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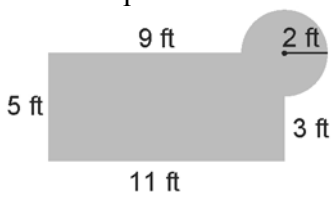
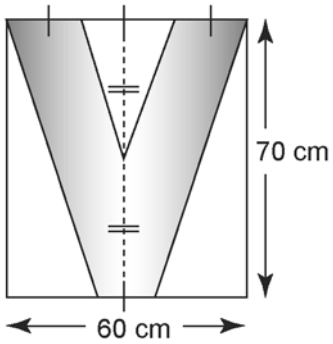
# Chapter 1 Review

### 1.1 Area, pages 4–15

**1.** Determine the area of this patio, to the nearest square foot.

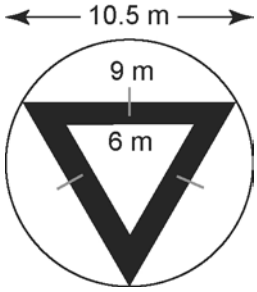



**2.** Vikram is constructing a sign for his store, Vikram's Jewellery.




What is the area of the sign, once the white parts are removed?

**3.** This design is to be painted on a dance club floor. Each colour requires two coats of paint. Each can of paint will cover 40 $m^2$.



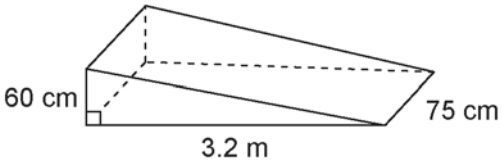

**a)** How many cans of white paint are required?

**b)** How many cans of black paint are required?

### 1.2 Volume, pages 18–25

**4.** A cylindrical container has a volume of 600 $cm^3$ and a height of 9 cm. Determine the radius of the circular base, to the nearest tenth of a centimetre.

**5.** Determine the volume of concrete needed to build this ramp, to the nearest tenth of a cubic metre.

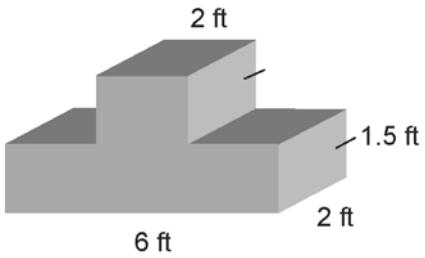



**6.** A storage container in the shape of a square-based prism has a volume of 120 $ft^3$. lf the sides of the square base are 4 ft in length, determine the height of the container.

### 1.3 Surface Area, pages 26–35

**7.** Refer to question 5. Determine the surface area of the ramp, not including the bottom, to the nearest tenth of a square metre.

**8.** Jyeed is painting a riser used to display clothes in his store. Each display surface is a square with sides 2 ft in length. Determine the surface area to be painted, not including the bottom.







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**9.** A cylindrical box has a height of 14 cm and a diameter of 19 cm. Determine the surface area, to the nearest square centimetre.

### 1.4 Optimize Perimeter and Area, pages 36–45

**10.** A soccer coach is fencing in a rectangular area of the playing field for ball practice.

**a)** If she has 24 m of fencing, how should she arrange the fencing to provide the greatest possible practice area?

**b)** How should she alter her design if she can use part of an existing fence as one of her boundaries?

**Use this information to answer questions 11 and 12.**

Students at a high school want to start a school garden. The principal will allow them to enclose a rectangular area of a field behind the school. The garden cannot be larger than 60 $yd^2$**.**

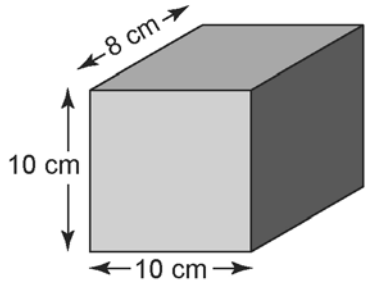
**11.** What is the minimum perimeter of fence that can be used to enclose the garden?

**12.** How would the solution change if the school can be used as one side of the garden? Use words and diagrams to explain your answer.

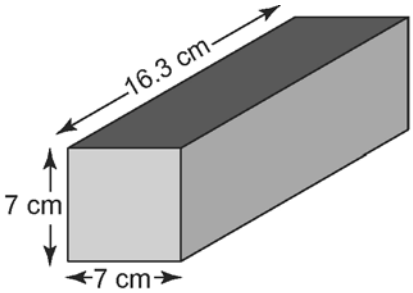
### 1.5 Investigate Optimum Volume and Surface Area, pages 46–53

**13.** These boxes are in the shape of a square-based prism. Each box has the same volume.

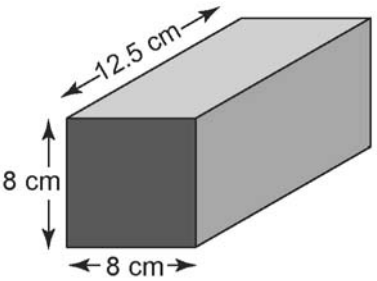
**A**



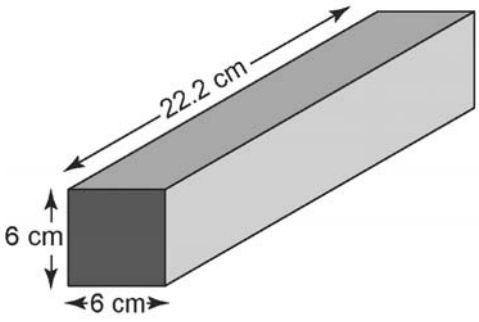

**B**




**C**




**D**




Without measuring, order the storage containers from minimum to maximum surface area. Explain your reasoning.

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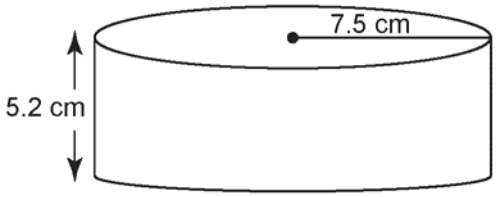
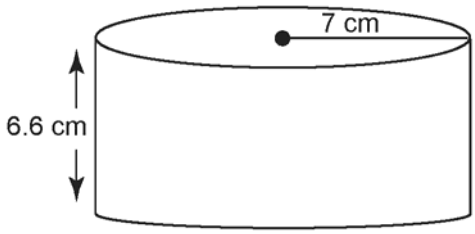
**14.** Each container has the same surface area.

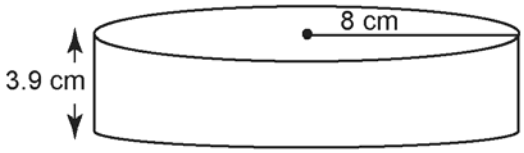
**A**



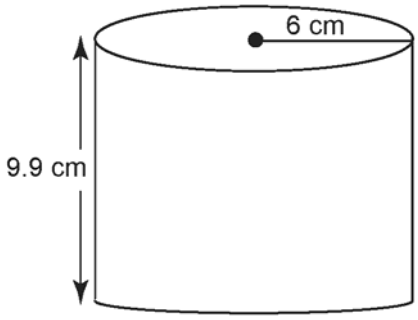

**B**




**C**



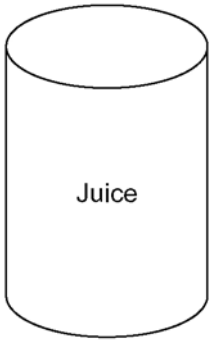

**D**




Without measuring, order these packages from maximum to minimum volume. Explain your reasoning.

## 1.6 Analyse Optimum Volume and Surface Area, pages 54–63

**15.** A cylindrical juice container is to have a volume of 2 L or 2000 $cm^3$.




**a)** Determine the dimensions of the container with minimum surface area. Discuss any assumptions you made.

**b)** Suggest two reasons why the manufacturer may not choose this design.

**16. a)** What are the dimensions of a box in the shape of a square-based prism with a surface area of 900 $cm^2$ and the greatest volume?

**b)** Describe the shape of the box.

**c)** What is the maximum volume of this box?

**17.** Ken is going to build a tree house for his son's 12th birthday. He has 28 $m^2$ of wood with which to build it. He plans to build it in the shape of a square-based prism.

**a)** What is the maximum volume he can enclose?

**b)** How much additional volume can be added to the tree house in each case? Round your answer to the nearest tenth of a cubic metre.

**i)** Ken leaves the roof open.

**ii)** Ken leaves the roof and the back wall (facing the tree trunk) open. Include any assumptions that you made.

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