Word Problems with Substitution

Bell Work:

1. **Solve the equation. Show all work.** $x + 2(3x - 7) = 21$

2. **What does substitution mean?**

3. **What is the slope of the line with an equation with** $5x + 4y = -20$**?**

4. **What is the domain of the constant parent function?**

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1. **Tom is twice as old plus 4 years as his brother, Jerry. Together, their ages add up to 37. How old are Tom and Jerry?**

Identify the variables.

x: **Tom**

y: **Jerry**

Set both equations.

$$x = 2y + 4$$

$$x + y = 37$$

Solve by using substitution.

$$2y + 4 + y = 37$$

$$3y + 4 = 37$$

$$3y = 33$$

$$y = 11$$

Find the other answer.

$$x = 2(11) + 4 = 22 + 4 = 26$$

Answer the question with a complete sentence.

Tom is 26 years old and Jerry is 11 years old.

2. **Margret earned $423 for 2 weeks at her job. The first week, she earned $47 less than her 2nd week. How much did she earn each week?**

Identify the variables.

$$x: \textbf{1}^{\textbf{st}} \textbf{ week}$$

$$y: \textbf{2}^{\textbf{nd}} \textbf{ week}$$

Set both equations.

$$x = y - 47$$

$$x + y = 423$$

Solve by using substitution.

$$y - 47 + y = 423$$

$$2y - 47 = 423$$

$$2y = 470$$

$$y = 235$$

Find the other answer.

$$x = 235 - 47 = 188$$

Answer the question with a complete sentence.

She earned $188 during the 1st week and $235 during the 2nd week.

3. Patrick scored 49 points in 2 basketball games. In the 2nd game he scored 3 times as many plus 5 than in the 1st game. How many points did he score in each game?

Identify the variables.

x: **1ˢᵗ game**

y: **2ⁿᵈ game**

Set both equations.

$$y = 3x + 5$$

$$x + y = 49$$

Solve by using substitution.

$$x + 3x + 5 = 49$$

$$4x + 5 = 49$$

$$4x = 44$$

$$x = 11$$

Find the other answer.

$$y = 3(11) + 5 = 38$$

Answer the question with a complete sentence.

Patrick scored 11 points in the 1ˢᵗ game and 38 points in the 2ⁿᵈ game.

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4. For a big football party, Mike ordered pizza. He ordered 5 more pepperoni pizzas than cheese. Each cheese pizza was $5.00 and each pepperoni was $6.00. The pizzas cost him $63.00. How many of each pizza did Mike order?

Identify the variables.

x: **pepperoni**

y: **cheese**

Set both equations.

$$x = y + 5$$

$$6x + 5y = 63$$

Solve by using substitution.

$$6(y + 5) + 5y = 63$$

$$6y + 30 + 5y = 63$$

$$11y = 33$$

$$y = 3$$

Find the other answer.

$$x = 3 + 5 = 8$$

Answer the question with a complete sentence.

Mike ordered 8 pepperoni pizzas and 3 cheese pizzas.

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Assignment:

FLEUNCY PRACTICE: Substitution Word Problems Worksheet