

Name \_\_\_\_\_

Modeling Linear Equations

Date \_\_\_\_\_

Algebra I

1. A company that manufactures radios first pays a start-up cost, and then spends a certain amount of money to manufacture each radio. If the cost of manufacturing  $r$  radios is given by the function  $c(r) = 5.25r + 125$ , what is the cost of each radio manufactured?
2. The owner of a small computer repair business has one employee, who is paid an hourly rate of \$22. The owner estimates his weekly profit using the function  $P(x) = 8600 - 22x$ . What does  $x$  represent?
3. The cost of airing a commercial on television is modeled by the function  $C(n) = 110n + 900$ , where  $n$  is the number of times the commercial is aired.
- a) Based on this model, how much does it cost to air the commercial 20 times?
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- b) If the company's budget is \$5,500, what is the maximum number of times the commercial can be aired?
4. A satellite television company charges a one-time installation fee and a monthly service charge. The total cost is modeled by the function  $y = 40 + 90x$ . What is the installation fee and the monthly service charge?

5. The cost of belonging to a gym can be modeled by  $C(m) = 50m + 79.50$ , where  $C(m)$  is the total cost for  $m$  months of membership.

a) How much would it cost for a 2-year gym membership?

b) If a person only wanted to spend \$1,000 on a gym membership, how long will this particular membership last?

6. Tim ate four more cookies than Alice. Bob ate twice as many cookies as Tim. If  $x$  represents the number of cookies Alice ate, write an expression that represents the number of cookies Bob ate.

7. Marcy determined that her father's age is four less than three times her age. If  $x$  represents Marcy's age, which expression represents her father's age?

8. What is the perimeter of a regular pentagon with a side whose length is  $x + 4$ ?

9. The length of a rectangular room is 7 less than three times the width,  $w$ , of the room. Which expression represents the area of the room?