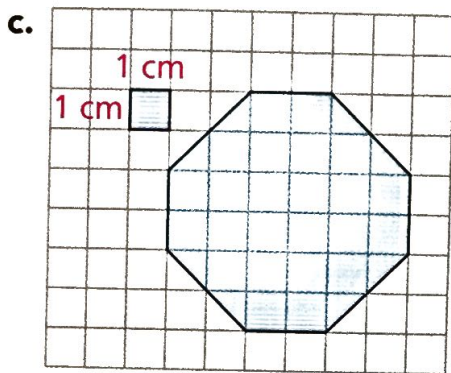
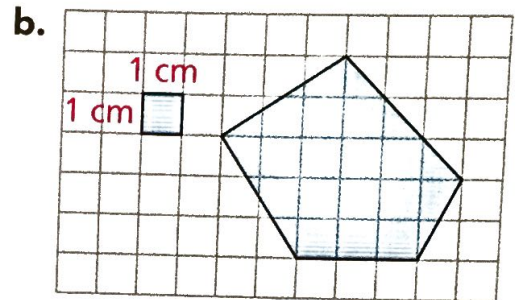
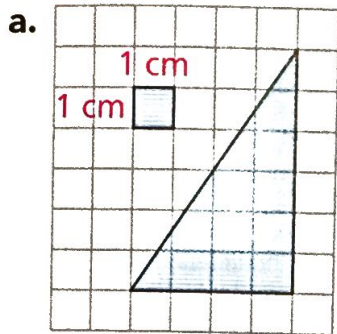


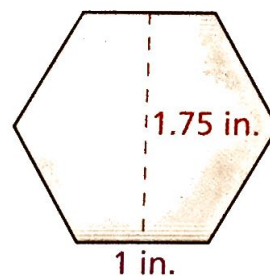
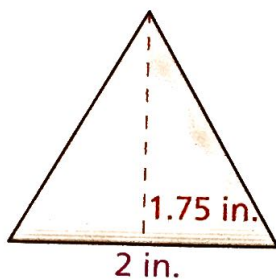
Applications

1. Suppose that the polygons below were drawn on centimeter grid paper. How many 1-centimeter cubes (some cut in pieces) would it take to cover each polygon?



2. Using the method from Problem 2.1, Darius and Mariana made paper prisms from 4 inch-by-6 inch pieces of paper. One has an equilateral triangle for its base, another has a square base, and the third has a regular hexagon for its base. The height of each prism is 4 inches.

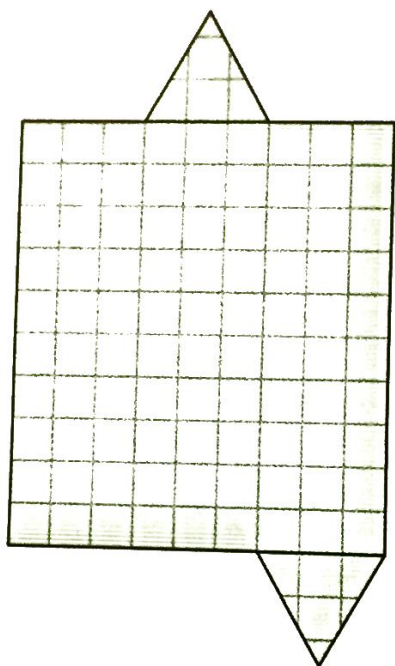
To find the areas of the base and top polygons, they traced and measured those figures, as accurately as they could, to get the data shown below. The figures are not drawn to scale.



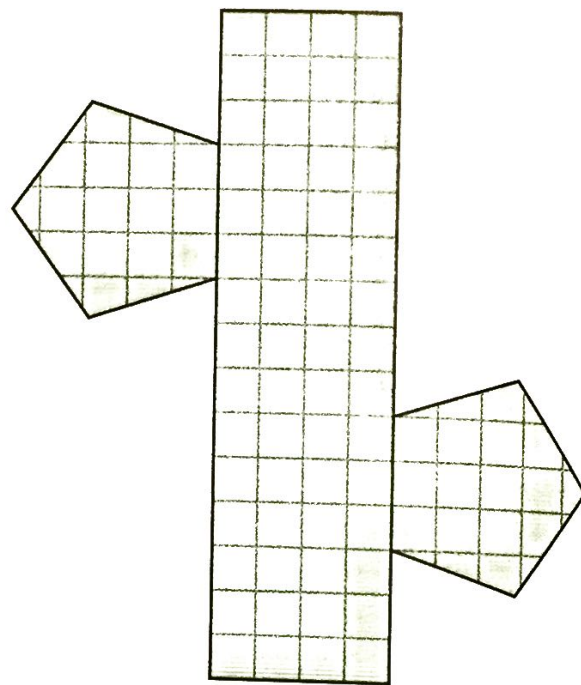
- What are the areas of the sides of each prism?
- What are the perimeters of the bases (and tops) of the each prism?
- What are the areas of the bases (and tops) of each prism?

For Exercises 3–5, use a copy of each of the figures on centimeter grid paper. Cut out each figure and tape it together to make a prism. Use the resulting prisms to answer parts (a) and (b) for each figure.

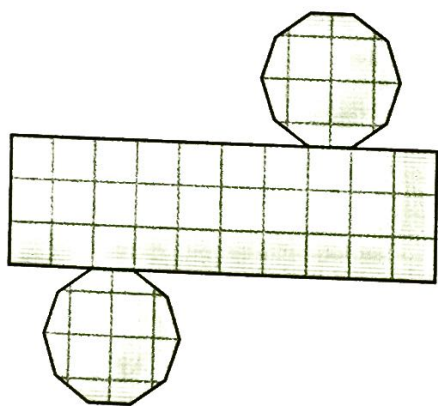
3.



4.

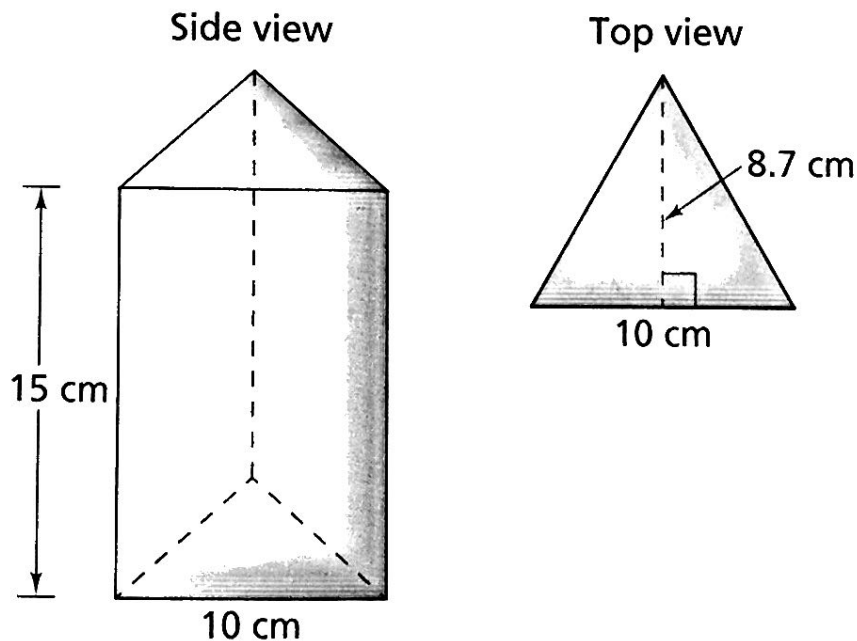


5.



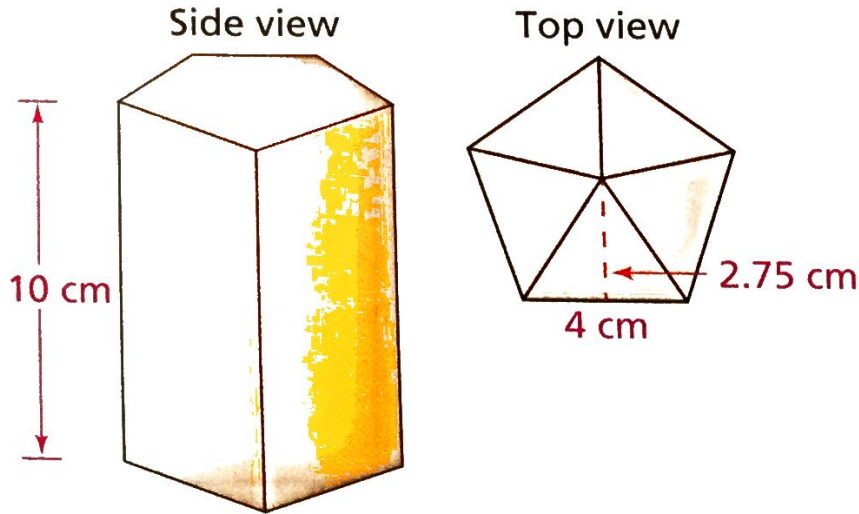
- a. What is the surface area of each prism? Explain your reasoning.
 - b. What is the volume of each prism? Explain your reasoning.
- 6.
- a. Describe how to find the surface area of any prism.
 - b. Compare your methods for finding the surface area of any prism with your method for finding the surface area of a rectangular prism.

7.
 - a. Describe how to find the volume of any prism.
 - b. Compare your methods for finding the volume of any prism with your method for finding the volume of a rectangular prism.
8. Suppose that the figures shown in Exercise 1 are the bases of prisms that are 10 centimeters tall (a triangular prism, a pentagonal prism, and an octagonal prism). What is the volume of each prism?
9. Use your answers to Exercise 2 to find the volumes of the prisms that Darius and Mariana created.
 - a. The triangular prism
 - b. The square prism
 - c. The hexagonal prism
 - d. Do the results in parts (a)–(c) fit the same pattern relating areas and volumes of the three prisms as your work in Problem 2.1? Why or why not?
10. Side and top views of a prism whose base and top are equilateral triangles are shown below.



- a. What is the surface area of the prism?
- b. What is the volume of the prism?

11. The sketch below shows side and top views of a prism with base and top that are regular pentagons.



- What is the surface area of the prism?
 - What is the volume of the prism?
12. For Problem 2.1, Sheryl made paper prisms that were all 8.5 inches high. She traced the polygon bases on 1-inch grid paper to give a picture like the one shown below. Estimate the volume of each prism.

