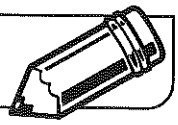
Name Date Time

LESSON 11•7

A Surface-Area Investigation



In each problem below, the volume of a rectangular prism is given. Your task is to find the dimensions of the rectangular prism (with the given volume) that has the smallest surface area. To help you, use centimeter cubes to build as many different prisms as possible having the given volume.

Record the dimensions and surface area of each prism you build in the table. Do not record different prisms with the same surface area. Put a star next to the prism with the smallest surface area.

1.

Dimensions (cm)	Surface Area (cm^2)	Volume (cm^3)
2 × 6 × 1	40	12
		12
		12
		12

2.

Dimensions (cm)	Surface Area (cm^2)	Volume (cm^3)
		24
		24
		24
		24
		24
		24

3. If the volume of a prism is 36 cm^3, predict the dimensions that will result in the smallest surface area. Explain.

_____

_____

4. Describe a general rule for finding the surface area of a rectangular prism in words or with a number sentence. _____

_____

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Area, Surface Area, and Volume

Area of rectangle: $A = l * w$

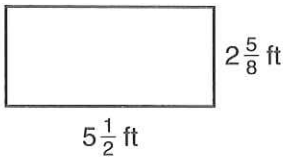
Volume of rectangular prism: $V = B * h$ or $V = l * w * h$

Circumference of circle: $c = \pi * d$

Area of circle: $A = \pi * r^2$

Volume of cylinder: $V = \pi * r^2 * h$

1. Record the dimensions and find the area.



Length = _____

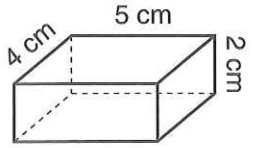
Width = _____

Area = _____

How many square tiles, each 1 ft long on a side, would be needed to fill the rectangle?

_____

2. Record the dimensions and find the volume.



Length of base = _____

Width of base = _____

Area of base = _____

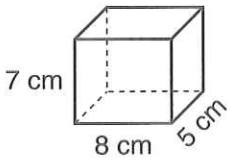
Height of prism = _____

Number of 1-centimeter unit cubes needed to fill the box: _____

Volume = _____

Record the dimensions, and find the volume and surface area for each figure below. Round results to the nearest hundredth.

3. Rectangular prism



Length of base = _____

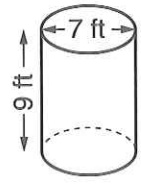
Width of base = _____

Height of prism = _____

Volume = _____

Surface area = _____

4. Cylinder



Diameter = _____

Height = _____

Volume = _____

Surface area = _____

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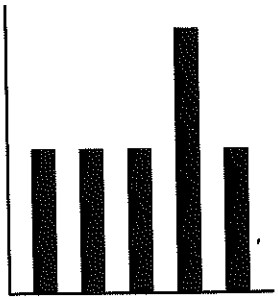
LESSON 10•7

Analyzing Graph Errors

For each graph below, describe a possible error in the graph.

1. The students in Ms. Wyn's fifth-grade class took a favorite color survey. About the same number of people voted for red, blue, and green. Orange and yellow got about the same number of votes, but the votes were a lot less than the other three colors. They made a bar graph of their results.

Favorite Colors



Describe at least one error in the Favorite Colors graph. Explain how you know this is an error.

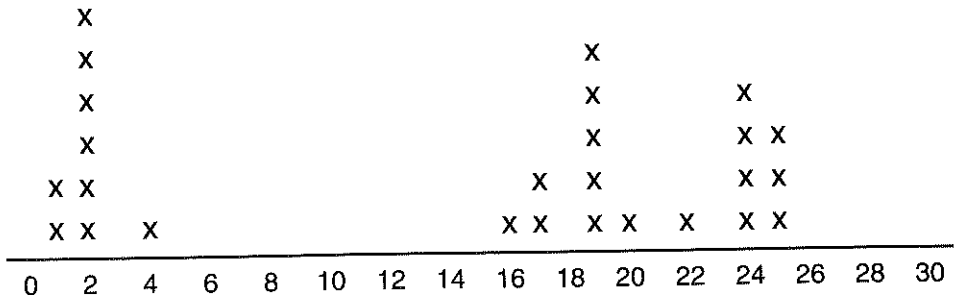
_____

_____

_____

2. There are 26 students in Ms. Wyn's class. They wanted to find the mean number of books that students had read in their class. They found out that half the class had read five or fewer books and the other half had read more than 15 books. The mode for the class was 19 books. They made a line plot of their results.

Books We Have Read



Describe at least one error in the Books We Have Read graph. Explain how you know this is an error.

_____

_____

_____