1. Using the symbols: N, W, Z, Q, I, and R for each number system, classify the following

   a) 5

   b) $\sqrt{2}$

1. a. $\underline{N, W, Z, Q, R}$

   b. $\underline{I, R}$

2. State the property of real numbers that is shown.

   a) $\frac{3}{4} \cdot \frac{4}{3} = 1$

   b) $2 + (6 + 7) = (2 + 6) + 7$

2. a. $\underline{Inverse\ prop\ of\ (x,}$

   b. $\underline{Associative\ Prop}$
   $\underline{of\ (+)}$

Write an algebraic expression for each statement.

3. 4 more than the product of a number and 2

3. $\underline{4 + 2x}$

4. 2 less than the quotient of a number and 4

4. $\underline{^x/_4 - 2}$

Simplify the expression.

5. $2 \cdot 5 + 3^2 - (9 + 4)$

$10 + 9 - 13$

$19 - 13 = 6$

5. $\underline{6}$

6. $2x + 3y - 4(x + 2y)$

$2x + 3y - 4x - 8y$

$-2x - 5y$

6. $\underline{-2x - 5y}$

Evaluate the expression.

7. $\frac{3a^2 + 2b}{c^2}$ when a = 1, b = 2, c = -3

$\frac{3(1)^2 + 2(2)}{(-3)^2} = \frac{3+4}{9} = \frac{7}{9}$

7. $\underline{^7/_9}$

Solve the equation.

8. $5m - (5 + 4m) = (3 + m) - 8$

$5m - 5 - 4m = 3 + m - 8$

$m - 5 = m - 5$

$-5 = -5$

9. $5x + 2 = 3x + 24$

$2x = 22$

$x = 11$

8. $\underline{All\ real\ \#'s}$

9. $\underline{x = 11}$

Solve for the given variable.

10. $3x + 5y = 15$, for y.

$\frac{5y}{5} = \frac{-3x + 15}{5}$

$y = -\frac{3}{5}x + 3$

11. $V = \frac{1}{3}\pi r^2 h$, for h.

$3V = \pi r^2 h$

$h = \frac{3V}{\pi r^2}$

10. $y = \underline{-\frac{3}{5}x + 3}$

11. $h = \underline{\frac{3V}{\pi r^2}}$

Solve each ineqaulity and graph the solution on the number line.

12. $6 - 4x > 3(x - 2)$

$6 - 4x > 3x - 6$

$-7x > -12$

$x < 12/7$

13. $-5 < 6n - 17 \leq 13$

$\quad +17 \quad +17 \quad +17$

$\dfrac{12}{6} < \dfrac{6n}{6} \leq \dfrac{30}{6}$

$2 < n \leq 5$

14. $7v + 6 \leq -22$ or $11 - v < 9$

$\quad -6 \quad -6 \quad\quad -11 \quad -v < -2$

$7v \leq -28$ or $v > 2$

$v \leq -4$

15. $|2x + 2| - 7 \leq -5$

$|2x + 2| \leq 2$

$2x + 2 \leq 2 \quad\quad -2x - 2 \leq 2$

$2x \leq 0 \quad\quad\quad -2x \leq 4$

$x \leq 0$ AND $x \geq -2$

Solve the absolute value equation. *Check your solution.*

$\dfrac{19}{2}$

16. $\dfrac{10\left|\frac{1}{2}x + 4\right|}{10} = \dfrac{2}{10}$

$\left|\dfrac{1}{2}x + 4\right| = 1/5$

$\dfrac{1}{2}x + 4 = \dfrac{1}{5} - \dfrac{20}{5}$

$\dfrac{1}{2}x = \dfrac{-19}{5} \cdot 2$

$x = \dfrac{-38}{5}$

$-\dfrac{1}{2}x - 4 = 1/5$

$-2 \cdot -\dfrac{1}{2}x = \dfrac{21}{5} \cdot -2$

$x = \dfrac{-42}{5}$

17. $-3 + 2|2x + 1| = 7$

$2|2x + 1| = 10$

$|2x + 1| = 5$

$2x + 1 = 5 \quad\quad -2x - 1 = 5$

$2x = 4 \quad\quad\quad -2x = 6$

$x = 2 \quad\quad\quad x = -3$

Solve algebraically showing all steps.

18. A Parent Teacher Organization has raised $1800 to help pay for a trip to an amusement park. Adult tickets are $45 and student tickets are $30. *Be sure to define a variable, write an equation, and solve the problem.*

a) If the group wants to take (50 students,) how many adults can chaperone and stay within budget of $1800?

$x \to$ # of adults

$50(30) + x(45) \leq 1800$

$1500 + 45x \leq 1800$

$45x \leq 300$

$x \leq 6.67$

b) How much money will be left over if any?

$1500 + 45(6)$

$1500 + 270 = 1770$

$\begin{array}{r} 1800 \\ -1770 \\ \hline \end{array}$

19. A student states that the answer to the following question is **The side is less than 6 inches.** Identify the error.

The lengths of the sides of a trianle are in the ratio 3:4:5. Describe the length of the longest side if the perimeter is not more than 72 inches.
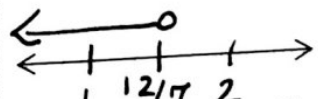
$3x + 4x + 5x \leq 72$

$12x \leq 72$

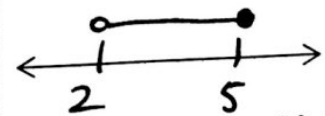$x \leq 6$

* 6 is the Ratio *

The students error is that 6 inches is the value for x. The longest side is 6(5) = 30

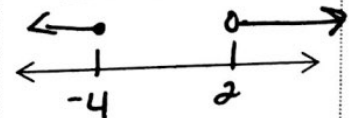12. $x < 12/7$
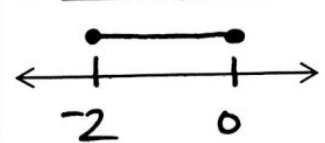

13. $2 < n \leq 5$

14. $v \leq -4$ or $v > 2$

15. $x \leq 0$ and $x \geq -2$

16. $x = \dfrac{-42}{5}, \dfrac{-38}{5}$

17. $x = -3, 2$

18a. 6 or less adults

18b. $30

19. 30 inches

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