

**Unit 9 Lesson 2 Homework**

Name: \_\_\_\_\_

- The time it takes to complete a project varies inversely with the number of employees. With 3 people, a project can be completed in 7 days.
  - What is the constant of variation?
  - How many days would it take 5 people to complete the project?
- If  $x$  and  $y$  vary inversely, find the missing value.  $(6, y)$  and  $(8, 9)$
- If  $y$  varies inversely as  $x$ , and  $y = -5$  when  $x = -4$ , find  $y$  when  $x = 10$ .
- The time,  $t$  (in minutes), you need to type paper varies inversely with the rate,  $r$  (in words per minute) that you can type. When typing 40 words per minute, you can finish in 50 minutes. Write the equation that relates the variables.
- In kick boxing, it is found that the force,  $f$ , needed to break a board varies inversely with the length,  $l$ , of the board. If it takes 5 lbs of pressure to break a board 2 feet long, how many pounds of pressure will it take to break a board that is 6 feet long?
- Olivia has determined the time it takes her to travel home from college varies inversely with the rate of speed. If it takes her 7 hours to travel home at 45 miles per hour, how fast would she have to go to make the trip in 6 hours?
- The force,  $F$ , acting on a charged object varies inversely to the square of its distance,  $r$ , from another charged object. When the two objects are 0.64 meters apart, the force acting on them is 8.2 Newtons. Approximately how much force would the object feel if it is at a distance of 0.4 meters from the other object?
- The frequency of a vibrating guitar string varies inversely as its length. Suppose a guitar string 0.65 meters long vibrates 4.3 times per second. What frequency would a string 0.5 meters long have?
- Suppose a greeting card company has found that the number of greeting cards it sells is inversely proportional to the price of each card. If it sells 500 cards per month when the price of each card is \$2, how many cards would it sell per month if the price of each card were \$3?
- For the choir fundraiser, the number of tickets Allie can buy is inversely proportional to the price of the tickets. She can afford 15 tickets that cost \$5 each. How many tickets can Allie buy if each ticket costs \$3?
- The temperature of the Pacific Ocean varies inversely with the depth. If the temperature at 2000 meters is 2.2 degrees Celsius, what is the temperature at a depth of 4000 meters.
- A naturally occurring whirlpool in the Strait of Mesasina, a channel between Sicily and the Italian mainland, is about 6 feet across at its center, and is said to be large enough to swallow small fishing boats. The speed,  $s$  (in feet per second), of the water in the whirlpool varies inversely with the radius,  $r$  (in feet). If the water speed is 2.5 feet per second at a radius of 30 feet, what is the speed of the water at a radius of 3 feet.