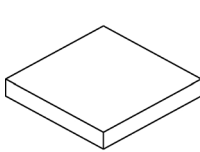


Chapter 9 Test

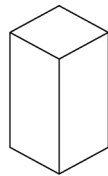
Multiple Choice

For questions 1 to 4, select the best answer.

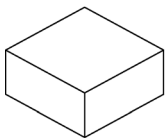
- Heather wants to build a rectangular pen. She has 24 1-m sections of fencing. What are the dimensions of the pen with the greatest area?
A 1 m by 11 m **B** 2 m by 10 m
C 3 m by 9 m **D** 4 m by 8 m
- A square-based prism has a surface area of 600 cm^2 . What are the dimensions of the prism if it has maximum volume?
A 15 cm by 2.5 cm by 2.5 cm
B 8.4 cm by 8.4 cm by 8.4 cm
C 10 cm by 10 cm by 10 cm
D 8 cm by 8 cm by 15 cm
- These square-based prisms all have the same volume. Which prism has the least surface area?



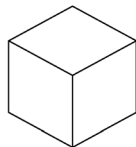
Prism A



Prism B



Prism C



Prism D

- A** Prism A **B** Prism B
C Prism C **D** Prism D
- The volume of a cylinder is 700 cm^3 . What are the radius and height of the cylinder if it has the least surface area possible?
A $r = 5 \text{ cm}$, $h = 8.9 \text{ cm}$
B $r = 4.8 \text{ cm}$, $h = 9.6 \text{ cm}$
C $r = 4.8 \text{ cm}$, $h = 4.8 \text{ cm}$
D $r = 5.2 \text{ cm}$, $h = 8.2 \text{ cm}$

Short Response

Show all steps to your solution. When necessary, round your answer to one decimal place.

- Wendy has 20 m of fencing. She plans to enclose an area in her yard. The fourth side of the area has a hedge, so she only needs to fence three sides. What is the greatest area Wendy can enclose?
- Suppose you plan to build a box with a volume of 120 cm^3 .
a) What are the dimensions of the box?
b) What is the least amount of material required to build the box?
- Amy is building a cylindrical storage tank to hold 800 cm^3 of road salt. Find the radius and height of the tank that requires the least amount of material.

Extend

Provide complete solutions.

- Engla wishes to make a container with a volume of 500 cm^3 using the least amount of material. Should the box be a square-based prism or a cylinder? Why?