Lucy's Linear Equations and Inequalities

Name_____ Class Period_____

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

1. Drawing a Sketch(if necessary)
2. Defining a Variable
3. Setting up an equation or inequality
4. Solve the equation or inequality
5. Make sure you answer the question

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1. The sum of 38 and twice a number is 124. Find the number.

add 2n =

$38 + 2n = 124$

$-38 \quad -38$

$\frac{2n}{2} = \frac{86}{2}$

$n = 43$

2. Find three consecutive integers whose sum is 171.

add

$x + (x+1) + (x+2) = 171$

$3x + 3 = 171$

$-3 \quad -3$

$\frac{3x}{3} = \frac{168}{3}$

$x = 56, 57, 58$

3. The sum of two consecutive integers is less than 83. Find the pair of integers with the greatest sum.

$x + (x+1) < 83$

$2x + 1 < 83$

4. Find four consecutive even integers whose sum is 244.

$x + (x+2) + (x+4) + (x+6) = 244$

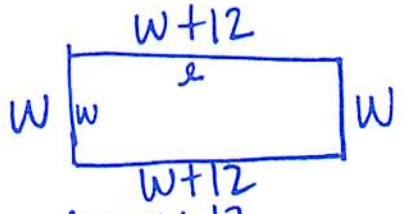
$4x + 12 = 244$

$-12 \quad -12$

$\frac{4x}{4} = \frac{232}{4}$

$x = 58, 60, 62, 64$

5. A rectangle is 12m longer than it is wide. Its perimeter is 68m. Find its length and width.



$l = w+12$

$w + w+12 + w + w+12 = 68$

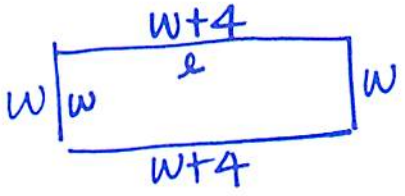
$4w + 24 = 68$

$-24 \quad -24$

$\frac{4w}{4} = \frac{44}{4}$

$\boxed{w = 11} \quad \boxed{l = 23}$

6. The length of a rectangle is 4 cm more than the width and the perimeter is at least 48 cm. What are the smallest possible dimensions for the rectangle?



$l = w+4$

$w + w+4 + w + w+4 \geq 48$

7. Alex has twice as much money as Jennifer. Jennifer has $6 less than Shannon. Together they have $54. How much money does each have?

$A = 2J = \boxed{2(S-6)}$

$J = \boxed{S-6}$

$\boxed{S}$

$\underline{S} + \underline{S-6} + \underline{2(S-6)} = 54$

$S + S - 6 + 2S - 12 = 54$

$4S - 18 = 54$

$+18 \quad +18$

$\frac{4S}{4} = \frac{72}{4}$

$S = 18$

$\boxed{S = 18}$
$\boxed{J = 12}$
$\boxed{A = 24}$

8. There are three exams in a marking period. A student received grades of 75 and 81 on the first two exams. What grade must the student earn on the last exam to get an average of no less than 80 for the marking period?

$\frac{75+81+X}{3} \geq 80$

$3 \cdot \frac{(156+X)}{3} \geq 80 \cdot 3$

$156 + X \geq 240$

$-156 \quad -156$

$\boxed{X \geq 84}$