

Name _____ **Key** _____

Directions:

Clear everything off your desk except this test, a pencil/pen, and a calculator.

Show all work to receive full credit, yes that means you need to show each step.

Read the directions for each question carefully.

Round all decimal answers to the nearest hundredth (two decimal places).

You will have up to **60 minutes** to complete this test. Do not spend too much time on any one problem. Skip problems and come back to them if necessary.

Please circle or box all your final answers.

2	3	4	5	Total
16	26	17	16	75

1. (6 pts) Place each number from this set $-5, 0, 2.5, \sqrt{2}, \frac{1}{2}, 6$ into **every** category in which it belongs.

- (1) Natural Numbers: 6
- (2) Whole Numbers: 0, 6
- (3) Integers: $-5, 0, 6$
- (4) Rational Numbers: $-5, 0, \frac{1}{2}, 2.5, 6$
- (5) Irrational Numbers: $\sqrt{2}$
- (6) Real Numbers: $-5, 0, \frac{1}{2}, \sqrt{2}, 2.5, 6$

2. (4 pts) Write the given interval in interval notation **and** graph it on a number line.

- (1) The set of real numbers greater than -2 and less than or equal to 5.

interval notation: $(-2, 5]$

number line:

- (2) The set of real numbers greater than or equal to -2.

interval notation: $[-2, \infty)$

number line:

3. (6 pts) Convert each fraction, decimal, or percent into its **two** other forms. Round decimals to the hundredths place and simplify fractions.

$$(1) \frac{3}{4} = \frac{3 \cdot 25}{4 \cdot 25} = \frac{75}{100} = 0.75 = 75\%$$

$$(2) .34 = 34\% = \frac{34}{100} = \frac{17}{50}$$

$$(3) 16\% = 0.16 = \frac{16}{100} = \frac{4}{25}$$

4. (10 pts) Perform the indicated operation to evaluate to **simplest** form.

$$(1) \frac{5}{6} + \frac{3}{4}$$

$$(2) \frac{5}{16} - \frac{3}{20}$$

$$(3) \frac{2}{15} \cdot \frac{5}{12}$$

$$(4) \frac{2}{3} \div \frac{5}{6}$$

$$(5) 5\frac{1}{12} + \frac{3}{8}$$

5. (8 pts) Use the correct order of operations to evaluate each expression.

$$(1) (-4)^3 = (-4) \cdot (-4) \cdot (-4) = -64$$

$$(2) 5 + 2 \cdot |5 - 6 \cdot 4| = 5 + 2 \cdot |5 - 24| = 5 + 2 \cdot |-19| = 5 + 2(19) = 5 + 38 = 43$$

$$(3) 3^2 - 7 \cdot (1 + 2^3) = 9 - 7 \cdot (1 + 8) = 9 - 7(9) = 9 - 63 = -54$$

6. (4 pts) Convert 3 feet to centimeters (Hint: there are 2.54 cm per inch).

7. (4 pts) Convert 25 miles per hour to feet per second (Hint: there are 5,280 feet in a mile).

8. (3 pts) Translate each verbal expression into an algebraic expression.

(1) The product of $3a$ and $(b - 4)$

(2) The quotient of $5x + 3$ and 8

(3) The sum of $4x^2$ and $3x$

9. (3 pts) Translate each algebraic expression into a verbal expression.

(1) $4x - 3$

(2) $5 \cdot (3x^3 + 2)$

(3) $\frac{2x - 3}{15}$

10. (6 pts) Simplify by combining like terms.

(1) $3a + 7 - (4a - 5)$

(2) $3(t - 2) - 5(3t - 9)$

(3) $y(y - 2) + 3(y + 1)$

11. (5 pts) Evaluate the expression for the given values of $a = 1$, $b = -3$, and $c = 5$.

$$\frac{3a^2 - b}{2c} + \frac{b^3 - (2a + c)}{10}$$

12. (10 pts) Identify the property represented by each equation. (Hint: You will only use each property once).

(1) $55 + 0 = 55$

(2) $6 \cdot (5 + 4) = 6 \cdot 5 + 6 \cdot 4$

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

(4) $12 + 5 = 5 + 12$

(5) $65 \cdot 1 = 65$

(6) $9 + (-9) = 0$

(7) $3 + (4 + 5) = (3 + 4) + 5$

(8) $678 \cdot 0 = 0$

(9) $a(b \cdot c) = (a \cdot b)c$

(10) $3 \cdot 12 = 12 \cdot 3$

13. (2 pts) Determine if 5 is a solution to the equation $3x - 6 = 9$ (Show your work and then indicate whether or not it is a solution).

14. (2 pts) Determine if 3 is a solution to the equation $\frac{2x - 4}{5} = -2$ (Show your work and then indicate whether or not it is a solution).

15. (2 pts) How did you prepare for this test? Please be honest and as specific as possible.