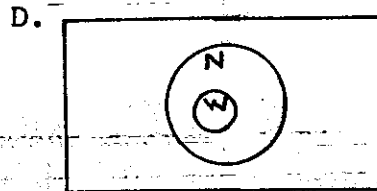
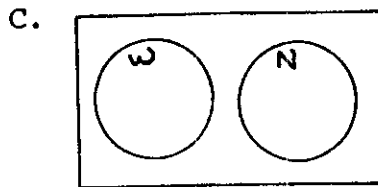
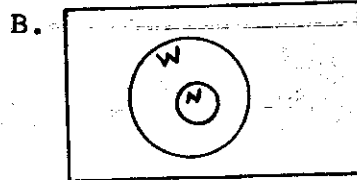
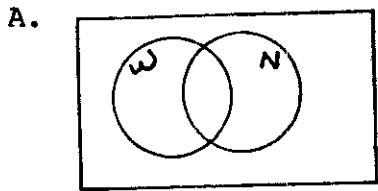


1. Venn diagrams are named after John Venn, an English mathematician who was among the first to use them extensively. To show that a set of natural numbers is a subset of the whole numbers, you can use a Venn diagram such as the one below.



E. NOTA

2. $\{x : x < 10\}$ -----In set builder notation, the colon within the brackets is read as "_____".

- A. such that
- B. less than
- C. is an element of
- D. if and only if
- E. NOTA

3. SIMPLIFY

$$2 - 3 \{ 5 + 4(-6^2 - 12) \}$$

- A. -101
- B. 563
- C. 432
- D. -301
- E. NOTA

4. EVALUATE the expression $n(n + 1)^2 - \frac{1}{2}n^3$ when $n = .1$

- A. 0.0011
- B. 0.003
- C. 0.111
- D. 0.12
- E. NOTA

5. Which field properties are being used in this problem?

$$(-24)\frac{1}{8} = (-3 \cdot 8)\frac{1}{8} = -3(8 \cdot \frac{1}{8}) = -3(1) = -3$$

- I. Associative for Multiplication
- II. Multiplicative Inverse
- III. Multiplication Identity

- A. I and III only
- B. I and II only
- C. II and III only
- D. I, II and III
- E. NOTA

6. The average mark on a test in an algebra class is 80. If the two lowest scores of 34 and 48 are not counted, the remaining scores would average 83. How many students are in the algebra class?

- A. 26 students
- B. 28 students
- C. 30 students
- D. 32 students
- E. NOTA

7. Which of the following statements is false?

- A. For every whole number n , $n^2 + 1 > 0$.
- B. There exists an integer k such that $k < 0$.
- C. For every natural number z , $z^2 > 1$.
- D. For some real number c , $c + 3 < 4$.
- E. NOTA

8. Solve the equation for the value of r when $s = -\frac{1}{4}$ and $t = \frac{2}{5}$.

- A. $\frac{1}{5}$
- B. $+\frac{2}{5}$
- C. $+\frac{1}{5}$
- D. $+\frac{1}{10}$
- E. NOTA

$$s^2 - t^2 = 13s(s + t) \quad |r|$$

9. Solve for k in terms of x and y . $x = \frac{ky}{k+y}$

- A. $\frac{xy}{y-x}$
- B. $\frac{xy}{x+y}$
- C. $\frac{y-x}{xy}$
- D. $\frac{x+y}{xy}$
- E. NOTA

10. If $x^2 + y^2 = 25$, then $(4x)^2 + (4y)^2 = ?$

- A. 100
- B. 200
- C. 400
- D. 800
- E. NOTA

11. Let a , b , and c be positive real numbers. If $ab = 48$, $bc = 96$, and $ac = 72$, what is the value of abc ?

- A. 24
- B. 576
- C. 864
- D. 331,776
- E. NOTA

12. Solve for n :

$$-2 | 4 + n | - 5 < 9$$

- A. empty set
- B. $n > -11$
- C. $n < 3$
- D. All Real numbers
- E. NOTA

13. Let $f(x) = x^2$ and $g(x) = 3x - 1$, find $\frac{f(3) + 1}{g(0)}$.

- A. -8
- B. 10
- C. -10
- D. undefined
- E. NOTA

14. The greatest integer function is denoted $f(x) = [x]$, where the symbol $[x]$ is used to represent the greatest integer that is less than or equal to the real number x .

SIMPLIFY: $[-3.5]$

- A. -4
- B. -3
- C. 3
- D. 4
- E. NOTA

15. If $f(x) = \{(2,3), (4,5), (6,7), (8,9)\}$
then the inverse function of $f(x)$ is ?

- A. $\{(-2,-3), (-4,-5), (-6,-7), (-8,-9)\}$
- B. $\{(3,2), (5,4), (7,6), (9,8)\}$
- C. $\{(8,9), (6,7), (4,5), (2,3)\}$
- D. $\{(1/2, 1/3), (1/4, 1/5), (1/6, 1/7), (1/8, 1/9)\}$
- E. NOTA

16. Jerry left his home at 1:30 P.M. and drove to the airport at an average speed of 45 km/h. After a 40 minute wait, he took off on a flight with an average speed of 350 km/h. He reached his destination at 4:20 P.M. If the total distance that Jerry traveled by car and by plane was 555 km, how far was Jerry's home from the airport?

- A. 40 km
- B. 30 km
- C. 50 km
- D. 45 km
- E. NOTA

17. Denise can type the school newspaper in $1 \frac{1}{2}$ hours. Working together with Larry, the job is completed in $1 \frac{1}{8}$ hours. How long would it take Larry alone to do the job?

- A. $\frac{9}{17}$ hour
- B. $\frac{3}{8}$ hour
- C. $\frac{8}{3}$ hours
- D. $\frac{9}{2}$ hours
- E. NOTA

18. If a is inversely proportional to b and if b is inversely proportional to c^2 , what effect will doubling c have on a ?

- A. double
- B. triple
- C. quadrupled
- D. squared
- E. NOTA

19. Stacie is x years old. Her brother Jason's age is the square of her age. Five years from now, Jason's age will be two years less than twice Stacie's age at that time. What is the sum of their ages now.

- A. 3
- B. 6
- C. 9
- D. 20
- E. NOTA

20. Which of the following are factors of $x^3 - 7x^2 - 9x + 63$?

- I. $x + 3$ II. $x - 7$ III. $x - 3$

- A. I only
- B. II only
- C. I and II
- D. I, II, and III
- E. NOTA

21. SIMPLIFY:

$$\frac{\frac{r-s}{r}}{\frac{1}{2} + \frac{s}{2r}}$$

A. $\frac{r+s}{r-s}$

B. $\frac{r-s}{r+s}$

C. $\frac{r+s}{2r-2s}$

D. $\frac{2r-2s}{r+s}$

E. NOTA

22. SOLVE for all values of m :

$$m^2 - 15 = 2m$$

- A. -5
- B. 5
- C. 3
- D. -3
- E. NOTA

23. DIVIDE: assume that the divisor does not equal zero.

$$\frac{6y^2 - 7y + 5}{2y - 3}$$

- A. $6y + 2$ r. 8
B. $3y + 1$ r. 2
C. $3y - 8$ r. -19
D. $3y + 1$ r. 8
E. NOTA
24. Solve the system, then find xy .

$$\begin{aligned} 3x + 4y &= -7 \\ -2x + 3y &= 16 \end{aligned}$$

- A. 1
B. -45
C. -8
D. -10
E. NOTA

25. What is the least common multiple of 1008 and 1080?

- A. 5555
B. 5040
C. 2100
D. 15120
E. NOTA

26. If $x = 27/8$ then $(x)^{-2/3} + (x)^{-1/3} =$

- A. $27/8$
B. $-8/27$
C. $10/9$
D. $-9/10$
E. NOTA

27. Write an equation in standard form of a line that contains A (-5,6) and B (1,2).

- A. $y = -2/3x + 8/3$
B. $3x + 2y = 8$
C. $2x + 3y = 8$
D. $2/3x + y = 8/3$
E. NOTA

28. RATIONALIZE the denominator and SIMPLIFY: $\frac{2\sqrt{x} - 3}{\sqrt{x} + 1}$

A. $\frac{2x - 5\sqrt{x} + 3}{x - 1}$

B. $\frac{2x + 5\sqrt{x} - 3}{x - 1}$

C. $\frac{2x - 5\sqrt{x} + 3}{x + 1}$

D. $\frac{2x + 5\sqrt{x} - 3}{x + 1}$

E. NOTA

29. SIMPLIFY: Assume that no variable equals zero and exponents are positive integers.

$$\left(\frac{a^{2m+3}}{a^{m+1}} \right)^2$$

A. a^{m^2+4m+4}

B. a^{2m+4}

C. $a^{2m^2+10m+6}$

D. a^{m+2}

E. NOTA

30. What is the degree of the polynomial?

$$2^3p^3q - 5p^3q^2 + 7p^2q^3$$

A. 4

B. 5

C. 7

D. 14

E. NOTA