

Name Key

Date _____

Unit 4. Equations and Inequalities REVIEW

Part I

1) Give an example of

a. the distributive property $4(x+2) = 4x+8$

b. the associative property $(5+6)+7 = 5+(6+7)$

c. the inverse property of addition $8+(-8)=0$

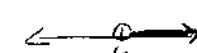
2) Simplify $(-4a-7b)-(9a-15b)$ * distribute the negative one!

$(-4a-7b)(-9a+15b) = \boxed{-13a+8b}$

3) Simplify the expression. Write in standard form. $2x-3(6+2x)$

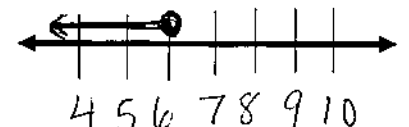
$2x-18-6x = \boxed{-4x-18}$

4) Solve, graph, & check the inequality:

$\frac{-3x}{-3} < \frac{-18}{-3}$ * switch the sign! check: test 10
 $x > 6$  $-3(10) < -18$
 $-30 < -18 \checkmark$

Part II: Solve and check each equation. Only algebraic solutions will receive full credit. [6 pts. Each]

<p>5.</p> $\begin{array}{r} 3x + 8 = 53 \\ -8 \quad -8 \\ \hline 3x = 45 \\ \frac{3}{3} \quad \frac{3}{3} \\ \hline \boxed{x = 15} \end{array}$	<p>Check</p> $\begin{aligned} 3(15) + 8 &= 53 \\ 45 + 8 &= 53 \\ 53 &= 53 \checkmark \end{aligned}$
<p>6.</p> $\begin{array}{r} 5(x+9) = -40 \\ 5x + 45 = -40 \\ -45 \quad -45 \\ \hline 5x = -85 \\ \frac{5}{5} \quad \frac{5}{5} \\ \hline \boxed{x = -17} \end{array}$	<p>Check</p> <p>P E M D A S</p> $\begin{aligned} 5(-17+9) &= -40 \\ 5(-8) &= -40 \\ -40 &= -40 \checkmark \end{aligned}$

<p>7.</p> $\frac{4}{5}x = \frac{28}{40}$ $\frac{-4}{5} \quad \frac{-4}{5}$ $\boxed{x = -.875}$ <p>calculator: (28÷40)÷(-4÷5)=</p>	<p>Check</p> $-\frac{4}{5}(-.875) = \frac{28}{40}$ $.7 = .7 \checkmark$	
<p>8.</p> <p>combine like terms →</p> $(12y + 9) - y = 42$ $11y + 9 = 42$ $\frac{-9}{-9} \quad \frac{-9}{-9}$ $11y = 33$ $\frac{11}{11} \quad \frac{11}{11}$ $\boxed{y = 3}$ <p>DCVCS</p>	<p>Check</p> $12(3) + 9 - 3 = 42$ $36 + 9 - 3 = 42$ $42 = 42 \checkmark$	
<p>9. Solve the inequality:</p> $3(a - 10) \leq -12$ $3a - 30 \leq -12$ $\frac{+30}{+30} \quad \frac{+30}{+30}$ $\frac{3a}{3} \leq \frac{18}{3}$ $\boxed{a \leq 6}$	<p>Graph:</p> 	<p>Check: Test a=6 or less</p> $3(5-10) \leq -12$ $3(-5) \leq -12$ $-15 \leq -12$ <p>✓ TRUE</p>

Part III: Solve and check each problem. Show all work.

10) You bought a magazine for \$5 and four erasers. You spent a total of \$25. How much did each eraser cost?

- Write an equation that represents this situation.
- Solve the equation from part a) to determine how much each eraser cost + worked to complete the job. Only algebraic solutions!!!

Let x = cost of each eraser

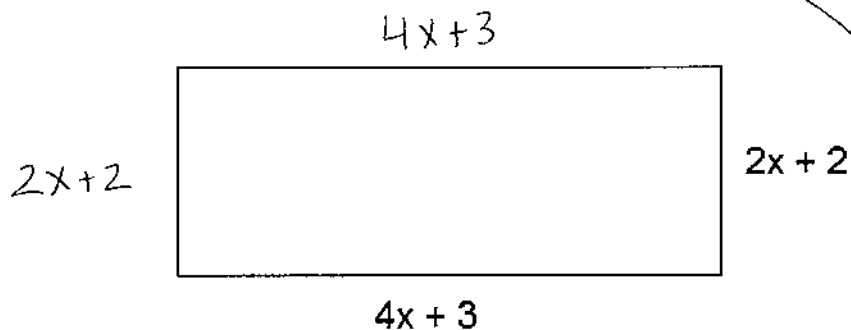
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$$\begin{array}{r} 5 + 4x = 25 \\ -5 \\ \hline 4x = 20 \end{array} \quad x = 5$$

\$5 for each eraser

11) Use the diagram below to answer parts a and b.

- a. Write a simplified linear expression in standard form to represent the perimeter of the rectangle shown below.



↓
add all the sides

$$(4x+3) + (2x+2) + (4x+3) + (2x+2) = \boxed{12x+10}$$

- b. Use the expression from part a) to find the value of x if the perimeter is 34 millimeters.

$$12x+10=34$$

$$\begin{array}{r} -10 \\ -10 \end{array}$$

$$\frac{12x}{12} = \frac{24}{12} \quad \boxed{x=2}$$

- 12) Find the common difference on the arithmetic sequence below, and find the next three numbers on the sequence:

17, 23, 29, 35...
 $\swarrow \searrow \swarrow \searrow$
 $+6 \quad +6 \quad +6$

Common difference = 6

next 3 terms = 41, 47, 53