Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Write the equation and then solve for the missing value.

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| 1) The number of gallons g of fuel used on a trip varies directly with the number of miles m traveled. If a trip of 270 miles required 12 gallons of fuel, how many gallons are required for a trip of 400 miles? | 2) The time it takes to travel a fixed distance varies inversely with the speed traveled. If it takes Pam 40 minutes to bike to her fishing spot at 9 miles per hour, how long will it take her if she rides at 12 miles per hour? |
| 3) Bob's dentist determined the number of cavities developed in his patient's mouth each year is inversely proportional to the total number of minutes spent brushing during each session. If Bob developed 4 cavities during the year in which he spent only ½ minute brushing his teeth each time, how many annual cavities will Bob develop if he increases his brushing time to 2 minutes per session? | 4) An egg is dropped from the roof of a building. The distance it falls varies directly with the square of the time it falls. If it takes 0.5 second for the egg to fall 8 feet, how long will it take the egg to fall 200 feet? |
| 5) The time needed to paint a fence varies directly with the length of the fence. If it takes 5 hours to paint 200 feet of fence, how long will it take to paint 500 feet of fence? | 6) To balance a seesaw, the distance, d (in feet), a person is from the fulcrum is inversely proportional to his or her weight, w (in pounds). Roger, who weighs 120 pounds, is sitting 6 feet away from the fulcrum. Eva weighs 108 pounds. How far from the fulcrum must she sit to balance the seesaw? |
| 7) The number of revolutions made by a tire traveling over a fixed distance varies inversely with the radius of the tire. A 12-inch radius tire makes 100 revolutions to travel a certain distance. How many revolutions would a 16-inch radius tire require to travel the same distance? | 8) Karen earns $28.50 for working 6 hours. If the amount m she earns directly varies with h the number of hours she works, how much will she earn for working 10 hours? |
| 9) The number of centimeters y in a linear measurement varies directly with the number of inches x in the measurement. Pablo's height is 152.4 centimeters or 60 inches. What is Maria's height in centimeters if she is 64 inches tall? | 10) The volume V of a gas kept at a constant - temperature varies inversely with the pressure p. If the pressure is 24 pounds per square inch, the volume is 15 cubic feet. What will the volume be when the pressure is 30 pounds per square inch? |