her kitchen that are similar to the one shown in the diagram. If the other three funnels have top diameters of 10<sup>(2)</sup> cm, 8<sup>(3)</sup> cm, and 6<sup>(4)</sup> cm, find the measures of the remaining parts for all three funnels.

Slant height	$t_1$
Funnel 2:	
$\frac{S_2^*}{16} = \frac{10}{12}$	$\frac{t_2}{10} = \frac{10}{12}$
$S_2^* = \frac{10(16)}{12}$	$t_2^* = \frac{10(10)}{12}$
$S_2 = 13.3 \text{ cm}$	$t_2 = 8.3 \text{ cm}$



Funnel 3:	
$\frac{S_3}{16} = \frac{8}{12}$	$\frac{t_3}{10} = \frac{8}{12}$
$S_3 = \frac{8(16)}{12}$	$t_3 = \frac{8(10)}{12}$
$S_3 = 10.7 \text{ cm}$	$t_3 = 6.7 \text{ cm}$

Funnel 4:	
$\frac{S_4}{16} = \frac{6}{12}$	$\frac{t_4}{10} = \frac{6}{12}$
$S_4 = \frac{6(16)}{12}$	$t_4 = \frac{6(10)}{12}$
$S_4 = 8 \text{ cm}$	$t_4 = 5 \text{ cm}$