

Lucy's Linear Equation and Inequalities (Practice Task)

Lucy has been assigned the following linear equations and inequality word problems. Help her solve each problem below by using a five step plan.

- Drawing a Sketch (if necessary)]
- Defining a Variable
- Setting up an equation or inequality
- Solve the equation or inequality
- Make sure you answer the question

1. The sum of 29 and triple a number is 185. Find the number. $n = \#$

$$29 + 3n = 185$$

$$n = 52$$

$$3n = 156$$

$$|n = 52|$$

2. The sum of two consecutive integers is less than 45. Find the pair of integers with the greatest sum. $x = 1st$ consecutive integer

$$x + (x + 1) < 45$$

$$|x < 22|$$

$$2x + 1 < 45$$

$$2x < 44$$

$$|x + 1 < 23|$$

3. A rectangle is 6m longer than it is wide. Its perimeter is 72 m. Find its length and width.

$$L = 6 + W$$

$$P = 2L + 2W$$

$$72 = 12 + 4W$$

$$L = 6 + 15 = \boxed{21m}$$

$$72 = 2(6 + W) + 2W$$

$$72 = 12 + 2W + 2W$$

$$60 = 4W$$

$$|W = 15m|$$

4. The length of a rectangle is 5 cm more than the width and the perimeter is at least 46 cm. What are the smallest possible dimensions for the rectangle?

$$L = 5 + W$$

$$P \geq 2L + 2W$$

$$|W \geq 9cm|$$

$$2(5 + W) + 2W \geq 46$$

$$10 + 4W \geq 46$$

$$4W \geq 36$$

$$L = 5 + 9 = \boxed{14cm}$$

5. Find three consecutive odd integers with a sum of -51. Set up an equation that represents this situation, then solve.

$$x + (x + 2) + (x + 4) = -51$$

$$3x + 6 = -51$$

$$|-19, -17, -15|$$

$$3x = -57$$

$$|x = -19|$$

Challenge:

$C = \#$ quarters Chris has; $N = \#$ quarters Nora has

6. Chris has saved twice the number of quarters that Nora saved plus 6. The number of quarters Chris saved is also five times the difference of the number of quarters and 3 that Nora has saved. Write and solve an equation to find the number of quarters they each have saved.

$$C = 2N + 6$$

$$C = 5(N - 3)$$

$$2N + 6 = 5(N - 3)$$

$$2N + 6 = 5N - 15$$

$$6 = 3N - 15$$

$$21 = 3N$$

$$C = 2(7) + 6 = \boxed{20}$$

Chris has saved 20 quarters & Nora has 7.

$$N = \boxed{7 \text{ quarters}}$$

7. Stacy's test scores are 95, 86, 83, and 98. What does she need to make on her 5th test to have an average of 92?

$$\frac{95 + 86 + 83 + 98 + x}{5} = 92 \cdot 5$$

$$\begin{array}{r} 342 + x = 460 \\ -342 \quad -342 \\ \hline \end{array}$$

$$\boxed{x = 98}$$

she needs to make a 98!

8. Three times the lesser of two consecutive even integers is 6 less than six times the greater number. Set up an equation and solve to find the integers.

$x =$ smallest consecutive integer (even) $\hat{=}$ $x + 2$

$$3x = 6(x + 2) - 6$$

$$3x = 6x + 12 - 6$$

$$3x = 6x + 6$$

$$-3x = 6$$

$$\boxed{x = -2}$$

$$\boxed{-2 \text{ and } 0}$$