Direct Variation Applications

1. In 1852, Henri Giffard built the first airship successfully used for transportation. It had a volume of 88,000 cubic feet and could support 3,4000 pounds. The *Graf zeppelin II*, built in 1937 had a volume of 7,063,000 cubic feet, making it one of the two largest airships ever built. The weight an airship can support varies directly with its volume. How much weight could the *Graf zeppelin II* support?
2. The income at a store varies directly as the advertising budget. When the owners spent $2300 per month to advertise, their monthly gross income was $120,000. If the owners increase their advertising budget to $5000 per month, how much gross monthly income can they expect?
3. The length that a spring will stretch S varies directly with the weight w attached to the spring. If a spring stretches 11 inches when a 20 pound weight is attached, how far will it stretch when a 10 pound weight is attached?
4. Find the constant of variation and the slope of the direct variation model:

a.  b. y = -2.5x

1. The perimeter of a square with side length s is modeled by \_\_\_\_\_\_\_\_. Do the side length and the perimeter have direct variation?
2. The variables x and y vary directly.

Use the given values to write an equation that relates x and y.

* 1. x = 5, y = \_\_\_\_\_\_\_ b. x = \_\_\_\_\_, y = 6.8

1. Sound travels about 12.4 miles in one minute. How long, in seconds, does it take sound to travel 30 miles?
2. If weight varies directly with gravity and a person who weights 120 pounds on Earth weighs 57 pounds on Mars, How much does a person who weighs 210 pounds on Earth weigh on Mars?