

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

### M3 T2 L4: Writing Equations Homework

Complete on a piece of lined paper.

Define the variables in each given problem. Then, write an equation that models the problem situation.

1. A store offers customers a \$9.99 discount off of every pair of shoes purchased.

Part A: Define variables for the original price of a pair of shoes and the price of the shoes after the discount.

Part B: Write an equation that models the relationship between these variables.

Part C: Solve the equation to determine how much the shoes cost after the discount if the original price was \$43.99.

Part D: Solve the equation to determine how much the shoes originally cost if the price after the discount was \$27.01.

2. The three owners of a construction company divide the total profit they make on the construction of any new home three ways.

Part A: Define variables for the total profit made on the construction of a new home and the profit made by each individual.

Part B: Write an equation that models the relationship between these variables.

Part C: Solve the equation to determine the total profit made on a new home if each person earned \$7,000.

Part D: Solve the equation to determine each owner's profit if the total profit was \$39,012.

3. A business subtracts \$7.50 from each employee's gross weekly pay to cover the cost of their uniforms.

Part A: Define variables for an employee's gross weekly pay and for an employee's weekly pay after the deduction for the cost of their uniform.

Part B: Write an equation that models the relationship between these variables.

Part C: Solve your equation to determine an employee's gross weekly pay if they received \$400 after uniforms.

Part D: Solve your equation to determine an employee's pay after uniforms if their gross pay was \$512.50.

4. Five employees work on the receiving dock at a factory. They divide the number of crates they unload from each truck equally.

Part A: Define variables for the number of crates on a truck and for the number of crates each employee unloads from the truck.

Part B: Write an equation that models the relationship between these variables.

Part C: Solve your equation to determine how many crates each employee unloaded if 20 crates were on the truck.

Part D: Solve your equation to determine how many crates were on the truck if each employee unloaded 20 crates.

5. On a windy January day, a weatherman in Montana subtracts 10 degrees from the actual air temperature (in degrees Fahrenheit) to determine the wind chill temperature at any given time.

Part A: Define variables for the actual air temperature and the wind chill temperature.

Part B: Write an equation that models the relationship between these variables.

Part C: Solve your equation to calculate the actual air temperature if the wind chill temperature was 16.

Part D: Solve your equation to calculate the wind chill temperature if the actual temperature was 8 degrees (challenge).

6. Old MacDonald feeds grain to his 75 cows each day. He wants to determine the average amount of grain (in pounds) consumed by each cow daily.

Part A: Define variables for the number of pounds of grain Old MacDonald feeds his cows on a given day and the average number of pounds consumed by each cow daily.

Part B: Write an equation that models the relationship between these variables.

Part C: Solve your equation to determine the average number of pounds consumed by each cow if Old MacDonald feeds them 1,500 pounds of grain on Wednesday.

Part D: Solve your equation to calculate the number of pounds of grain Old MacDonald fed his cows on Sunday if they each consumed 10 pounds that day.