Unit 1 (The Real Number System) and Unit 2 (Rational Numbers)

State the property shown in each example.

1. 7.9 x 0 = 0

2. 10(9 + 4.05) = (9 + 4.05)10

3. 987.654 x 1 = 987.654

4. (21.6 x 15.8) x 0.4 = 21.6 x (15.8 x 0.4)

5. 34.08 + 0 = 34.08

6. 3.7(4 + 1.56) = (3.7 x 4) + (3.7 x 1.56)

7. Does the commutative property work for subtraction? Explain and show an example.

8. Round 54.8979 to the nearest hundredth. _____

9. Round 0.01399 to the nearest thousandth. _____

10. A nurse takes your temperature, and the thermometer reads 101.2°F. She decides to take your temperature every ten minutes for an hour. Your temperature change over the hour is listed below:

-0.6°, +1.14°, -0.34°, -1.14°, +0.34°, -1.2°

What is your final temperature after the hour? Explain how you determined your answer **without adding** all of the indicated values.

11. A diver below sea level ascends 25 feet to a reef at -35.5 feet. What was the elevation of the diver before she ascended to the reef?

12. A plane descends 1.5 miles to an elevation of 3.75 miles. What was the elevation of the plane before descent?

13. Which expression has the greatest value when x = -2 and y = -3?

A. –xy B. xy C. x – y D. –x – y

14. What is the value of the expression below when x = 6, y = -4, and z = -2?

$$\frac{x - 2y}{-z}$$

A. -7 B. -1 C. 1 D. 7

15. Evaluate the expression when $x = \frac{1}{2}$ $y = \frac{2}{3}$ and $z = \frac{5}{6}$

$$\frac{y}{x + z}$$

16. Evaluate the following expression: $\frac{3}{8} + \frac{-4}{5} + \frac{-3}{8} + \frac{5}{4}$

17. Evaluate 100 ÷ 25 x 50 ÷ 5

18. Evaluate the algebraic expression 5(a – b) + 11b when a = 15 and b = 4.

19. Evaluate the expression using the given value for each variable.

$x = -\frac{1}{4}$ $y = 0.5$ and $z = -2\frac{1}{2}$

$$xz + y$$

20. T or F: The opposite of 0 is 0.

21. T or F: All integers are rational numbers.

22. T or F: π is a rational number.

23. T or F: 0 is an integer.

24. T or F: 0.235235 is a terminating decimal

25. Write the multiplicative inverse of $-3\frac{5}{9}$.

26. Write the additive inverse of -4.

27. Evaluate |-5|

28. Evaluate -|-6|

29. Evaluate |8|

30. Change 4% to a simplified fraction.

31. Change 29% to a decimal.

32. Change 0.05 to a percent.

33. Change $\frac{3}{15}$ to a decimal.

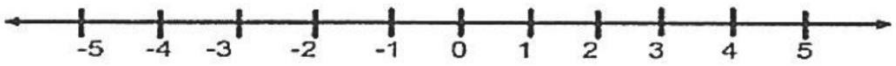
34. Change $\frac{2}{5}$ to a percent.

35. Change 0.08 to a simplified fraction.

36. Between which two integers does $\sqrt{41}$ lie? How do you know?

37. Plot the numbers on the number line.

$\sqrt{18}$ $\quad -\frac{1}{2}$ $\quad -1.\overline{18}$ $\quad 0.2$ $\quad 4.9$ $\quad \pi$ $\quad -\sqrt{25}$



38. Is $\sqrt{9} + \sqrt{36}$ the same as $\sqrt{9+36}$? Explain your reasoning.

39. T or F: If $a > 0$ and $b < 0$, then the product of $ab < 0$.

40. Write the reciprocal of $5\frac{3}{8}$

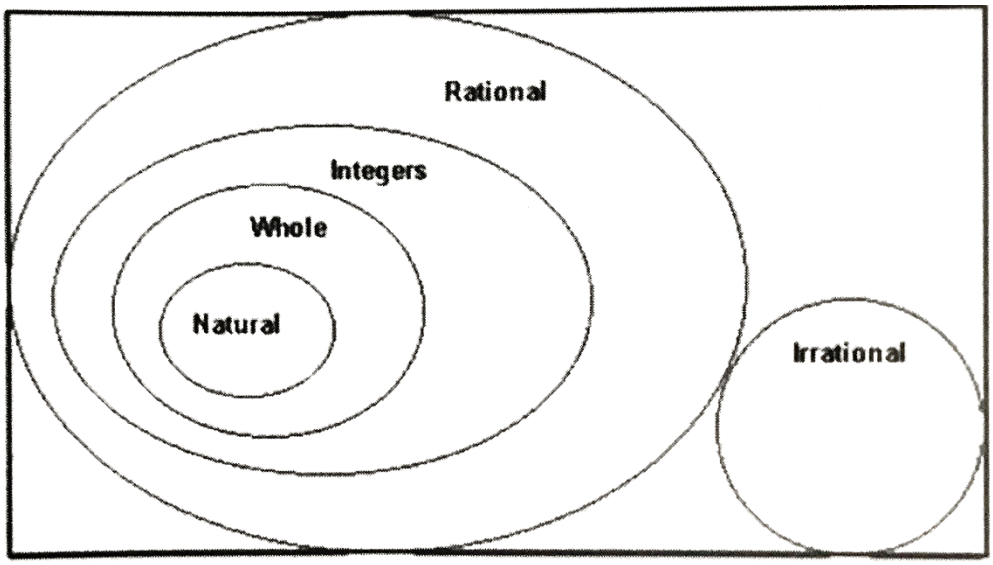
41. $\frac{-3}{8}$, $\frac{3}{-8}$, and $-\frac{3}{8}$ are equivalent fractions.

42. The coefficient of –x is 1.

43. Write the additive inverse of -2.

44. Place the numbers in the smallest set that they belong to.

0.002 -22 8 -3.5 $0.\overline{3}$ $\sqrt{16}$ $1\frac{1}{2}$ $\sqrt{18}$ 0 π



45. Evaluate each of the following using the correct order of operations. Show all work.

a. $-30 + 24 - (-4)^2$ b. $(4 - 12)(-18 \div -3)$

46. Evaluate each expression when a = 2, b = -2 and c = 3. Show all work.

c. $b^2 - a^2$ d. $c^3 - ab$