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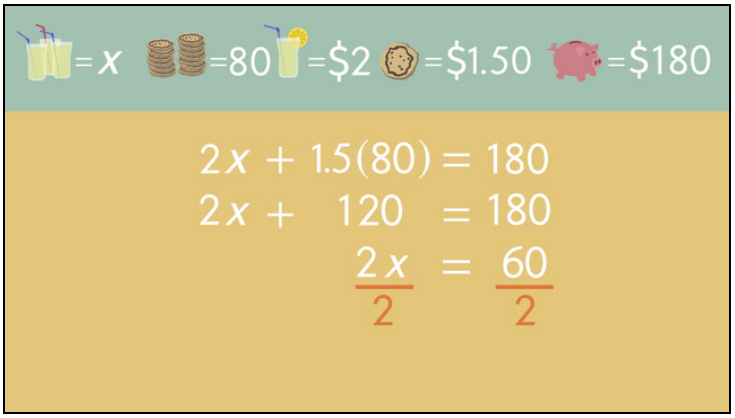
Standard Form



1. **Determine the number of glasses of lemonade that are sold.**
2. Describe how to graph the equation.
3. Decide how many marbles and colored pencils Sue can buy.
4. Explain how you can determine the number of large scoops of ice cream.
5. Decide which equation in standard form corresponds to the graph.

\+ with lots of tips, answer keys, and detailed answer explanations for all of the problems.

Determine the number of glasses of lemonade that are sold.

Fill in the blanks.

Kayla sells cookies and lemonade.

Today, she's earned $180 .

She sold 80 cookies for $ 1.50 each. How many glasses of lemonade did she sell for $ 2 per glass?

120	120	140	80	30	40	20	x	140	variables

slope	2	40	y	1.5	2	1.5	60

We use the standard form to write the equation that describes Kayla's sales.

First we assign the _____[1] x and y. x represents the number of sold glasses of lemonade, and y represents the number of sold cookies.

Then we plug in the known price for the lemonade and the cookies into the equation:

$$\_\_\_\_\_[2]\,x + \_\_\_\_\_[3]\,y = 180$$

Because we already know the number of sold cookies, we can substitute y by 80:

$$\_\_\_\_\_[4]\ \_\_\_\_\_[5] + \_\_\_\_\_[6] \times \_\_\_\_\_[7] = 180$$

To solve this equation we first simplify:

$$2x + \_\_\_\_\_[8] = 180.$$

Then we subtract _____[9] on both sides of the equation:

$$2x = \_\_\_\_\_[10].$$

Finally we divide both sides by 2 to calculate the solution:

$$x = \_\_\_\_\_[11].$$

Hints for solving these problems

1 of 5

Determine the number of glasses of lemonade that are sold.

Hint #1

The standard form:

$Ax + By = C$

$A \neq 0$ and $B \neq 0$.

Hint #2

In this example, $A = 2$ and $B = 1.5$ are the known prices.

Hint #3

To solve an equation, first simplify by combining like terms, and then isolate the variable using opposite operations.

Answers and detailed answer explanations for these problems

1 of 5

Determine the number of glasses of lemonade that are sold.

Answer key: 1: variables // 2: 2 // 3: 1.5 // 4: 2 // 5: x // 6: 1.5 // 7: 80 // 8: 120 // 9: 120 // 10: 60 // 11: 30

To write the in standard form: $Ax + By = C$, consider the facts.

- x is the unknown number of sold glasses of lemonade.
- y is the number of sold cookies.
- $A = 2$ is the price of one glass of lemonade.
- $B = 1.5$ is the price of one cookie.
- $C = 180$ is the total amount Kayla earned that day.

The equation written in standard form:

$$2x + 1.5y = 180.$$

Since we already know the number of sold cookies (80), we can substitute y with this number:

$$2x + 1.5 \times 80 = 180.$$

Now we can solve the equation:

$$\begin{array}{rcll} 2x + 1.5 \times 80 & = & 180 & \mid \text{multiplying} \\ 2x + 120 & = & 180 & \\ -120 & & -120 & \\ 2x & = & 60 & \end{array}$$

Finally we divide both sides of the equation by 2:

$$x = 30.$$

Now we know that Kayla sold 30 glasses of lemonade.