

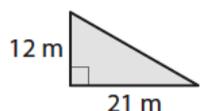
Scale Factor Homework

Area of a trapezoid is $A = \frac{1}{2}(b_1 + b_2)h$.

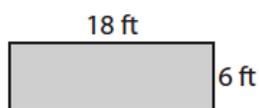
A certain trapezoid has the vertices $(0,0)$, $(4,0)$, $(4,4)$, and $(-3,4)$.

- Describe the effect on the area if both the x- and y-coordinates of the vertices of the trapezoid above are multiplied by $\frac{1}{2}$. What is the scale factor of the area?

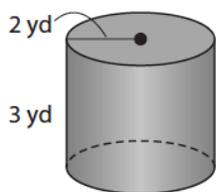
- Describe the effect of the change on the area of triangle below ($A = \frac{1}{2}bh$) if the height is doubled. What is the scale factor of the area?



- Describe the effect on the perimeter if the base and height of the rectangle below are multiplied by $\frac{1}{2}$. What is the scale factor of the perimeter?



- Describe the effect on the volume and surface area of the cylinder below when the dimensions are multiplied by 5. What is the scale factor of the volume and the scale factor of the surface area?



Volume

Surface Area

Graphs and Volume Day 4 HOMEWORK

5. Weston has two spherical balloons. One balloon has a radius that is 3 times the radius of the other balloon. How much more air will the larger balloon need than the smaller balloon?
6. A student has a basketball with a radius that is 4 times larger than a rubber ball. How much more air will the basketball hold than the rubber ball?
7. You decide you need to graph a circle on a handy online program. However, it will only take $y=$ equations. Solve the circle equations below so that you can put them into the program.
- a. $x^2 + y^2 = 100$

BONUS b. $(x-3)^2 + (y+2)^2 = 4$

8. The formula to determine the power of an electrical charge is $P = \frac{V^2}{R}$, where P is the power, V is the electrical potential difference (a value that can be negative or positive), and R is the resistance. Solve this equation for electric potential difference.

9. There are many different physics formulas dealing with one-dimensional motion. Solve the following equations for time (t).

a. $v_f = v_i + at$

b. $d = \frac{v_i + v_f}{2} \cdot t$

10. Kinetic energy is calculated using $K = \frac{1}{2}mv^2$, where m is mass and v is velocity. Solve for mass.

11. The gravitational force between two objects is calculated using $F_G = -\frac{Gm_1m_2}{r^2}$ where G is the universal gravitational constant, m_1 and m_2 are the masses of the two objects and r is the distance between them. Solve the equation for the distance between the two objects.