

1 The number of calories needed in a daily diet varies directly as the weight of an individual. If 1,550 calories should be consumed daily for a 155-pound person, what is the weight of an individual who consumes 1,790 calories per day

$y = kx$ $1550 = 155x$
 $1790 = 10x$ $x = 10$
 179 lbs

2 The price of tiling a room varies directly as the size of the room. Sam is laying tile in his kitchen. If the tiling costs \$1,918.00 for 274 square feet, what is the size of a kitchen that costs \$1,596.00?

$y = kx$ $1,918.00 = 274x$ $1596 = 7x$
 $x = 7$
 228.59 ft

3 The number of goals scored by a soccer team varies directly as the number of shots on goal. If the Lakeside Bears scored 2 goals after 24 shots on goal, how many shots on goal should the team take to score two more goals?

$y = kx$ $24 = 2x$ $y = 4(12)$
 $12 = x$ $y = 48 \text{ shots}$

4 The number of miles a car can be driven varies directly with the number of gallons of gas in its tank. Oliver was able to drive 399 miles with 19 gallons of gas in his car. If he puts 8 gallons of gas in the same car, how many miles will he be able to drive?

$y = kx$ $399 = 19x$ $y = 8 \cdot 21$
 $k = 21$ 168 miles

5 To build a sound wall along the highway, the amount of time t needed varies directly with the number of cement blocks c needed and inversely with the number of workers w. A sound wall made of 2400 blocks, using six workers takes 18 hours to complete. How long would it take to build a wall of 4500 blocks with 10 workers?

$t = \frac{cK}{w}$ $18 = \frac{2400K}{6}$ $K = 0.45$ $4500(0.45)$
 $\frac{10}{10}$

6 The number of hours needed to assemble computers varies directly as the number of computers and inversely as the number of workers. If 4 workers can assemble 12 computers in 9 hours, how many workers are needed to assemble 48 computers in 8 hours?

$h = \frac{Kc}{w}$ $9 = \frac{K \cdot 12}{4}$ $K = 3$ $8 = \frac{3 \cdot 48}{w}$

7 The number of minutes needed to solve an exercise set of variation problems varies directly as the number of problems and inversely as the number of people working on the solutions. It takes 4 people 36 minutes to solve 18 problems. How many minutes will it take 6 people to solve 42 problems.

$m = \frac{Kp}{w}$ $36 = \frac{K \cdot 18}{4}$ $K = 8$ $8w = 144$
 56 min $w = 18$

8 The electrical resistance of a wire varies directly as its length and inversely as the square of its diameter. A wire with a length of 200 inches and a diameter of one-quarter of an inch has a resistance of 20 ohms. Find the electrical resistance in a 500 inch wire with the same diameter.

$w = \frac{KL}{d^2}$ $20 = \frac{K \cdot 200}{.25^2}$ $K = 0.025$
 $R = 0.025(500)$
 $.25$

50