

Instructions: Write clearly and neatly. Show all work to receive full credit.

1. (10 pts) Define the following terms. Write complete sentences.

- a. Equation

- b. Solution

- c. Equivalent equations

- d. Contradiction

- e. Conditional

2. (20 pts) True or false, circle one.

- a. True or False, 2 is a natural number.
- b. True or False, 2 is an integer.
- c. True or False, 2 is a rational number.
- d. True or False, 2 is a real number.
- e. True or False, 0 is a natural number.
- f. True or False, 0 is an irrational number.
- g. True or False, $\sqrt{2}$ is an integer.
- h. True or False, $\sqrt{2}$ is a rational number.
- i. True or False, -3 is an integer.
- j. True or False, -3 is a whole number.
- k. True or False, $12 \div 3 \cdot 4 = 1$.
- l. True or False, $4 - 4(4 - 4) = 0$.
- m. True or False, $-|-4| = -4$.
- n. True or False, $\frac{0}{2}$ does not exist.

o. True or False, $\frac{5}{5-5} = 0$.

p. True or False, $6 = 0$ is an equation.

q. True or False, $x = 6$ is the solution of $2x + 3 = 15$.

r. True or False, $-2^2 = -4$.

s. True or False, $(-2)^2 = 4$.

t. True or False, Always store beer in a cool, dark, place.

3. (5 pts) Evaluate $\frac{5y-x}{2}$ when $x = 20$ and y is 4 less than half of x .

4. (10 pts) Find the solution sets of the following equations. Remember to check your solution (if any) and to state the answers clearly.

a. $\frac{4}{3}x - 7 = 1$

b. $5(x-2) = 8x+2-3x$

5. (10 pts) Solve the following inequalities. Graph and write set-builder notation for each answer.

a. $3x \leq 2x + 7$

b. $6 - 13y < 4 - 12y$

6. (10 pts) Leon left a \$4 tip for a meal that cost \$25.

a. What percent of the cost of the meal was the tip?

b. If the tax rate is 8.25 percent, how much tax was paid on the meal?

7. (10 pts) Twice the sum of 4 and some number is 34. What is the number?