

NAME: _____ Score _____ /100
Please print

SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED FASHION

Circle T or F, whichever is correct. (2 pts each)

1. T F $5 - 4 = -20$.
2. T F Every rational number is an integer.
3. T F $\{x | x \in \mathbb{R} \text{ and } 7 \leq x < 12\} = [7, 12)$
4. T F $\sqrt{3}$ is a rational number.
5. T F $5 - (-7 - 2) = 5 + (7 - 2)$.
6. T F The reciprocal of $\frac{3}{19}$ is $-\frac{19}{3}$.
7. T F $\frac{2}{3} + \frac{4}{5} = \frac{6}{8}$.
8. T F The set $\{x | x \text{ is an integer less than } 3\}$ contains a negative number.
9. T F If x is a real number and $x < 0$, then $-x$ is positive.
10. T F $-5^4 = -625$.
11. (3 pts) Check each of the following which are equal to the interval $[4, 7]$.

<input type="checkbox"/> $\{x 4 < x < 7\}$	<input type="checkbox"/> $\{x 4 \leq x < 7\}$	<input type="checkbox"/> $\{4, 5, 6\}$
<input type="checkbox"/> $\{x 4 < x \leq 7\}$	<input type="checkbox"/> $\{x 4 \leq x \leq 7\}$	<input type="checkbox"/> $\{5, 6, 7\}$
<input type="checkbox"/> $[7, 4]$	<input type="checkbox"/> $(3, 8)$	<input type="checkbox"/> $\{x x \in \mathbb{N} \text{ and } 4 \leq x \leq 7\}$

12. (3 pts) Check each of the following which are equal to the fraction $\frac{x}{y}$.

<input type="checkbox"/> $\frac{-x}{-y}$	<input type="checkbox"/> $-\frac{-x}{-y}$	<input type="checkbox"/> $-\frac{x}{-y}$
<input type="checkbox"/> $-\frac{x}{y}$	<input type="checkbox"/> $-\frac{-x}{y}$	<input type="checkbox"/> $\frac{-x}{y}$
<input type="checkbox"/> $\frac{x}{-y}$	<input type="checkbox"/> $\frac{y}{x}$	

Fill in each of the blanks to make the statements true. (2 pts each)

13. A _____ is a collection of objects.

14. The formula for the area of a circle is _____ .
15. Give an example of a binary operation _____.
16. In the expression a^b , a is the _____ and b is the _____.
17. Give an example of a unary operation: _____.
18. The product of two real numbers with the same signs is _____.
19. The transitive property of equality states that if _____ and $b = c$, then $a = c$.
20. $\frac{5}{0}$ is _____.
21. On the number line the symbol $<$ means "to the _____ of".
22. Absolute value is defined by $|x| = \begin{cases} \text{_____} \\ \text{_____} \end{cases}$
23. Complete the statement of the Law of Trichotomy.
 If a and b are real numbers, then one and only one of the following is true:
 i) _____
 ii) _____
 iii) _____
24. If a and b are real numbers and $ab = 0$, then _____ or _____.
25. The property of the real numbers which justifies $3(x + 2y) = 3x + 6y$ is the _____ property.
26. $\frac{3}{-3} =$ _____
27. $(-1)^4 =$ _____
28. $-1^2 =$ _____
29. $4 - (-12) =$ _____
30. $2(5 - 3)^2 =$ _____
31. A formula must be an _____

32. $\{x \in \mathbb{R} \mid x > 8\}$ is an example of _____ notation for a set.

33. $[3, 5)$ is an example of _____ notation.

34. In the expression $a \div b$, a is called the _____, b is called the _____ and $a \div b$ is called the quotient.

Show your work on exercises 35 – 40 inclusive (5 pts each). No work –No Credit Be neat!

35. $25 - [(3 - 5) + (14 - 18)]^2 =$

36. Simplify the expression $5x - 2(7x - 5) + 3x$

37. Simplify $\frac{10 + \left(\frac{1}{4}\right)(12)}{\left(\frac{1}{5}\right)(20) - 5}$

38. Calculate the area of a trapezoid whose height is 4 and its bases are $B = 3$ and $b = 7$. State the formula and then use the formula. **State the formula and then use the formula.**

39. Complete the following diagram to convert the subtraction problem to an equivalent addition problem. **(I do not want you to compute the difference.) No work required.**

$$\begin{array}{ccc} -5 & - & (-8) \\ \downarrow & \downarrow & \downarrow \\ \underline{\quad} & \underline{\quad} & \underline{\quad} \end{array}$$

40. Complete the following diagram to convert the division problem to an equivalent multiplication problem. **(I do not want you to compute the quotient.) No work required.**

$$\begin{array}{ccc} -\frac{3}{5} & \div & \left(-\frac{4}{7}\right) \\ \downarrow & \downarrow & \downarrow \\ \underline{\quad} & \underline{\quad} & \underline{\quad} \end{array}$$