

MATH 106 - QUIZ 4
Spring 2009

Name _____

Answer all questions with the best possible answer. Point values are indicated.

1. Use complete sentences for explanations. (1 point each)

- a. Explain how you know that all rhombi will tessellate the plane. Use pictures if you want to.

- b. Explain how you know, using an argument involving angles measures, why regular decagons cannot tessellate the plane.

2. State whether each of the following shapes can tessellate the plane: (2 point total)

- a. A regular pentagon yes no
- b. A regular hexagon yes no
- c. A trapezoid yes no

- d. This shape yes no



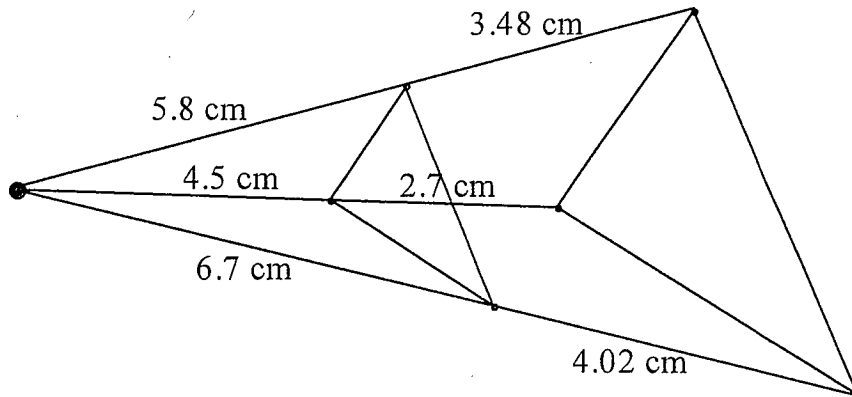
3. Complete the following: (3 points)

- a. 3.8 cm is _____ times longer than 1.1 cm.

- b. 24 inches is _____ % as long as 36 inches.

- c. A change in the number of graduates from Smalltown High from 20 to 27 represents a _____ % increase.

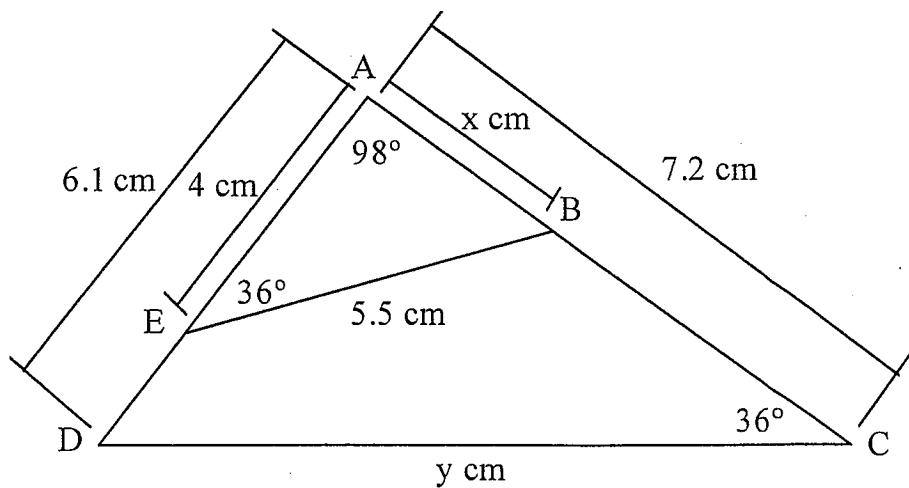
4. Are the two shaded triangles below similar? If so then what s the scale factor? If not, why not? (2 points)



4. Use the diagram below to answer the questions. (4 points)

- a. Explain why triangles ACD and AEB below must be similar.

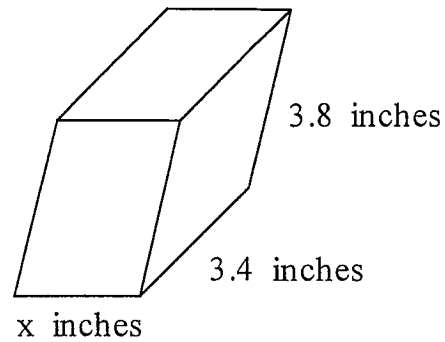
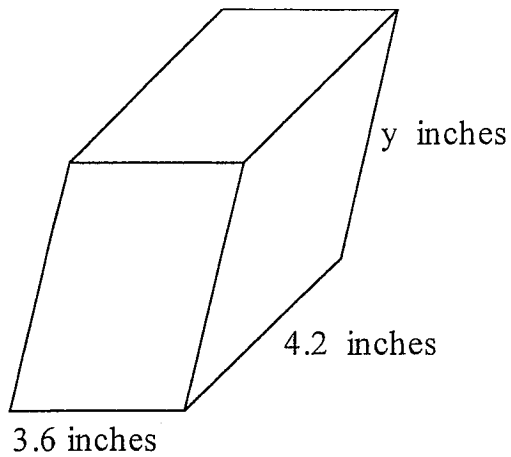
They are similar because: _____



- b. Knowing that triangles ACD and AEB are similar, find the following.

$x =$ _____ $y =$ _____ $\angle EBA =$ _____

8. If the two polyhedra below are similar, then what are the values of x and y ?
(2 points)

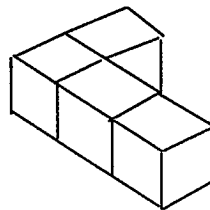


$x =$ _____

$y =$ _____

9. Suppose you have an L-shaped figure such as the one below. (2 points)

- a. What is the volume of a figure similar to this one, with a scale factor of 2.8?



- b. What is the surface area of a figure similar to this one, with a scale factor of 2.8?

10. (2 points) Explain how the mathematical ideas of “cylinder” and “cone” are different from most people’s traditional, everyday use of these terms.

11. (2 points) Draw, as carefully as possible, the following figures:

a. a right circular cone

b. an oblique non-circular cylinder.

12. (2 points) Fill in the blank in each statement with always, sometimes, or never to make a true statement.

a. A chord of a circle may _____ have one endpoint at the center of the circle.

b. A circular cylinder _____ has reflection symmetry.

13. (2 points) Answer the following:

a) How many reflection symmetries does a right circular cylinder have? _____

b) Prism is to pyramid as cylinder is to _____.