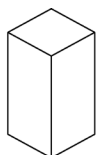


## Chapter 9 Practice Test

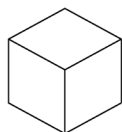
### Multiple Choice

For questions 1 to 4, select the best answer.

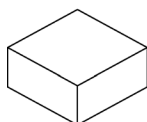
- Angus wants to build a pen against one wall of his house. He has 16 m of fencing. Which dimensions will give him the pen with greatest area?  
**A** 4 m by 4 m      **B** 4 m by 8 m  
**C** 2 m by 8 m      **D** 3 m by 10 m
- A square-based prism has volume  $27\,000\text{ cm}^3$ . What are the dimensions of the prism if it has minimum surface area?  
**A** 46 cm by 30 cm by 20 cm  
**B** 90 cm by 30 cm by 10 cm  
**C** 27 cm by 10 cm by 10 cm  
**D** 30 cm by 30 cm by 30 cm
- These square-based prisms all have the same surface area. Which prism has the greatest volume?



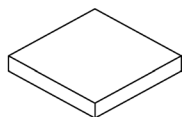
Prism A



Prism B



Prism C



Prism D

- A** Prism A      **B** Prism B  
**C** Prism C      **D** Prism D
- The surface area of a cylinder is  $800\text{ cm}^2$ . What are the radius and height of the cylinder if it has the greatest volume possible?  
**A**  $r = 8\text{ cm}$ ,  $h = 8\text{ cm}$   
**B**  $r = 6.5\text{ cm}$ ,  $h = 6.5\text{ cm}$   
**C**  $r = 6.5\text{ cm}$ ,  $h = 13\text{ cm}$   
**D**  $r = 4\text{ cm}$ ,  $h = 28\text{ cm}$

### Short Response

Show all steps to your solution.

- Walter wants to fence an area  $400\text{ m}^2$ . What is the least amount of fencing he will require?
- Suppose you are allowed to use a maximum of  $1350\text{ cm}^2$  of cardboard to build a square-based box. What are the dimensions of the largest box you can build?
- A cylindrical storage tank must hold 70 L of cleaning fluid. Find the radius and height of the tank that requires the least amount of metal. Express your answers to the nearest tenth of a centimetre.

### Extend

Provide complete solutions. Round all answers to one decimal place.

- Solvig has  $100\text{ cm}^2$  of cardboard to make a box with the greatest possible volume.
  - Should the box be a square-based prism or a cylinder? Why?
  - What assumptions did you make?