

Day 7: Solving Proportions & Application Problems

#7

Use the step by step process that we have been working on in class:

- define the variable (i.e. $x = \#$ of lawns mowed)
- write an equation (i.e. $3x + 20 = 85$)
- solve the equation
- find the solution and check it
- answer the question in a complete sentence

1. Brendan wants to buy a new sound system for \$145. He has already saved \$65. He gets \$20 for each student that he tutors. Write an equation to show how many students Brendan must tutor in order to have enough money for his new sound system, then solve it.

$$\begin{array}{r}
 x = \# \text{ of students} \\
 145 = 65 + 20x \\
 \underline{-65} \quad \underline{-65} \\
 80 = 20x \\
 \underline{20} \quad \underline{20} \\
 4 = x
 \end{array}$$

He needs to tutor 4 students.

2. Antonio bought Mrs. Becker six boxes of chocolate. He used a coupon that took \$1.00 off his total bill. His total bill came to \$23.00. Write an equation to show how much each box of chocolate cost, then solve it.

$$\begin{array}{r}
 x = \text{cost of chocolate} \\
 23 = 6x - 1 \\
 +1 \quad \quad +1 \\
 \underline{24} = \underline{6x} \\
 \underline{6} \quad \underline{6} \\
 4 = x
 \end{array}$$

Each box of chocolate costs \$4.

3. Brittany, her mom, and her two siblings went to a movie. The cost of her mother's ticket was \$6. Brittany's ticket cost the same as her two siblings (kids' rate). The total for all of them to watch the movie was \$15. Write an equation to show the cost of each of the kids' tickets, then solve it.

$$\begin{array}{r}
 x = \text{cost of kids ticket} \\
 15 = 6 + 3x \\
 \underline{6} \quad \underline{6} \\
 9 = 3x \\
 \underline{3} \quad \underline{3} \\
 3 = x
 \end{array}$$

The ticket cost \$3.

4. Erin went to the amusement park and paid \$7.00 just to get in. She also bought six cotton candies for herself and her five friends. She spent \$31.00 total at the amusement park. Write an equation to find the cost of each cotton candy, then solve it.

$x = \text{cost of cotton candy}$

$$31 = 7 + 6x$$

$$\begin{array}{r} -7 \quad -7 \\ 24 = 6x \\ \underline{\quad} \quad \underline{\quad} \\ 24 = 6x \end{array} \rightarrow x = 4$$

Cotton candy costs \$4

5. Jerome has \$28 in his pocket. He wants to buy as many candy bars as he can for \$1.75 each. Write an equation to show how many candy bars he can buy, then solve it.

$x = \text{# of candy}$

$$28 = 1.75x$$

$$\begin{array}{r} \underline{\quad} \quad \underline{\quad} \\ 1.75 \quad 1.75 \end{array}$$

$$16 = x$$

He can buy 16 candies

6. Grace bought a book for \$8 and some pencils that cost \$.50 each. She spent a total of \$18. Write and solve an equation to determine how many pencils she bought.

$x = \text{# of pencils}$

$$\begin{array}{r} 8 + .50x = 18 \\ -8 \quad \quad -8 \end{array}$$

$$\begin{array}{r} .50x = 10 \\ \underline{\quad} \quad \underline{\quad} \\ -50 \quad -50 \end{array}$$

$$x = 20$$

Grace bought 20 pencils

7. Brian sold half of his Pokémon cards. The next day, he bought 10 more. Now he has a total of 50 cards. Write and solve an equation to determine how many Pokémon cards he had before he sold any.

$x = \text{# of original cards}$

$$\begin{array}{r} \frac{1}{2}x + 10 = 50 \\ -10 \quad -10 \end{array}$$

$$2 \cdot \frac{1}{2}x = 40 - 2$$

$$x = 80$$

He had 80 cards