Systems of Equations – Elimination

Bell Work:

1. **Solve the system of equations. Show all work.**

$$y = -2x - 9$$

$$5x - 3y = -61$$

2. **What is elimination?**

3. **What is the slope of the line with an equation of** $3x - 4y = 36$**?**

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

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1. **Linda sells tables and chairs. One month she sold 16 chairs and 5 tables making $342. The next month she made $546 by selling 28 chairs and 7 tables. How much does each chair and table cost?**

Identify the variables.

Chairs: *x*

Tables: *y*

Set up the equations.

$$(-7)\ 16x + 5y = 342$$

$$(5)\ \ 28x + 7y = 546$$

Solve by eliminating one of the variables.

$$-112x - 35y = -2394$$

$$+\ 140x + 35y = 2730$$

$$28x = 336$$

$$x = 12$$

Substitute this into one of the equations to solve for y.

$$16(12) + 5y = 342$$

$$192 + 5y = 342$$

$$5y = 150$$

$$y = 30$$

Answer the question with a complete sentence.

A chair costs $12 and a table costs $30.

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2. **Mark had a party last month where he bought 8 pepperoni pizzas and 5 cheese pizzas for $81. But for a party this month, he will buy 10 pepperoni pizzas and 6 cheese pizzas. It will cost him $100. How much does each pepperoni pizza and cheese pizzas cost?**

Identify the variables.

Pepperoni: *x*

Cheese: *y*

Set up the equations.

$(-6)\quad 8x + 5y = 81$

$(5)\quad 10x + 6y = 100$

Solve by eliminating one of the variables.

$$-48x - 30y = -486$$

$$+\quad 50x + 30y = 500$$

$$2x = 14$$

$$x = 7$$

Substitute this into one of the equations to solve for y.

$$8(7) + 5y = 81$$

$$56 + 5y = 81$$

$$5y = 25$$

$$y = 5$$

Answer the question with a complete sentence.

A pepperoni pizza costs $7 and a cheese pizza costs $5.

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3. **Jerry sells 2 types of basketballs, Spalding and Nike, at his sporting goods store. One month he sold 7 Spalding basketballs and 5 Nike basketballs, making $305.50. The next month Jerry made $250 from selling 4 Spalding basketballs and 6 Nike basketballs. How much does each basketball cost?**

Identify the variables.

Spalding: *x*

Nike: *y*

Set up the equations.

$(-4)\quad 7x + 5y = 305.50$

$(7)\quad 4x + 6y = 250$

Solve by eliminating one of the variables.

$$-28x - 20y = -1222$$
$$+\quad 28x + 42y = 1750$$
$$22y = 528$$
$$y = 24$$

Substitute this into one of the equations to solve for y.

$$4x + 6(24) = 250$$
$$4x + 144 = 250$$
$$4x = 106$$
$$x = 26.5$$

Answer the question with a complete sentence.

A Spalding basketball costs $26.50 and a Nike basketball costs $24.

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4. Tom bought 5 bottles of pop and 3 bottles of juice for his party this month, paying $38. Later he decided to buy 2 more bottles of pop and 4 bottles of juice paying $32. How much does each bottle of pop and bottle of juice cost?

Identify the variables.

Pop: *x* (-2)

Juice: *y* (5)

Set up the equations.

$$5x + 3y = 38$$

$$2x + 4y = 32$$

Solve by eliminating one of the variables.

$$-10x - 6y = -76$$

$$+\quad 10x + 20y = 160$$

$$14y = 84$$

$$y = 6$$

Substitute this into one of the equations to solve for y.

$$2x + 4(6) = 32$$

$$2x + 24 = 32$$

$$2x = 8$$

$$x = 4$$

Answer the question with a complete sentence.

Each bottle of pop costs $4 and each bottle of juice costs $6.

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Assignment:

FLUENCY PRACTICE: Word Problems: Elimination B Worksheet