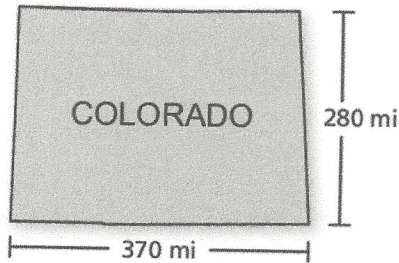## Review Chapter 1

1. The state of Colorado has a population of about 5.0 million people. Find the population density in people per square mile.
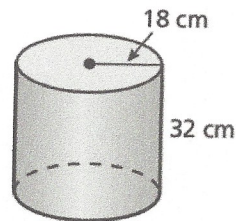

COLORADO
280 mi
370 mi

2. You have 320 meters of fencing to build a rectangular enclosure. What is the maximum area that you can enclose?

Describe how the change affects the surface area of the sphere or right cylinder.
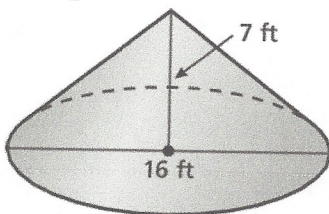
3. multiplying all the linear dimensions by 2

18 mm

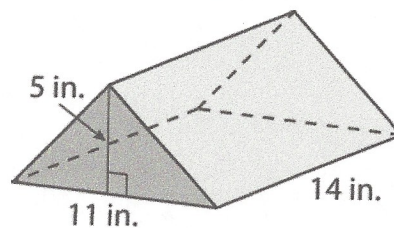4. multiplying all the linear dimensions by $\frac{1}{4}$

18 cm
32 cm

**Describe how the change affects the volume of the cone or right triangular prism.**

5. multiplying all the dimensions by $\frac{3}{2}$

7 ft
16 ft

6. doubling the height

5 in.
11 in.
14 in.

7. The lateral surfaces and tops of two closed cylindrical vats need to be painted. The larger vat is shown. The smaller vat has linear dimensions that are $\frac{1}{3}$ times the dimensions of the larger vat. Does the smaller vat need $\frac{1}{3}$ times the amount of paint? Explain.
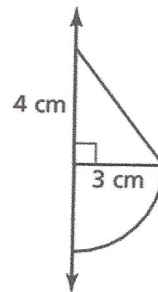
330 m

240 m
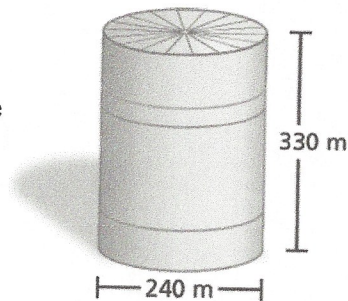
8. You cut the bead shown in half horizontally. Describe the shape of the cross section you make.
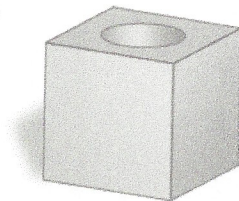
Sketch the solid produced by rotating the figure around the given axis. Identify and describe the solid. Then find its surface area and volume.

9.

18 in.

7 in.   7 in.

9 in.

10.

4 cm

3 cm
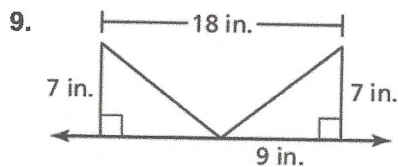
11. City A has a population density of 38 people per square mile and a population of 9700 people. City B has a population density of 32 people per square mile and a population of 8200 people. Which has the largest area of land? Explain.

12. The total perimeter of the window shown is 16 feet. Determine the dimensions of the window that maximize the area.
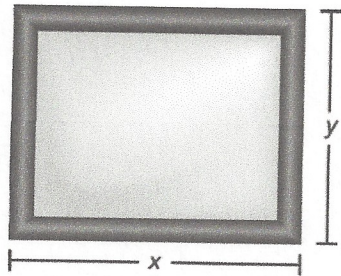

13. A construction worker cuts the cement block along the indicated diagonal.

18 cm

22 cm

30 cm
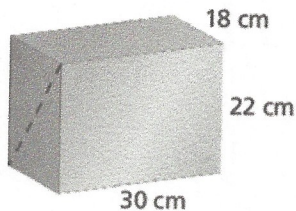
a. Identify the solids formed by the cut.

b. Find the perimeter and area of the cross section formed by the cut.

c. The block has a density of about 3.15 grams per cubic millimeter. Find the mass of the block to the nearest gram.

Sketch a two-dimensional shape and an axis of revolution that forms the object shown.

14.
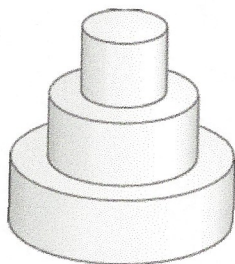
15.

16. Describe the solid that is produced when the region enclosed by $y = -3$, $y = -1$, $x = 0$, and $x = 5$ is rotated around the x-axis. Then find the volume of the solid.