Name: _____Key_____

AWM10 **Ch. 6.1 Similar Figures** Notes

When two figures or shapes are similar, one figure or shape has dimensions (length and width) that are proportional to the other figure. We will look at many different types of figures and determine whether or not they are similar.

Similar Figures: shapes that are the same, but they are different sizes. Same ratio of sides.

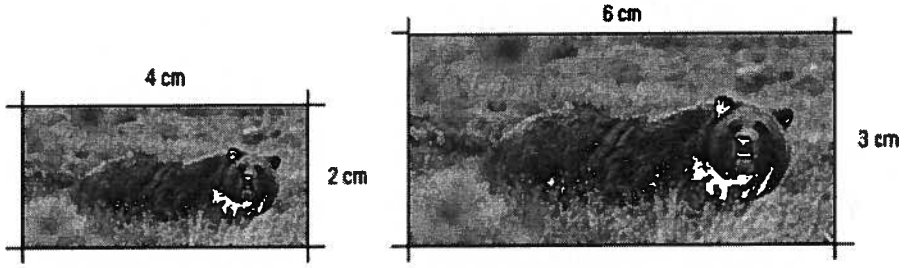
Congruent: same size and shape.

Corresponding Angles: angles in the same position when a transversal crosses 2 parallel lines. Also angles that are in the same position in similar polygons.

Corresponding Sides: Sides that match in similar polygons.

Example 1

Debbie works at an art gallery and is adjusting a bear image to fit on a certain wall. She is not sure if she changed the length and width by the same amount and wants to find out if she has used the right ratio for each dimension.



a) What is the ratio of lengths (the horizontal measurement)?

$\frac{4}{6}$

b) What is the ratio of widths (the vertical measurement)?

$\frac{2}{3}$

c) Has the same ratio been used in both cases?

$\frac{4}{6} = \frac{2}{3}$ $\quad 4 \times 3 = 6 \times 2$

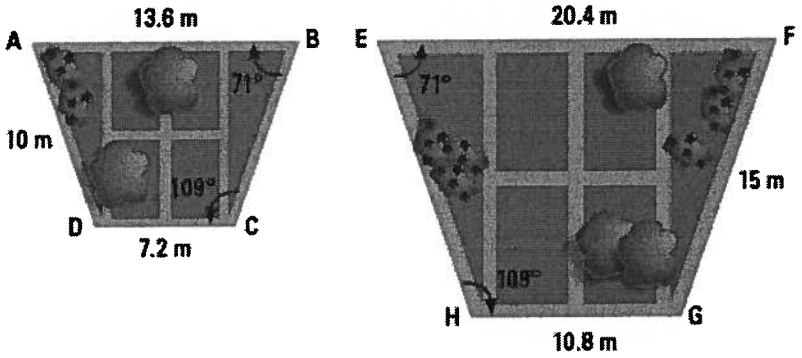
$12 = 12$ Yes the same ratio has been use for both length and width.

d) Are the two pictures similar?

Yes.

Example 2

Steve and Tanya are moving from their home in Chilliwack to a new larger home in Hope. Tanya loves her garden so much she wants to build a bigger one in Hope but keep it exactly the same shape. Steve drew out the plans for the new larger garden on the right.



a) Are these two gardens similar?

$\frac{13.6}{20.4} = \frac{10}{15}$ $\quad 13.6 \times 15 = 20.4 \times 10$

$\quad 204 = 204$

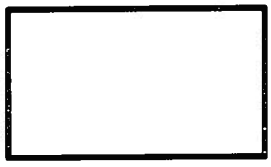
$\frac{13.6}{20.4} = \frac{7.2}{10.8}$ $\quad 13.6 \times 10.8 = 20.4 \times 7.2$

$\quad 146.88 = 146.88$

Yes, these two gardens are similar. Sides are in proportion with each other.

Example 3

A tissue company creates rectangular tissue with a length of 9 cm and a width of 10 cm. They want to increase the size of their tissue for people with bigger noses by a factor of 1.7. What would be the new dimensions of the larger tissue?



9 cm

10 cm

Increase by 1.7 means x all dimensions by 1.7

$9 \times 1.7 = 15.3$

$10 \times 1.7 = 17$

New dimension: 15.3cm x 17 cm

Let's say the tissue company wanted to decrease the size by 2 for people with smaller noses. What would be the dimension of the smaller tissue?

Decrease by 2 means divide all dimensions by 2.

$9 \div 2 = 4.5$

$10 \div 2 = 5$

New dimension: 4.5 cm x 5 cm