

## Scale Factor and Dimensional Changes Worksheet

*Answer the following problems. Use a separate sheet of paper if you need more room:*

1. A rectangle has a perimeter of 28. It is dilated by a scale factor of 3.
  - (a) What is the new perimeter?
  - (b) What is the new area? (*Hint: What would the ratio of the areas be?*)
2. A pentagon has a perimeter of 20 ft. If every side is halved, find the new perimeter.
3. The perimeter of a triangle is 12 in. After a dilation the perimeter is 16 in. What is the scale factor of the dilation?
4. The area of a rectangle is  $100 \text{ cm}^2$ . After a dilation, the area is  $25 \text{ cm}^2$ . What is the scale factor of the dilation?
5. Describe the effect on the area of a circle when the radius is tripled.
6. Tony and Edwin each built a rectangular garden. Tony's garden is twice as long and twice as wide as Edwin's garden. If the area of Edwin's garden is 600 square feet, what is the area of Tony's garden?
7. The ratio of two similar polygons is 3:5. The perimeter of the larger polygon is 150 centimeters. What is the perimeter of the smaller polygon?
8. The scale of two similar quadrilaterals is 1:4. The perimeter of the smaller quadrilateral is 80 centimeters. What is the perimeter of the larger quadrilateral?
9. If the dimensions of a rectangle with a perimeter of 24 inches are tripled, what will be the perimeter in inches of the new rectangle?
10. If the volume of a cube is increased by a factor of 8, what is the change in the length of the sides of the cube?

11. The radius of a spherical beach ball is 24 centimeters. If another spherical beach ball has a radius 3 centimeters longer, about how much greater is its volume, to the nearest cubic centimeter?

12) Describe the effect on the area of a circle when the radius is doubled.

F The area is reduced by  $\frac{1}{2}$ .

G The area remains constant.

H The area is doubled.

J The area is increased four times.

13) The scale factor of two similar polygons is 2:3. The perimeter of the larger polygon is 150 centimeters. What is the perimeter of the smaller polygon?

A 100 cm

B 75 cm

C 50 cm

D 150 cm

14) A rectangular solid has a volume of 24 cubic decimeters. If the length, width, and height are all changed to  $\frac{1}{2}$  their original size, what will be the new volume of the rectangular solid?

A  $3 \text{ dm}^3$

B  $4 \text{ dm}^3$

C  $6 \text{ dm}^3$

D  $12 \text{ dm}^3$

15) Campbell's manufactures a cylindrical soup can that has a diameter of 6 inches and a volume of  $226 \text{ in}^3$ . If the stays height the same and the diameter is doubled, what will happen to the can's volume?

A It will remain the same.

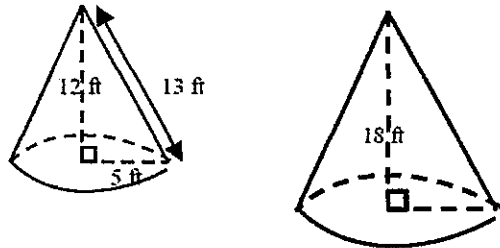
B It will double.

C It will triple.

D It will quadruple.

16. Two spheres have a scale factor of 1:3. The smaller sphere has a surface area of  $16 \text{ ft}^2$ . Find the surface area of the larger sphere.

17. The cones below are similar. What is the volume of the larger cone?



18. Two rectangular prisms are similar and the ratio of their sides is 2:3. The surface area of the larger rectangular prism is  $1944 \text{ cm}^2$ . What is the surface area of the smaller rectangular prism?

19. The ratio of the sides of two similar cubes is 3:4. The smaller cube has a volume of  $729 \text{ m}^3$ . What is the volume of the larger cube?

20. Pyramid X is similar to pyramid Y. The Surface area of pyramid X is  $135 \text{ cm}^2$ , and the surface area of pyramid Y is  $240 \text{ cm}^2$ . If the volume of pyramid X is  $189 \text{ cm}^3$ , then what is the volume of pyramid Y?