



9-8. Assume that two figures on a flat surface, A and B , are similar. [Homework Help](#) 

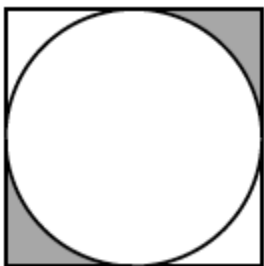
a. If the linear scale factor is $\frac{2}{5}$, then what is the ratio of the areas of A and B ?


b. If the ratio of the perimeters of A and B is $14:1$, what is the ratio of the areas?

c. If the area of A is 81 times that of B , what is the ratio of the perimeters?

9-9. Find the area of a regular decagon with perimeter 100 units. Show all work. [Homework Help](#) 

9-10. The diagram below shows a circle inscribed in a square. Find the area of the shaded region if the side length of the square is 6 meters. [Homework Help](#) 




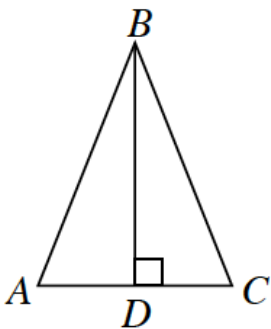
9-11. Solve each system of equations below. Write your solution in the form (x, y) . Check your solution. [Homework Help](#) 

a. $3x - y = 14$
 $x = 2y + 8$

b. $x = 2y + 2$
 $x = -y - 10$

c. $16x - y = -4$
 $2x + y = 13$

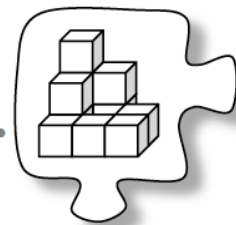
9-13. Multiple Choice: What information would you need to know about the diagram below in order to prove that $\triangle ABD \cong \triangle CBD$ by SAS \cong ? [Homework Help](#) 



- a. $AD \cong CD$
- b. $AB \cong CB$
- c. $\angle A \cong \angle C$
- d. $\angle ABC \cong \angle CBD$
- e. None of these

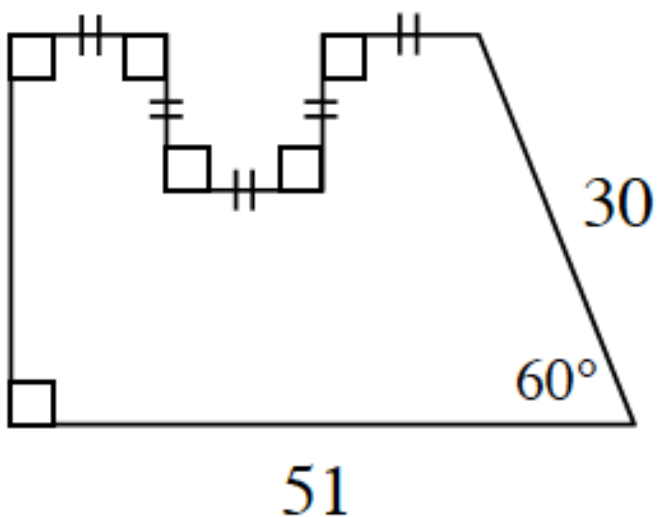
9.1.2 How can I measure it?

Volumes and Surface Areas of Prisms




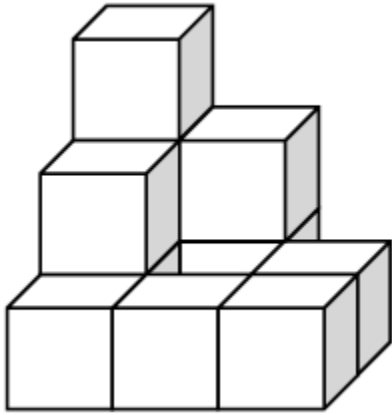
9-20. Mr. Wallis is designing a home. He found the plan for his dream house on the Internet and printed it out on paper. [Homework Help](#)

- a. The design of the home is shown below. If all measurements are in millimeters, find the area of the diagram.



- b. Mr. Wallis took his home design to the copier and enlarged it 400%. What is the area of the diagram now? Show how you know.

9-21. Below is the solid from problem 9-7. View it isometrically using the [9-21 HW eTool](#) (CPM). [Homework Help](#) 



a. On graph paper, draw the front, right, and top views.

b. Find the total surface area of the solid.

9-22. Review what you know about the angles of polygons below. [Homework Help](#) 

a. If the exterior angle of a polygon is 29° , what is the interior angle?


b. If the interior angle of a polygon is 170° , can it be a regular polygon? Why or why not?

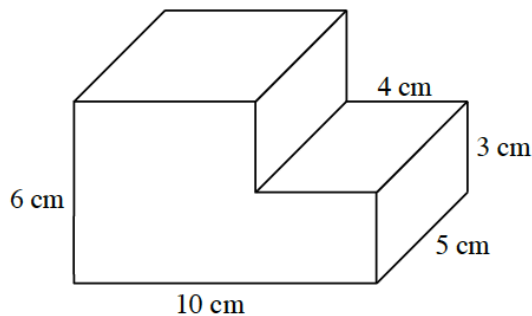
c. Find the sum of the interior angles of a regular 29-gon.

9-25. On graph paper, graph $\triangle ABC$ if $A(-3, -4)$, $B(-1, -6)$, and $C(-5, -8)$. [9-25 HW](#)

[eTool](#) (Desmos). [Homework Help](#)  What is AB (the length of \overline{AB})?

- Reflect $\triangle ABC$ across the x -axis to form $\triangle A'B'C'$. What are the coordinates B' ? Describe the function that would change the coordinates of $\triangle ABC$ to $\triangle A'B'C'$.
- Rotate $\triangle A'B'C'$ 90° clockwise (\curvearrowright) about the origin to form $\triangle A''B''C''$. What are the coordinates of C'' ?
- Translate $\triangle ABC$ so that $(x, y) \rightarrow (x + 5, y + 1)$. What are the new coordinates of point A ?

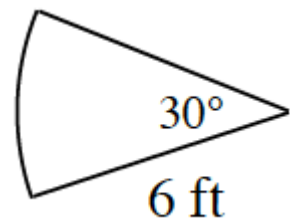
9-26. Compute the volume of the figure below. [Homework Help](#) 



9-27. **Multiple Choice:** Find the perimeter of the sector at right. [Homework Help](#)



- 12π ft
- 3π ft
- $6 + 3\pi$ ft
- $12 + \pi$ ft
- None of these

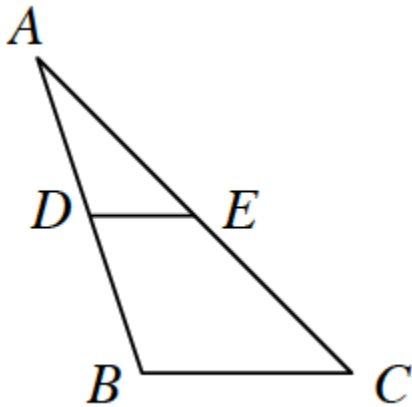


9.1.3 What if the bases are not rectangles?

Prisms and Cylinders

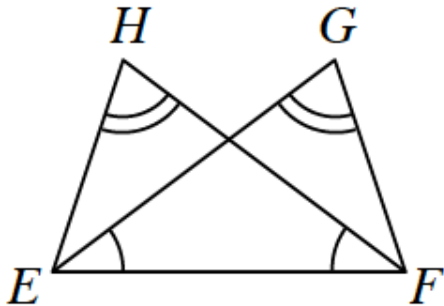


9-33. In the diagram below, \overline{DE} is a mid-segment of $\triangle ABC$. If the area of $\triangle ABC$ is 96 square units, what is the area of $\triangle ADE$? Explain how you know. [Homework Help](#)



9-34. A regular hexagonal prism has a volume of 2546.13 cm^3 and the base has an edge length of 14 cm. Find the height and surface area of the prism. [Homework Help](#)

9-35. Are $\triangle EHF$ and $\triangle FGE$ congruent? If so, explain how you know. If not, explain why not. [Homework Help](#)



9.1.4 How does the volume change?

Volumes of Similar Solids



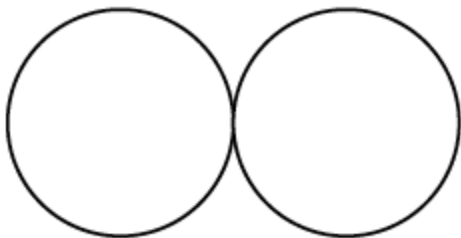
9-45. Koy is inflating a spherical balloon for her brother's birthday party. She has used three full breaths so far and her balloon is only half the width she needs. Assuming that she puts the same amount of air into the balloon with each breath, how many more breaths does she need to finish the task? Explain how you know. [Homework Help](#)


9-46. Draw a cylinder on your paper. Assume the radius of the cylinder is 6 inches and the height is 9 inches. [Homework Help](#)

a. What is the surface area of the cylinder? What is the volume?

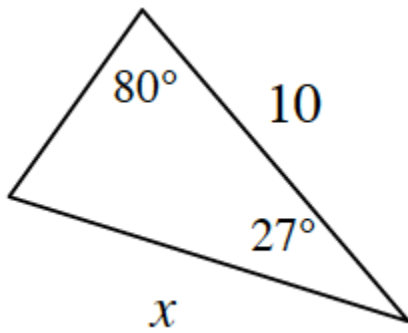
b. If the cylinder is enlarged with a linear scale factor of 3, what is the volume of the enlarged cylinder? How do you know?

9-47. While Katarina was practicing her figure skating, she wondered how far she had traveled. She was skating a "figure 8," which means she starts between two circles and then travels on the boundary of each circle, completing the shape of a sideways 8. If both circles have a radius of 5 feet, how far does she travel when skating one "figure 8"? [Homework Help](#)

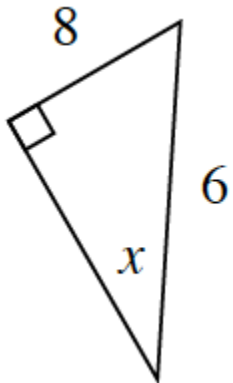


9-48. For each triangle below, solve for x , if possible. If no solution is possible, explain why. [Homework Help](#) 

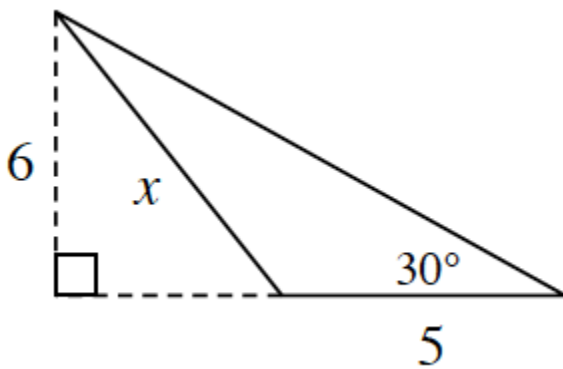
a.




b.



c.



9-49. The mat plan for a three-dimensional solid is shown below. [9-49 HW eTool](#) (CPM). [Homework Help](#) 

3	2	0
1	4	1
0	3	2

RIGHT

FRONT

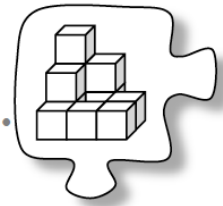
Mat Plan

a. On your paper, draw the front, right, and top views of this solid.

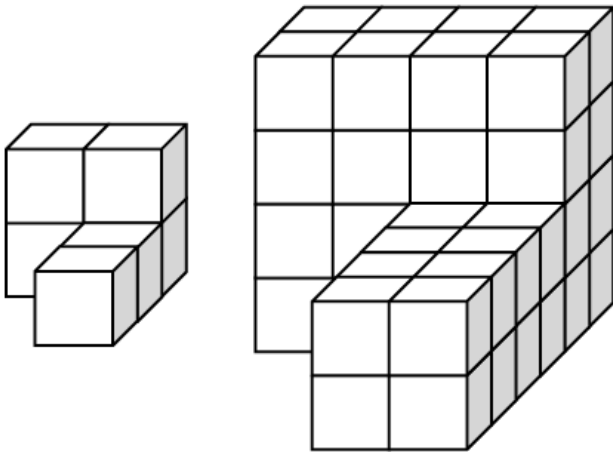
b. Find the volume and surface area of the solid.

9.1.5 How does the volume change?


Ratios of Similarity

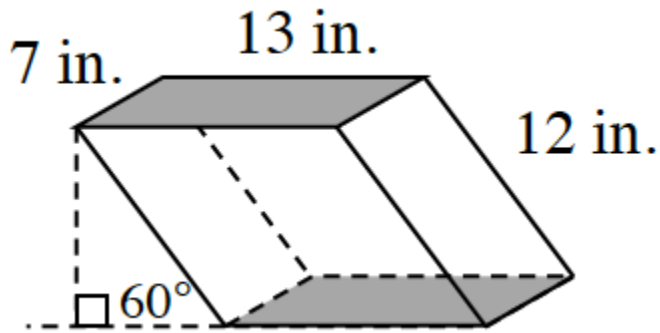


9-56. Consider the two similar solids below. [9-56 HW eTool](#) (CPM). [Homework Help](#)



- Create a net plan and draw the front, right, and top views for the solid on the left.
- What is the linear scale factor between the two solids?
- Find the surface area of each solid. What is the ratio of the surface areas? How is this ratio related to the linear scale factor?
- Now find the volumes of each solid. How are the volumes related? Compare this to the linear scale factor and record your observations.


9-57. Elliot has a modern fish tank that is in the shape of an oblique prism, shown below. [Homework Help](#) 



- a. If the slant of the prism makes a 60° angle with the flat surface on which the prism is placed, find the volume of water the tank can hold. Assume that each base is a rectangle.

- b. If Elliot has 25 fish, how crowded are the fish? That is, what is the density of fish, measured in number of fish per cubic inch?

- c. What is the density of fish in Elliot's tank in fish per cubic *foot*?

9-58. Decide if the following statements are true or false. If they are true, explain how you know. If they are false, provide a counterexample. [9-58a HW eTool](#) (Desmos). [9-58d HW eTool](#) (Desmos). [Homework Help](#) 

- a. If a quadrilateral has two sides that are parallel and two sides that are congruent, then the quadrilateral must be a parallelogram.

