

Modeling with Multi-Step Equations

Period _____

Write an equation to model each situation. Then solve the equation.

- 1) General admission tickets to the fair cost \$4.50 per person. Ride passes cost an additional \$6.50 per person. Parking costs \$10 for the family. The total costs for ride passes and parking was \$87. How many people in the family attended the fair?
- 2) Angela ate at the same restaurant five times. Each time she ordered a salad and left a \$4 tip. She spent a total of \$76. Write and solve an equation to find the cost of each salad.
- 3) A plumber finished three jobs on Tuesday. The first two only cost the owner the \$40 trip fee because they took very little time to complete. For the third job, the plumber charged the trip fee plus 5 times his hourly rate. If the plumber received a total of \$375 for the day, what is the hourly rate?
- 4) Eli took the fleet of 12 vans for oil changes. All of the vans needed windshield wipers which cost \$26 per van. The total bill was \$570. Write an equation to find out what each oil change cost. Solve the equation.

- 5) Four friends are planning to play 18 holes of golf. Two of them need to rent clubs at \$12 per set. Total cart rental is \$18. The total cost of the golf outing, including green fees, is \$86. How much did each of the friends pay in green fees?
- 6) You have a part-time job. You work 3 hours on Friday and 6 hours on Saturday. You also receive an allowance of \$20 per week. You earn \$92 per week. How much do you earn per hour at your part-time job?

Solve each equation.

7) $-121 = 8(5x - 2) - 5x$

8) $-4(-6a + 7) = -148$

9) $102 = -2(7r + 5)$

10) $-3(-5p - 4) = 87$

$$11) -8 = 4(x + 4) - 6(4 - 5x)$$

$$12) 5(1 - n) + 7(n + 4) = 47$$

$$13) -70 = -5(6 + 6p) + 5(7p - 3)$$

$$14) -12 = 3(3a + 8) + 6(-6 - 6a)$$

$$15) -32 + x = 3 + 7(1 + x)$$

$$16) 21 - 3x = 8(-7x - 4)$$

$$17) 24 + 4a = -2(a + 3)$$

$$18) 8n - 40 = 4(5n - 7)$$

$$19) -7(2p - 3) + p = -5(2p + 3)$$

$$20) 7(4 + r) = 2(r - 1)$$

$$21) 6(x + 7) = 7(x + 5)$$

$$22) 6(n - 3) - 7(n - 6) = -n + 8n$$

$$23) |v + 2| = 10$$

$$24) |x - 4| = 8$$

$$25) |7 + b| = 8$$

$$26) \left| \frac{n}{7} \right| = 3$$

$$27) \frac{|x + 10|}{4} = 3$$

$$28) |x - 2| + 3 = 6$$

$$29) \left| \frac{b}{8} \right| + 1 = 2$$

$$30) |n + 9| - 1 = 13$$

Modeling with Multi-Step Equations

Period _____

Write an equation to model each situation. Then solve the equation.

- 1) General admission tickets to the fair cost \$4.50 per person. Ride passes cost an additional \$6.50 per person. Parking costs \$10 for the family. The total costs for ride passes and parking was \$87. How many people in the family attended the fair?

$$4.5p + 6.5p + 10 = 87; 7 \text{ people}$$

- 2) Angela ate at the same restaurant five times. Each time she ordered a salad and left a \$4 tip. She spent a total of \$76. Write and solve an equation to find the cost of each salad.

$$5c + 5 \cdot 4 = 76; \$11.20$$

- 3) A plumber finished three jobs on Tuesday. The first two only cost the owner the \$40 trip fee because they took very little time to complete. For the third job, the plumber charged the trip fee plus 5 times his hourly rate. If the plumber received a total of \$375 for the day, what is the hourly rate?

$$40 + 40 + 40 + 5h = 375; \$51 \text{ per hour}$$

- 4) Eli took the fleet of 12 vans for oil changes. All of the vans needed windshield wipers which cost \$26 per van. The total bill was \$570. Write an equation to find out what each oil change cost. Solve the equation.

$$12(v + 26) = 570; \$21.50$$

- 5) Four friends are planning to play 18 holes of golf. Two of them need to rent clubs at \$12 per set. Total cart rental is \$18. The total cost of the golf outing, including green fees, is \$86. How much did each of the friends pay in green fees?

$$2 \cdot 12 + 18 + 4g = 86; \$11$$

- 6) You have a part-time job. You work 3 hours on Friday and 6 hours on Saturday. You also receive an allowance of \$20 per week. You earn \$92 per week. How much do you earn per hour at your part-time job?

$$3h + 6h + 20 = 92; \$8 \text{ per hour}$$

Solve each equation.

7) $-121 = 8(5x - 2) - 5x$

$$\{-3\}$$

8) $-4(-6a + 7) = -148$

$$\{-5\}$$

9) $102 = -2(7r + 5)$

$$\{-8\}$$

10) $-3(-5p - 4) = 87$

$$\{5\}$$

$$11) -8 = 4(x + 4) - 6(4 - 5x)$$
$$\{0\}$$

$$12) 5(1 - n) + 7(n + 4) = 47$$
$$\{7\}$$

$$13) -70 = -5(6 + 6p) + 5(7p - 3)$$
$$\{-5\}$$

$$14) -12 = 3(3a + 8) + 6(-6 - 6a)$$
$$\{0\}$$

$$15) -32 + x = 3 + 7(1 + x)$$
$$\{-7\}$$

$$16) 21 - 3x = 8(-7x - 4)$$
$$\{-1\}$$

$$17) 24 + 4a = -2(a + 3)$$
$$\{-5\}$$

$$18) 8n - 40 = 4(5n - 7)$$
$$\{-1\}$$

$$19) -7(2p - 3) + p = -5(2p + 3)$$
$$\{12\}$$

$$20) 7(4 + r) = 2(r - 1)$$
$$\{-6\}$$

$$21) 6(x + 7) = 7(x + 5)$$
$$\{7\}$$

$$22) 6(n - 3) - 7(n - 6) = -n + 8n$$
$$\{3\}$$

$$23) |v + 2| = 10$$
$$\{8, -12\}$$

$$24) |x - 4| = 8$$
$$\{12, -4\}$$

$$25) |7 + b| = 8$$
$$\{1, -15\}$$

$$26) \left| \frac{n}{7} \right| = 3$$
$$\{21, -21\}$$

$$27) \frac{|x + 10|}{4} = 3$$
$$\{2, -22\}$$

$$28) |x - 2| + 3 = 6$$
$$\{5, -1\}$$

$$29) \left| \frac{b}{8} \right| + 1 = 2$$
$$\{8, -8\}$$

$$30) |n + 9| - 1 = 13$$
$$\{5, -23\}$$