

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. Which of the following fractions is closest to 0?

- A.  $-\frac{5}{12}$     B.  $-\frac{2}{3}$     C.  $\frac{5}{8}$     D.  $\frac{3}{4}$

2. What is the order of the following set of numbers from greatest to least?

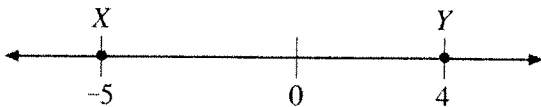
$$1\frac{1}{3}, \frac{2}{3}, -\frac{1}{3}, \frac{9}{5}$$

- A.  $-\frac{1}{3}, \frac{2}{3}, \frac{9}{5}, 1\frac{1}{3}$     B.  $-\frac{1}{3}, 1\frac{1}{3}, \frac{2}{3}, \frac{9}{5}$   
 C.  $\frac{9}{5}, \frac{2}{3}, 1\frac{1}{3}, -\frac{1}{3}$     D.  $\frac{9}{5}, 1\frac{1}{3}, \frac{2}{3}, -\frac{1}{3}$

3. If the values of the expressions below are plotted on a number line, which expression would be closest to five?

- A.  $|-4|$     B.  $|-18|$     C.  $|7|$     D.  $|16|$

4. The number line below shows points X and Y with coordinates -5 and 4 respectively.



Which of the following expressions represents the distance from point X to point Y?

- A.  $|4 - 5|$     B.  $|4 - (-5)|$   
 C.  $(4 - 5)^2$     D.  $(4 - (-5))^2$

5. Which integer is greater than -32 and less than -17?

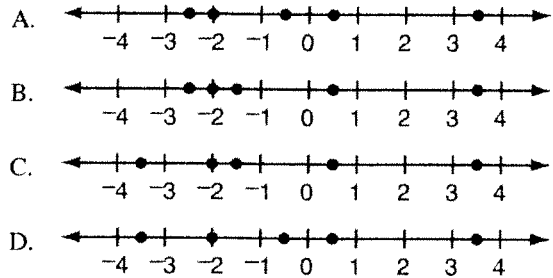
- A. -40    B. -35    C. -20    D. -15

6. Which statement is true?

- A.  $0.75 < 0.75^2$     B.  $-\frac{3}{8} < -0.38$   
 C.  $\frac{46}{25} > 1\frac{5}{6}$     D.  $-2\frac{3}{5} > 1.5$

7. Which number line below shows the set of numbers graphed correctly?

$$\{3.5, -\frac{7}{2}, \frac{1}{2}, -2, -1\frac{1}{2}\}$$



8. Each of the following phrases describes a numerical value.

- The absolute value of 9
- The opposite of 9

Which statement is true about the relationship between the numerical values?

- A. The opposite of 9 is equal to the absolute value of 9.  
 B. The absolute value of 9 is less than the opposite of 9.  
 C. The opposite of 9 is the same distance from 0 on a number line as the absolute value of 9.  
 D. The absolute value of 9 is farther from 0 on a number line than the opposite of 9.

9. Examine the following relationships:

$w < y$ $x < y$ $z > y$
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If  $w = -6$ ,  $x = -4$ ,  $y = -1$ , and  $z = 0$ , which statement is true?

- A.  $z - y > z - x$     B.  $z - y > x - w$   
 C.  $z - y > z - w$     D.  $z - y > x - z$

10. If  $a$  is a real number and  $a^2 < \sqrt{a}$  then
- A.  $0 < a < 1$ .                      B.  $a < 0$ .  
 C.  $-1 < a < 1$ .                      D.  $1 < a$ .
11. Which of the following shows an application of the distributive property?
- A.  $(6xy + 4xy) + 2xz = 6xy + (4xz + 2xz)$   
 B.  $2xy + 3xz + 5xy = 2xy + 5xy + 3xz$   
 C.  $4xy - 12xz = 4x(y - 3z)$   
 D.  $-5xy + 5xy + 3xz = 3xz$
12. Ted used the expression  $10 + c + 2c$  to show the total number of ice-cream cones he sold in one day. Ted used the Commutative Property of Addition and created an equivalent expression.
- Which of the following expressions did Ted create?
- A.  $2c + c + 10$                       B.  $2 \times (c + c) + 10$   
 C.  $2(c + 5) + 2c$                       D.  $4c + 10$
13. Which of these equations shows the Associative Property of Multiplication?
- A.  $(a \times b)c = a(b \times c)$   
 B.  $a(b \times c) = (a \times b) \times (a \times c)$   
 C.  $a \times 1 = 1 \times a$   
 D.  $(a \times b) \times c = (b \times a) \times c$
14. Which equation demonstrates the Distributive Property?
- A.  $a(b + c) = ab + ac$   
 B.  $a + b + c = a + c + b$   
 C.  $a + 0 = a$   
 D.  $(ab)c = a(bc)$

15. Caleb ate  $c$  carrots and  $p$  pickles each day for a full week. He used the expression  $7(c + p)$  to represent the number of vegetables he ate that week.

Which equation correctly shows the Distributive Property?

- A.  $7(c + p) = 7 + (c + p)$   
 B.  $7(c + p) = 7c + 7p$   
 C.  $7(c + p) = 7c + p$   
 D.  $7(c + p) = 7(cp)$

16. The expression  $4(5 - 3y) + 3(y + 2)$  is simplified in the following steps.

$$\begin{aligned} \text{Step 1} \quad 4(5 - 3y) + 3(y + 2) &= 20 - 12y + 3y + 6 \\ \text{Step 2} &= 20 - 9y + 6 \\ \text{Step 3} &= 20 + 6 - 9y \\ \text{Step 4} &= 26 - 9y \end{aligned}$$

Which property was used to go from Step 2 to Step 3?

- A. commutative property  
 B. additive identity  
 C. associative property  
 D. distributive property

17. Which of the following has the same value as  $5^6 \times 5^{-2}$ ?

- A.  $5^{-12}$     B.  $5^{-3}$     C.  $5^4$     D.  $5^8$

18. Which value is equivalent to  $\frac{3^{10}}{3^2}$ ?

- A. 5    B. 8    C.  $3^5$     D.  $3^8$

19. Which of the following shows the numbers in order from least to greatest?

- A.  $5.7 \times 10^3, 3.9 \times 10^{-2}, 1.8 \times 10^3, 8.2 \times 10^{-2}$   
 B.  $8.2 \times 10^{-2}, 3.9 \times 10^{-2}, 1.8 \times 10^3, 5.7 \times 10^3$   
 C.  $1.8 \times 10^3, 3.9 \times 10^{-2}, 5.7 \times 10^3, 8.2 \times 10^{-2}$   
 D.  $3.9 \times 10^{-2}, 8.2 \times 10^{-2}, 1.8 \times 10^3, 5.7 \times 10^3$

20. The distance from the earth to the moon is 380,000 kilometers. How would you write this in scientific notation?

- A.  $380 \times 10^4$                       B.  $38 \times 10^4$   
 C.  $3.8 \times 10^5$                       D.  $3.8 \times 10^6$

21. Which of the following is equivalent to the expression below for all real values of  $n$  and  $k$ ?

$$5^n \cdot 5^k$$

- A.  $5^{n+k}$     B.  $5^{n-k}$     C.  $5^{nk}$     D.  $5^{n \div k}$

22. An astronomer measures four distances:

- distance P =  $2.1 \times 10^{18}$  kilometers
- distance Q =  $4.2 \times 10^{36}$  kilometers
- distance R =  $8.4 \times 10^{18}$  kilometers
- distance S =  $8.4 \times 10^{36}$  kilometers

Which statement about these distances is correct?

- A. Distance Q is twice as great as distance P.  
 B. Distance R is twice as great as distance Q.  
 C. Distance S is twice as great as distance Q.  
 D. Distance S is twice as great as distance R.

23. Simplify.

$$\frac{1.2 \times 10^{-6}}{4.8 \times 10^4}$$

- A.  $2.5 \times 10^{-2}$                       B.  $2.5 \times 10^{-9}$   
 C.  $2.5 \times 10^{-10}$                       D.  $2.5 \times 10^{-11}$

24. Charlie converted the number 428,000,000 to scientific notation and wrote his answer as  $42.8 \times 10^7$ .

Which statement explains why Charlie's answer is *not* correct?

- A. Charlie only needed to move the decimal seven places to the left.  
 B. Charlie needed to move the decimal behind the first non-zero digit.  
 C. Charlie needed to move the decimal one more place to the left and then change the exponent to an 8.  
 D. Charlie needed to move the decimal one place to the right and then change the exponent to a 6.

25. Martha was asked to write  $a^{48}$  as a product of two powers with the same base in four different ways, using only positive exponents.

Which of the following could be one of Martha's expressions?

- A.  $a^5 \cdot b^8$                                       B.  $a^{15} \cdot a^{23}$   
 C.  $(a^4)^{12}$                                       D.  $\frac{a^{12}}{a^{60}}$

26. Which of the following is equivalent to this expression?

$$6^2 \cdot 3^{-4}$$

- A. -144    B.  $\frac{4}{27}$     C.  $\frac{4}{9}$     D. 1

27. Which of the following shows 0.125, -2.1,  $-\frac{1}{2}$ , and  $1.2 \times 10^2$  ordered from least to greatest?

- A.  $1.2 \times 10^2, 0.125, -\frac{1}{2}, -2.1$   
 B.  $0.125, -\frac{1}{2}, -2.1, 1.2 \times 10^2$   
 C.  $-2.1, -\frac{1}{2}, 0.125, 1.2 \times 10^2$   
 D.  $1.2 \times 10^2, -\frac{1}{2}, 0.125, -2.1$



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1.  
Answer:      A
2.  
Answer:      D
3.  
Answer:      A
4.  
Answer:      B
5.  
Answer:      C
6.  
Answer:      C
7.  
Answer:      C
8.  
Answer:      C
9.  
Answer:      D
10.  
Answer:      A
11.  
Answer:      C
12.  
Answer:      A
13.  
Answer:      A
14.  
Answer:      A
15.  
Answer:      B
16.  
Answer:      A
17.  
Answer:      C
18.  
Answer:      D
19.  
Answer:      D
20.  
Answer:      C

21.  
Answer:      A
22.  
Answer:      C
23.  
Answer:      D
24.  
Answer:      C
25.  
Answer:      C
26.  
Answer:      C
27.  
Answer:      C
28.  
Answer:      A
29.  
Answer:      B
30.  
Answer:      C