

Course: MFM2P Gr. 10 Applied

Lesson: 57

Unit: Volume and Surface Area

Topic: Unit Review

✚ *homework check:* FM10 p. 402 #1, 3, 4, 6, 8

✚ *note:* Unit Review

FM10 p. 406 #1 – 5, 7, 10

FM10 p. 408 #1 – 4, 6, 7

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Chapter 9 Review

Review of Key Terms

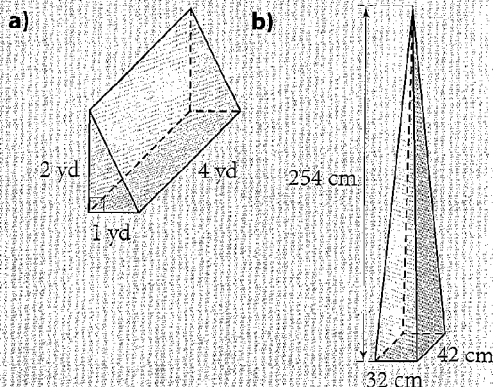
- Copy each definition, description, or example into your notebook, then match it with the best key term from the list below.

cone	sphere
cylinder	surface area
prism	volume
pyramid	

- a three-dimensional object with length, width, and height
- a Pyramid of Giza
- a three-dimensional object with all points on its surface the same distance from the centre of the shape
- a three-dimensional object with a circular base and a curved surface connecting the circle to a point called the vertex
- the amount of space occupied by an object
- a three-dimensional object with parallel circular faces
- the total area of the surface of a three-dimensional object

9.1 Volume of Prisms and Pyramids, pages 364 to 371

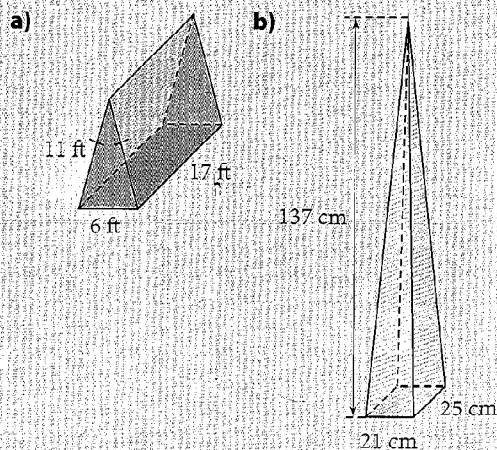
- Find the volume of each object.



- Suppose the length of a rectangular prism is doubled. What is the effect on the volume of the prism?

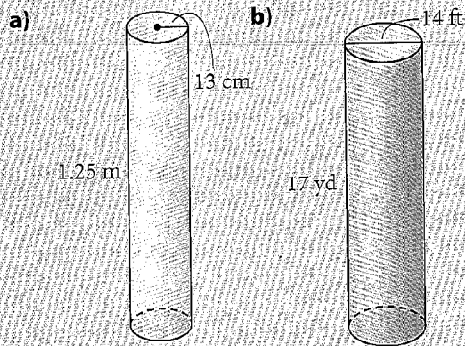
9.2 Surface Area of Prisms and Pyramids, pages 372 to 380

- Find the surface area of each prism.



9.3 Surface Area and Volume of Cylinders, pages 381 to 390

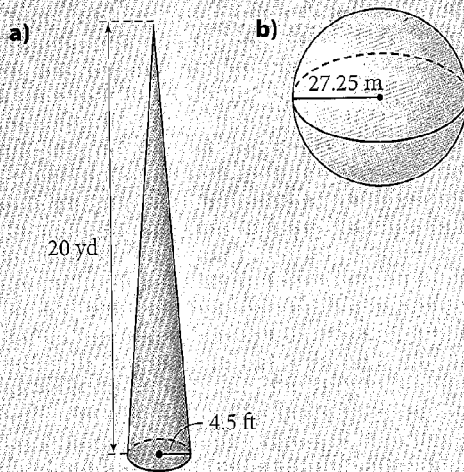
5. Find the surface area and volume of each cylinder.



6. A log with a uniform diameter of 12" is cut into 8 equal pieces, each 22" long.
- Find the volume of wood in each piece.
 - Find the total volume of the tree trunk.

9.4 Volume of Cones and Spheres, pages 391 to 397

7. Find the volume of each object.



8. A cubical container with sides 15 in. long is full of water. The water is poured into a rectangular prism with dimensions 20 in. by 18 in. by 54 in.

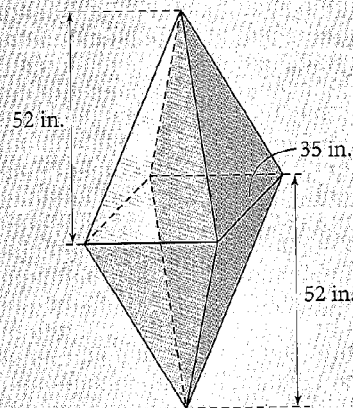
- Find the volume of each container.
- How much empty space is left in the rectangular prism?

9. If you were to pack a conical container with snow and melt it, the volume of meltwater would be about one-third the volume of the cone. The cone has radius 27 in. and height 77 in.

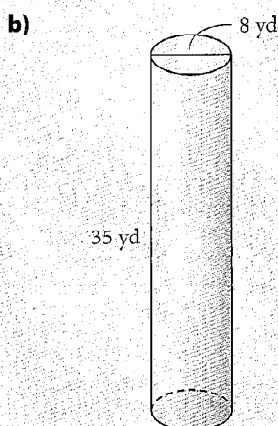
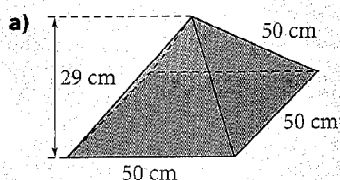
- Find the volume of the cone.
- Find the volume of meltwater in the cone.
- To what height would the water fill the cone?

9.5 Solve Problems Involving Surface Area and Volume, pages 398 to 405

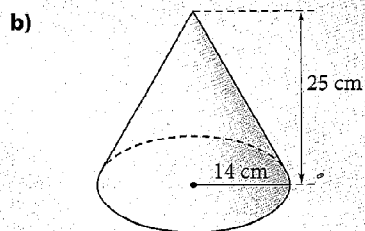
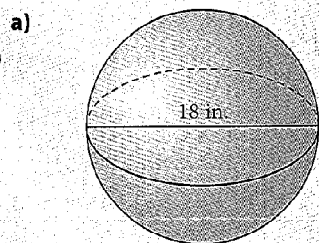
10. Find the surface area of this composite shape, made of two square-based pyramids.



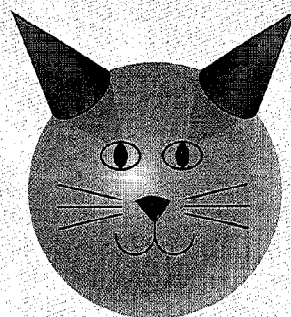
1. Find the surface area and the volume of each object.



2. Find the volume of each object.



3. A cone has height 75 ft and radius 21 ft.
- Find the volume of the cone.
 - A sphere with the same volume as the cone is to be constructed. Find the diameter of the sphere.
4. A cube has side length 18 in. A rectangular prism has length 12 in., width 8 in., and height 5 ft.
- Which object has the greater volume? How do you know?
 - Which object has the greater surface area? Explain.
5. Erin is filling novelty balloons for her sister's cat-themed birthday party. When full, each balloon will be in the shape of a sphere with two cones. The sphere has radius 6". The cones each have radius 2" and height 6".



- Find the volume of helium needed to fill each balloon.
- Erin rents a helium tank to fill the balloons. The tank contains 14 ft^3 of helium. How many balloons can Erin fill?

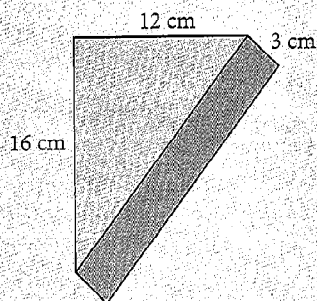
Chapter Problem Wrap-Up

For Canada, Vanessa packages skateboard wheels in a cylindrical container that is 8.5 cm tall with radius 2.78 cm. For the United States, however, she plans to use a container that is 3.5" tall with diameter 2.25".

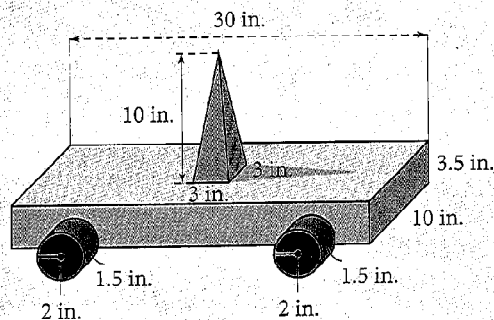
- Which container requires more material? How much more?
- The wheels have diameter 5.4 cm and height 2.1 cm. Which container has more wasted space?



- Owen is packing blocks into a box. Each block is in the shape of a triangular prism, as shown. How many blocks can Owen fit in a box with volume 1000 cm^3 ? Justify your answer and state any assumptions you have made.



- A toy is made of a rectangular body, with a square-based pyramid on top, and four cylindrical wheels.



- Find the total surface area of the toy.
- If a container of model paint covers 300 in.^2 on the first coat and 450 in.^2 on the second coat, how many containers of paint will be needed to paint the toy with two coats?