

Name _____

Date _____

1. Transcribe and solve each of the following linear equations.

- a. Ofelia has a certain amount of money. If she spends 12 dollars, then she has $\frac{1}{5}$ of the original amount left. How much money did Ofelia have originally?

LET x BE THE AMOUNT OF MONEY OFELIA HAD

$$x - 12 = \frac{1}{5}x$$

$$x - \frac{1}{5}x - 12 + 12 = \frac{1}{5}x - \frac{1}{5}x + 12$$

$$\frac{4}{5}x = 12$$

$$x = 12 \cdot \frac{5}{4} = \frac{60}{4}$$

OFELIA HAD \$15.00 ORIGINALLY.

- b. Three consecutive integers have a sum of 234. What are the three integers?

LET x BE THE FIRST INTEGER

$$x + x + 1 + x + 2 = 234$$

$$3x + 3 = 234$$

$$3x + 3 - 3 = 234 - 3$$

$$3x = 231$$

$$x = 77$$

THE INTEGERS ARE 77, 78, AND 79.

- c. Gil is reading a book that has 276 pages. He has already read some of it last week. He plans to read 20 pages tomorrow. By then, he will be $\frac{2}{3}$ of the way through the book. How many pages did Gil read last week?

LET x BE THE NUMBER OF PAGES GIL READ LAST WEEK.

$$x + 20 = \frac{2}{3}(276)$$

$$x + 20 = 184$$

$$x + 20 - 20 = 184 - 20$$

$$x = 164$$

GIL READ 164 PAGES LAST WEEK.



2. a. Without solving, identify which of the following equations has a unique solution, no solution, or infinitely many solutions.

$3x + 5 = -2$ UNIQUE

$6(x - 11) = 15 - 4x$ UNIQUE

$12x + 9 = 8x + 1 + 4x$ NO SOLUTION

$2(x - 3) = 10x - 6 - 8x$ INFINITELY MANY SOLUTIONS

$5x + 6 = 5x - 4$ NO SOLUTION

- b. Solve the following equation for a number x . Verify that your solution is correct.

$$\begin{array}{r} -15 = 8x + 1 \\ -1 \quad -1 \\ \hline -16 = 8x \\ \frac{-16}{8} = \frac{8x}{8} \\ -2 = x \end{array}$$

$$\begin{aligned} -15 &= 8(-2) + 1 \\ -15 &= -16 + 1 \\ -15 &= -15 \end{aligned}$$

- c. Solve the following equation for a number x . Verify that your solution is correct.

$$\begin{aligned} 7(2x + 5) &= 4x - 9 - x \\ 14x + 35 &= 4x - x - 9 \\ 14x + 35 &= 3x - 9 \\ 14x - 3x + 35 &= 3x - 3x - 9 \\ 11x + 35 &= -9 \\ 11x + 35 - 35 &= -9 - 35 \\ 11x &= -44 \\ x &= -4 \end{aligned}$$

$$\begin{aligned} 7(2(-4) + 5) &= 4(-4) - 9 - (-4) \\ 7(-8 + 5) &= -16 - 9 + 4 \\ 7(-3) &= -25 + 4 \\ -21 &= -21 \end{aligned}$$