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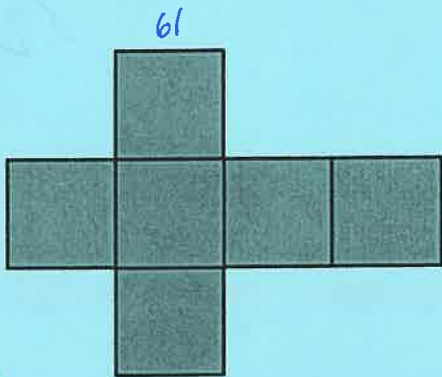
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## Unit 1, Lesson 18: Surface Area of a Cube

1. a. What is the volume of a cube with edge length 8 in?
- b. What is the volume of a cube with edge length  $\frac{1}{3}$  cm?
- c. A cube has a volume of  $8 \text{ ft}^3$ . What is its edge length?

$8 \cdot 8 \cdot 8 = 512 \text{ in}^3$   
 $\frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3} = \frac{1}{27} \text{ cm}^3$   
 $8 = x \cdot x \cdot x$   
 $x = 2 \text{ ft}$

2. a. What three-dimensional figure can be assembled from this net?

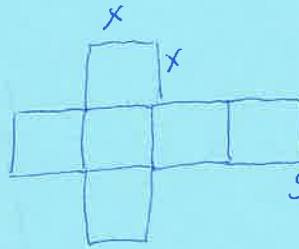


cube

- b. If each square has a side length of 61 cm, write an expression for the surface area and another for the volume of the figure.

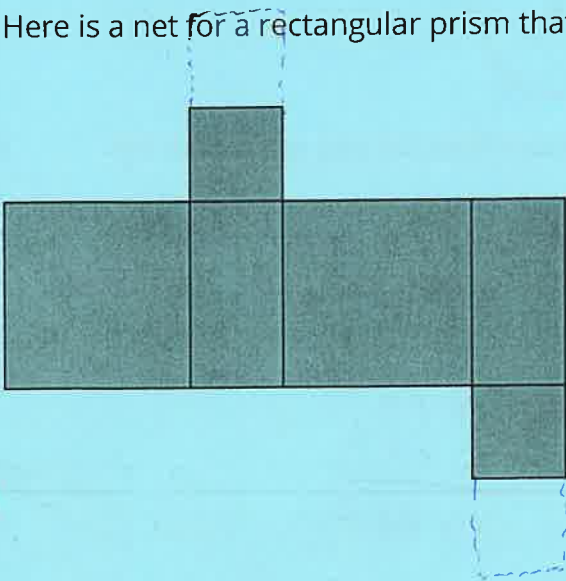
surface area =  $6(61 \cdot 61)$   
 volume =  $61 \cdot 61 \cdot 61$

3. a. Draw a net for a cube with edge length  $x$  cm.
- b. What is the surface area of this cube?
- c. What is the volume of this cube?



$6(x \cdot x)$   
 SA  $6x^2$   
 $V = x \cdot x \cdot x$   
 $= x^3$

4. Here is a net for a rectangular prism that was not drawn accurately.



- a. Explain what is wrong with the net.
- b. Draw a net that can be assembled into a rectangular prism.
- c. Create another net for the same prism.

Challenge

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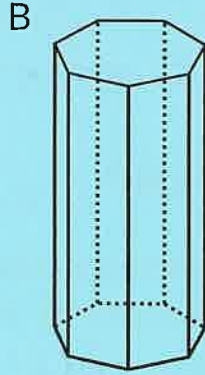
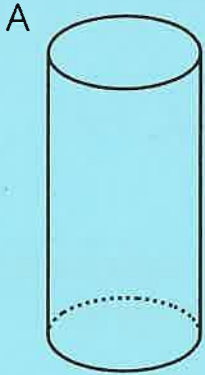
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(from Unit 1, Lesson 14)

5. State whether each figure is a polyhedron. Explain how you know.

No curved edges

Yes, closed, 3D, polygon faces



1/2

(from Unit 1, Lesson 13)

6. Here is Elena's work for finding the surface area of a rectangular prism that is 1 foot by 1 foot by 2 feet.

top & bottom:  
 $2 \cdot (12 \cdot 12)$   
 $= 2 \cdot 144$   
 $= 288 \text{ in}^2$

$2(1 \cdot 1)$   
 $2 \text{ ft}^2$

four side faces:  
 $4 \cdot (2 \cdot 1)$   
 $= 8 \text{ ft}^2$

She concluded that the surface area of the prism is 296 square feet. Do you agree with her conclusion? Explain your reasoning.

No

- she mixed inches and feet (+bottom) (sides)

1/2

(from Unit 1, Lesson 12)

- should be  $8 \text{ ft}^2 + 2 \text{ ft}^2 = 10 \text{ ft}^2$