Unit 3 Lesson 4 Volume and Surface Area Application

How much sand is needed to fill a pit that is 5m deep and 6m wide and 8m long?

Cylinder P has a base radius of 1.4 m and a height of 3 m. Cylinder Q has a base radius of 2 m and a height of 2.1 m. Find the ratio of their volumes.

Find the volume of a right circular cone-shaped building with a height of 9cm and a radius of base 7 cm.

Find the Volume of the following irregular shapes.





A cubic tank with 4.6 m edges is filled with water. How much water will be left in the tank if some is drained off to fill a cylindrical tank with a radius of 2.2 m and a height of 4.6 m.

A water tank is 11 feet high, 11 feet long, and 5 feet wide. A solid metal box which is 9feet high, 3 feet long, and 2 feet wide is sitting at the bottom of the tank. The tank is filled with water, but the box does NOT contain any water.

What is the volume of the water in the tank?

William needs to ship a package of flour to a baker. He has 90 cubic meters of flour to send. The post office will not ship any box which has an edge 10 meters or longer.

What dimensions will hold exactly 90 cubic meters of flour, but whose edge lengths are all integers less than 10 meters?

The diagram shows a prism. The cross-section of the prism consists of a rectangle and a semicircle.

a) Calculate the volume of the prism. Give your answer to the nearest cm^{3} .

b) Calculate the total surface area of the prism. Give your answer to the nearest cm^2 .



Graded Practice Unit 3 Lesson 4

1) Omar needs to ship a package of flour to a baker. He has 168 cubic meters of flour to send. The post office will not ship any box which has an edge 10 meters or longer.

What dimensions will hold exactly 168 cubic meters of flour, but whose edge lengths are all integers less than 10 meters?

2) A water tank is 12 feet high, 2 feet long, and 12 feet wide. A solid metal box which is 1foot high, 1 foot long, and 10 feet wide is sitting at the bottom of the tank. The tank is filled with water, but the box does NOT contain any water.

What is the volume of the water in the tank?

3) Find the volume of a right circular cone-shaped building with a height of 6cm and a radius of base 14 cm.

4) Cylinder P has a base radius of 3m and a height of 14 m. Cylinder Q has a base radius of 6 m and a height of 7 m. Find the ratio of their volumes.

5) The diagram shows a wooden block that has a hole drilled in it. The diameter of the hole is 2 cm. Calculate the volume of this solid, giving your answer correct to two decimal places.

6 cm 6 cm 4 cm