Variation Problems

Write an equation of variation to represent the situation and solve for the indicated information.

1. 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?

2. 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?

3. Karen earns $28.50 for working six hours. If the amount m she earns varies directly with h the number of hours she works, how much will she earn for working 10 hours?

4. A bottle of 150 vitamins costs $5.25. If the cost varies directly with the number of vitamins in the bottle, what should a bottle with 250 vitamins cost?

5. Wei received $55.35 in interest on the $1230 in her credit union account. If the interest varies directly with the amount deposited, how much would Wei receive for the same amount of time if she had $2000 in the account?

6. The volume V of a gas kept at a constant temperature varies inversely as the pressure p. If the pressure is 24 pounds per square inch, the volume is 15 cubic feet. What will be the volume when the pressure is 30 pounds per square inch?

7. The time to complete a project varies inversely with the number of employees. If 3 people can complete the project in 7 days, how long will it take 5 people?

8. The time needed to travel a certain distance varies inversely with the rate of speed. If it takes 8 hours to travel a certain distance at 36 miles per hour, how long will it take to travel the same distance at 60 miles per hour?

9. The number of revolutions made by a tire traveling over a fixed distance varies inversely to 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?

10. For a fixed number of miles, the gas mileage of a car (miles/gallon) varies inversely with the number of gallons used. One year an employee driving a truck averaged 24 miles per gallon and used 750 gallons of gas. If the next year, to drive the same number of miles the employee drove a compact car averaging 39 miles per gallon, how many gallons of gas would be used?