9/3/2019

Unit 4

Applying Linear Equations

ALGEBRA 1

Word Problem

Carson is a salesman at an insurance company. He receives a monthly salary of $1,236.00 and a $215.00 commission on each policy he sells. If Carson receives his commission check at the end of the month along with his salary check, which of the following equations can be used to determine his total pay for the month.

(Let *x* represent the number of policies sold and *y* represent the total amount of pay for the month.)

A. $y = 215x$

B. $y = 21.5x + 1,236$

C. $y = 215x + 1,236$

D. $y = 1,236x + 215$

1236.00 ← constant w/o variable

215.00 ← varies (needs variable)

Word Problem

A rental car company charges a base fee of $38.85 plus $0.42 per mile driven. If *x* represents the number of miles driven, which of the following equations could be used to find *y*, the total cost of the bill?

A. $y = \$0.42x + \$38.85$

B. $y = \$38.85x + \$0.42$

C. $y = \$39.27x$

D. $y = \$0.72x + \$38.85$

38.85 ← constant

0.42 ← varies

Word Problem

A company has fixed operating costs of $1,976.00 per month with a production cost of $13.23 per unit. If each unit brings $33.57 in revenue, which of the following equations represents the profit for the month?

(Let *x* represent the number of units made per month and *y* represent the total profit for the month. Note: Profit is the money left after taking the costs out of the revenue.)

A. $y = 13.23x - 1,976$

B. $y = 33.57x - 1,976$

C. $y = 20.34x - 1,976$

D. $y = 46.8x - 1,976$

33.57
−13.23
$20.34

Word Problem

Marcus works as a salesman at a car dealership. He is paid a base salary of $1,176.25 each month, and he receives a commission of $193.76 for each vehicle he sells. If last month Marcus earned $6,795.29, how many cars did he sell last month?

A. 70

B. 41

C. 58

D. 29

$6795.29 - 1176.25 = 5619.04 \div 193.76$

Word Problem

Indicate which property is illustrated in Step 8.

Step 1: $30 - 28x + 6x - 3 = 0$
Step 2: $30 + (-28x + 6x) - 3 = 0$
Step 3: $30 + (-28 + 6)x - 3 = 0$
Step 4: $30 + (-22x) - 3 = 0$
Step 5: $(-22x + 30) - 3 = 0$
Step 6: $-22x + (30 - 3) = 0$
Step 7: $-22x + 27 = 0$
Step 8: $-22x + 27 + (-27) = 0 + (-27)$
Step 9: $-22x = -27$
Step 10: $-22x \cdot \left(-\frac{1}{22}\right) = -27 \cdot \left(-\frac{1}{22}\right)$
Step 11: $x = \frac{27}{22}$

A. inverse property of addition
B. additive identity property
C. inverse property of multiplication
D. commutative property

The difference between 7 and 8 is adding the opposite (additive inverse)

Word Problem

Meghan is completing her chemistry and geometry homework. Each chemistry assignment has x problems, and each geometry assignment has y problems. She must complete a total of 71 problems. The equation below describes the relationship between the number of chemistry problems and the number of geometry problems.

x y

$4x + 3y = 71$

The ordered pair (5, 17) is a solution of the equation. What does the solution (5, 17) represent?

A. Meghan must complete 5 chemistry assignments and 17 geometry assignments.

B. Meghan spent 5 minutes on her chemistry homework and 17 minutes on her geometry homework.

C. Each chemistry assignment contains 5 problems and each geometry assignment contains 17 problems.

D. Meghan must complete 12 more geometry assignments than chemistry assignments.

Same wording

Word Problem

Indicate which property is illustrated in Step 8.

Step 1: $10 - 36x + 8x - 4 = 0$
Step 2: $10 + (-36x + 8x) - 4 = 0$
Step 3: $10 + (-36 + 8)x - 4 = 0$
Step 4: $10 + (-28x) - 4 = 0$
Step 5: $(-28x + 10) - 4 = 0$
Step 6: $-28x + (10 - 4) = 0$
Step 7: $-28x + 6 = 0$
Step 8: $-28x + 6 + (-6) = 0 + (-6)$
Step 9: $-28x = -6$
Step 10: $-28x \cdot \left(-\frac{1}{28}\right) = -6 \cdot \left(-\frac{1}{28}\right)$
Step 11: $x = \frac{3}{14}$

A. inverse property of multiplication
B. commutative property
C. inverse property of addition
D. additive identity property

Same as

3/20

Unit 4

Solving Linear Equations

ALGEBRA 1

Solve for the Variable

$10 = x + 6$	$-13 = 3p$	$8 = \frac{w}{6}$	$-6 = \frac{7}{11}t$
Var. Num $x + 6 = 10$ $x = 10 - 6$ $x = 4$	$\frac{3p}{3} = \frac{-13}{3}$ $p = \frac{-13}{3}$	$\frac{w}{6} = 8$ $w = 48$	$\frac{11}{7} \cdot \frac{7}{11}t = -6 \cdot \frac{11}{7}$ $t = \frac{-66}{7}$

Steps for Solving an Equation

1. Do Distributive Property (If Necessary)
2. Combine Like Terms ($+ \; or \; -$) (If Necessary)
3. Use the Addition or Subtraction Property of Equality (Undo $+ \; or \; -$ by doing the Opposite)
4. Use Multiplication or Division Property of Equality (Undo $x \; or \; \div$ by doing the Opposite)

Solve the Equation

Var. Num $-6 = -g + 8$ $-g + 8 = -6$ $-g = -6 - 8$ $\frac{-g}{-1} = \frac{-14}{-1}$ $g = 14$	Var. Num $7.2x + 8.5 = 17.4$ $7.2x = 17.4 - 8.5$ $\frac{7.2x}{7.2} = \frac{8.9}{7.2}$ $x = 1.2$

Solve the Equation

$\frac{3}{4}x - 4 = 7$

$\frac{3}{4}x = 7 + 4$

$\frac{4}{3} \cdot \frac{3}{4}x = 11 \cdot \frac{4}{3}$

$x = \frac{44}{3}$

$\frac{c+7}{-11} = -3$

$c + 7 = 33$

$c = 33 - 7$

$c = 26$

Solve the Equation

Var. Numbers

Solve for p.

A. $p = -9$

B. $p = 21$

C. $p = \frac{33}{2}$

D. $p = 66$

$\frac{2p - 30}{4} = 3$

$2p - 30 = 12$

$2p = 12 + 30$

$\frac{2p}{2} = \frac{42}{2}$

$p = 21$

Solve for x.

A. $x = -\frac{4}{7}$

B. $x = -4$

C. $x = -\frac{4}{19}$

D. $x = \frac{4}{7}$

$-6x + 14 = -13x + 10$

$-6x + 13x = 10 - 14$

$\frac{7x}{7} = \frac{-4}{7}$

$x = -\frac{4}{7}$

Solve the Equation

Solve for m.

A. $m = 1$

B. $m = -2$

C. $m = -1$

D. $m = -\frac{11}{3}$

$6m = -8 + 2m$

$6m - 2m = -8$

$\frac{4m}{4} = \frac{-8}{4}$

$m = -2$

Solve for x.

A. $x = \frac{5}{2}$

B. $x = -\frac{4}{7}$

C. $x = \frac{4}{7}$

D. $x = \frac{13}{2}$

$12(2x - 4) = 108x$

$24x - 48 = 108x$

$24x - 108x = 48$

$\frac{-84x}{-84} = \frac{48}{-84}$

$x = -\frac{4}{7}$

Solve the Equation

Var, Num

Solve for x.

A. $x = 6$

B. $x = 27$

C. $x = 9$

D. $x = \frac{41}{4}$

$8(x - 3) = -4x + 84$

$8x - 24 = -4x + 84$

$8x + 4x = 84 + 24$

$\frac{12x}{12} = \frac{108}{12}$

$x = 9$

Solve for x.

A. $x = \frac{3}{5}$

B. $x = 2$

C. $x = \frac{2}{5}$

D. $x = 3$

$9x - 3 = 6x + 6$

$9x - 6x = 6 + 3$

$\frac{3x}{3} = \frac{9}{3}$

$x = 3$