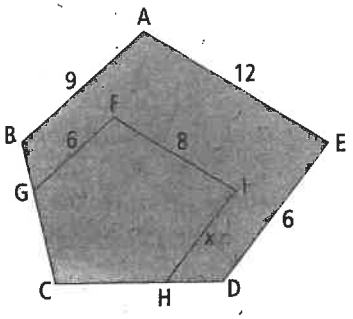
For help with #5 and #6, refer to Example 2 on page 156.

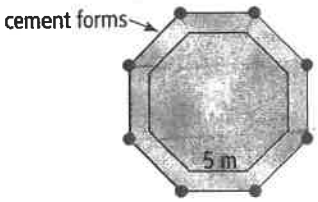
5. Use the two similar pentagons to help determine the missing side length. Show your work.



6. The sides of rectangle A measure 22.4 m and 14.7 m. One side of a similar rectangle B measures 4.3 m. The measure for the other side is missing. Rectangle A is an enlargement of rectangle B with a scale factor of 5.2. What is the missing measurement, to the nearest tenth?

9. Michelle plans to make a game board that is a reduction of an actual baseball diamond. A baseball diamond is a square with sides that measure 27.4 m (2740 cm). Draw Michelle's game board using a scale of 1:182.5.

10. a) Rachel's family is making a cement deck around a pool that is a regular octagon. They want the cement deck to keep the same shape as the pool, but with sides 1.5 times as long as the pool. What do the lengths of the cement forms along the sides of the outer octagon need to be in order to pour the cement?



b) What is the sum of the interior angles in an octagon? Show how you know.

Literacy Link

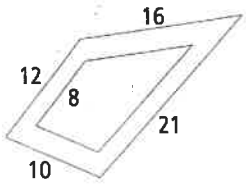
A *regular polygon*, has all sides equal and all angles equal.

11. The pattern shows the front of a birdhouse. Chris enlarged the pattern using a scale factor of 3. He needs to make it twice as large as that.

a) Draw the correct size.

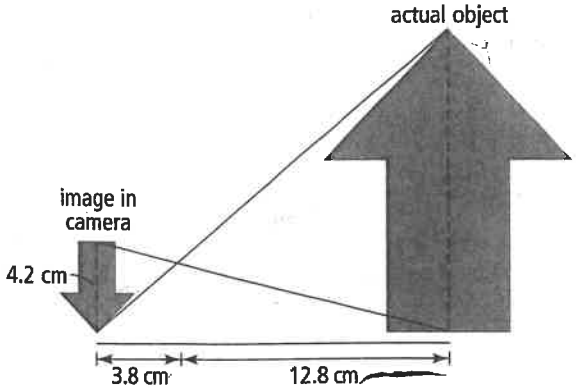
b) Explain how you know the enlargement is similar to the original pattern.

12. A piece of cardboard is cut showing the inner and outer boundaries of a pair of similar quadrilaterals. Calculate the perimeter of the smaller quadrilateral.



Extend

13. In a camera, similar figures occur as shown. Calculate the actual height of the arrow.



Did You Know?

In the past, some cameras showed the image upside down in the viewfinder.

14. Eliza is building a model of the canvas tent her family uses in Behchoko, NWT. The model will have a peak height of 12 cm. The actual tent floor measures 2.4 m by 3 m. The walls are 1.5 m high and the peak height is 2.4 m.

a) What scale factor will Eliza need to use for her model?

b) The front of the tent is a pentagon. Calculate the dimensions of this polygon on the model.

c) Calculate the other dimensions of the tent model.

15. An old rectangular tank with length 0.3 m could hold 154 L of water. A new similar tank has a length of 1.5 m. What is the capacity of the new tank?

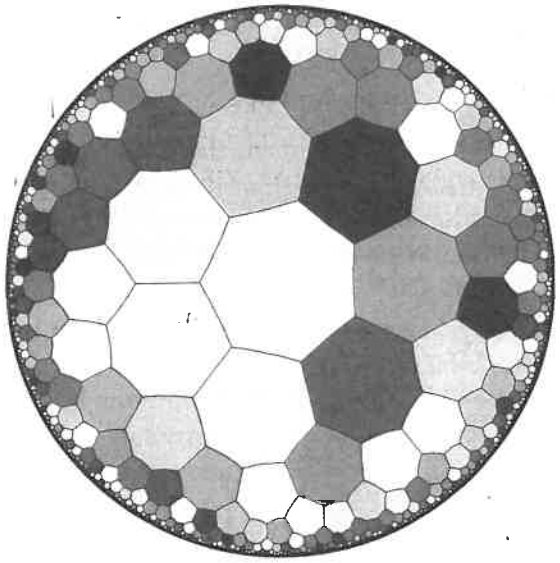
16. How do the ratios of areas compare to the ratios of corresponding side lengths in similar polygons? Use pairs of similar polygons to help explain your answer.

17. Develop an argument showing that if two prisms have corresponding side lengths in the ratio of 3:1, then their volumes are in the ratio of 27:1.

18. a) Identify the similar polygons shown in the tessellation.

b) Describe the pattern verbally. Use your description to create your own tessellation that features similar polygons.

c) Sketch each different set of similar polygons in your tessellation. Label the dimensions of each set.



Math Link

For your design project, include a polygon.

- Use a polygon that is similar to one shown here.
- Use an appropriate scale factor and draw a scale diagram of the polygon to fit on your design project. Identify the scale factor used on your design.