## Remember: It's best to draw the shape when it is not given!

- **1.** Determine the volume of a rectangular-based prism with a length of 9 m, a width of 2 m and a height of 5 m.
- 2. Determine the volume of a cylinder with a radius of 6 m and a height 14 m.
- **3.** Determine the volume of a triangular prism with a length of 18 cm and the triangular base has a height of 4 cm and a base of 6 cm.
- **4.** Determine the volume of a square-based pyramid that has a height of 6 cm and a square base with sides that are 5 cm.
- 5. Determine the volume of a cone with a radius of 8cm and a *slant* height of 10 cm?
- 6. What is the cost to make a solid steel wrecking ball with a diameter of 1.2 m if the cost of steel is \$180/m<sup>3</sup>?
- 7. What is the cost to fill a box 2 m  $\times$  4 m  $\times$  3 m with sand if the cost of sand is \$2.25/m<sup>3</sup>?
- **8.** What is the cost to fill a cylindrical tank with liquid fertilizer if the diameter is 4 m, the height is 6 m and the fertilizer costs \$6.50/m<sup>3</sup> ?
- **9.** Booster Juice is offering a special conical cup for a limited time. What is the cost to fill the cup if the height is 15 cm, the radius is 5 cm and the smoothie costs \$0.014/mL? (*note*: 1 mL = 1 cm<sup>3</sup>)
- **10.** A solid cylinder fits perfectly into a rectangular box. If the box has dimensions 8 cm × 8 cm × 12 cm, then how much <u>extra</u> space is left in the box?
- **11.** A cone fits perfectly into a cylindrical box with a diameter of 12 cm and height 14 cm. How much <u>extra</u> space is left in the cylindrical box?
- 12. The Toblerone bar to the right contains 15 pieces (side-by-side -- assume no air gap between the triangular pieces). If each piece is 8 mm thick, has a base of 35 mm and a height of 38 mm, then how much space is inside an empty Toblerone package?



**13.** How much space is contained in the cardboard house to the right if the height from the ceiling to the roof peak is 3 cm?



## ANSWERS

1.	90 m <sup>3</sup>		<b>2.</b> 1583.4	m <sup>3</sup>		3.	216 cm <sup>3</sup>	4.		50 cm <sup>3</sup>
5.	402.1 cm <sup>3</sup>	6.	\$162. <sup>86</sup>	7.	\$54. <sup>00</sup>	8.	\$490. <sup>09</sup>	9.		\$5. <sup>50</sup>
10.	164.8 cm <sup>3</sup>	11.	1055.6 cm <sup>3</sup>		12.	79800 m	$m^3 = 79.8 \text{ cm}^3$	13	3.	1330 cm <sup>3</sup>

- 14. The base of a storage shed is 8 m × 8 m and it has walls that are 2.5 m high. It also has a roof in the shape of a pyramid with a slant height of 4.2 m. How much would it cost to fumigate the shed by filling it with gas if the gas costs \$3.50/m<sup>3</sup>?
- **15.** A cylindrical gumball container is 20 cm high and has a radius of 6 cm. How many gumballs of diameter 3 cm could fit into the container? Is the answer you calculated realistic? Explain.
- **16.** What is the volume of a hexagonal prism that has a height of 10 cm, each side of the hexagonal base is 3 cm and the distance from each side to the centre of the hexagon is 2.6 cm?
- **17.** A marble column in the shape of a cylinder is 9.0 m high and 82 cm in diameter. If the mass of 1 m<sup>3</sup> of marble is 3000 kg, find the mass of the column.
- 18. The dimensions for a section of concrete pipe used to make storm sewers, is shown in the diagram to the right. Calculate the volume of concrete that is needed to make this section of pipe, to the nearest tenth of a cubic metre.
- **19.** The volume of a cylinder is 972 cm<sup>3</sup>. If the radius of the base is 5 cm, what is the height of the cylinder?
- **20.** Three tennis balls, each 8cm in diameter, are stacked in a cylindrical container.

a) Determine the minimum volume of this container.

b) Determine the volume of the empty space inside the container.

- **21.** To store his grain, Gary is building a cylindrical silo that must have a volume of 185m<sup>3</sup>. The height of the silo must be 15 m. What should the measure of the radius be, to the nearest hundredth of a meter?
- **22.** A farmer had this temporary hoop barn built to store hay bales. The diameter of the structure is 60 feet and the length is 100 feet. If the semi-cylindrical support posts are anchored to a cement foundation wall that is 1.2 feet off the ground, determine the amount of space inside of the structure.

 Answers

 14. \$657.<sup>07</sup>
 15. 160 gumballs
 16. 234 cm<sup>3</sup>
 17. 14258.7 kg

 18. 2.5 m<sup>3</sup>
 19. 12.4 cm
 20. a) 1206.4 cm<sup>3</sup>
 20. b) 402.1 cm<sup>3</sup>

 21. 1.98 m
 22. 148571.7 ft<sup>3</sup>
 20. b) 402.1 cm<sup>3</sup>





