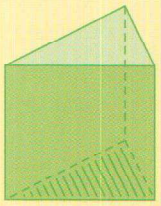
7.50 - Questions Handout #s 1 - 9

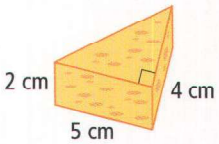
Key Ideas

- The surface area of a triangular prism is the sum of the areas of its faces.
- Volume of a triangular prism = area of base × height of prism

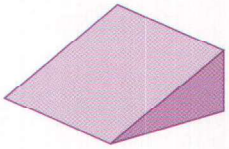


Communicate the Ideas

1. Carl says the size of the piece of cheese shown is 20 cm^2. Explain what mistake he is making.



2. Bob wants to know how much foam is needed to fill a wedge-shaped pillow. What does he need to calculate, surface area or volume? Justify your response.

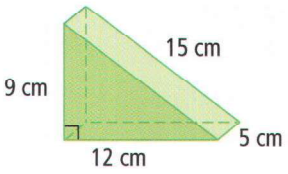


Check Your Understanding

Practise

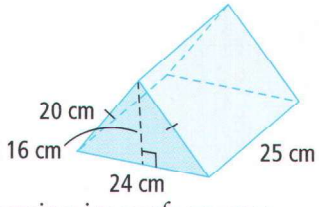
For help with questions 3 and 4, refer to the Example.

3. The dimensions of a right triangular prism are given.



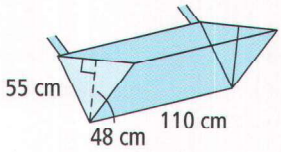
a) Determine its surface area.
b) Calculate its volume.

4. The diagram shows the dimensions of an isosceles triangular prism.



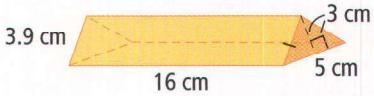
a) Determine its surface area.
b) Calculate its volume.

5. The scoop on a backhoe is an equilateral triangular prism.



a) What area of sheet metal was used to make the scoop?
b) How much liquid can the scoop hold?
c) How much earth might the scoop hold? Explain your answer.

6. One type of chocolate is packaged in a box that is a triangular prism.



a) Find the least amount of cardboard needed to package each chocolate bar. Round your answer to the nearest unit.

b) The manufacturer needs to allow for the overlapping part that makes up the seams. How much cardboard is needed for each box if 10% more is added for the seams?

c) If 1.2 g of chocolate fills 1 cm^3, how many grams of chocolate fit in each box?

7. Decide whether the following statements are always, sometimes, or never true. Justify your answers using pictures and words. Then, change each statement that is sometimes true to make a similar statement that is always true.

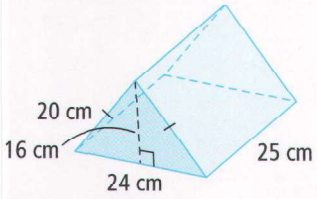
a) The surface area of a triangular prism can be found by adding half the area of the triangular faces to the area of the rectangular faces.

b) The volume of a triangular prism can be found by multiplying the area of the base by the height.

c) The base area of a triangular prism is calculated by dividing the base area of a rectangular prism by two.

Apply

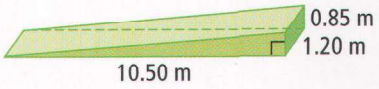
8. Samantha is preparing a project for her science class. She has decided to demonstrate the nature of white light as it passes through solid glass prisms. Her teacher asks her to show some related calculations.



Using the dimensions provided, help Samantha determine the amount of glass used to make the triangular prism.

Try This!

9. The school has hired construction workers to build a wheelchair ramp to the entrance.

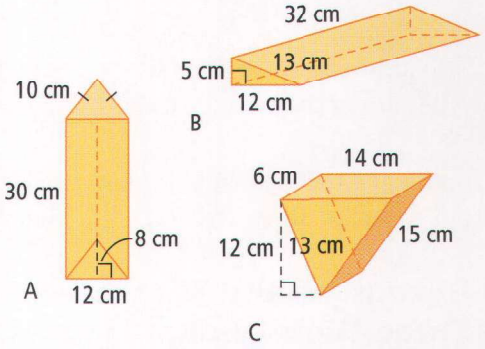


a) How much concrete is needed to make the ramp?

b) The exposed surfaces of the the ramp are to be painted blue. How many cans of paint are needed? One can covers 20 m^2.

Extend

10. Three triangular prisms, A, B, and C, are shown.



a) Which do you think is the biggest? Define what you mean by the biggest.

b) Which triangular prism has the greatest volume?

c) Which has the greatest surface area?

d) If a triangular prism has a large volume, does it also have a large surface area? Justify your answer.

11. A triangular prism has a height of 8 cm and a volume of 400 cm^3.

a) What is the area of a base of the triangular prism?

b) Sketch two possible triangular prisms, with dimensions, that match the description given.