

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Decide whether the argument is an example of inductive or deductive reasoning.

- 1) $17 + 11 = 28$, $41 + 23 = 64$, $11 + 13 = 24$. Therefore, the sum of two prime numbers is even. 1) _____
 A) Deductive B) Inductive
- 2) Practice makes perfect. I have practiced. Therefore, I'll be perfect. 2) _____
 A) Deductive B) Inductive
- 3) All U.S. Presidents have come from the original 48 states. Therefore, no U.S. President can be from Alaska. 3) _____
 A) Deductive B) Inductive

Determine the most probable next term in the sequence.

- 4) 6, -12, 24, -48, 96 4) _____
 A) -192 B) -144 C) 144 D) 192
- 5) $\frac{3}{2}$, $\frac{5}{4}$, $\frac{7}{6}$, $\frac{9}{8}$, $\frac{11}{10}$ 5) _____
 A) $\frac{13}{12}$ B) $\frac{13}{11}$ C) $\frac{12}{11}$ D) $\frac{12}{13}$

Use inductive reasoning to predict the next equation.

- 6) $6 \times 7 = 8 \times 9 - (6 + 7 + 8 + 9)$ 6) _____
 $7 \times 8 = 9 \times 10 - (7 + 8 + 9 + 10)$
 A) $8 \times 9 = 10 \times 11 - (8 + 9 + 10 + 11)$ B) $9 \times 10 = 11 \times 12 - (9 + 10 + 11 + 12)$
 C) $9 \times 10 = 11 \times 12 - (8 + 7 + 6 + 5)$ D) $8 \times 9 = 10 \times 11 - (6 + 7 + 8 + 9 + 10 + 11)$
- 7) $(1 \times 9) - 8 = 1$ 7) _____
 $(21 \times 9) - 8 = 181$
 $(321 \times 9) - 8 = 2881$
 A) $(432 \times 9) - 8 = 38,881$ B) $(4321 \times 9) - 8 = 38,881$
 C) $(4321 \times 9) - 8 = 3880$ D) $(4321 \times 9) - 8 = 28,881$

Use the method of successive differences to determine the next term in the sequence.

- 8) 2, 19, 55, 112, 192, 297, ... 8) _____
 A) 429 B) 431 C) 427 D) 448
- 9) 5, 24, 91, 263, 619, 1260, ... 9) _____
 A) 2299 B) 2309 C) 2331 D) 2287

Use the appropriate formula to find the indicated figurate number.

10) the 9th triangular number
A) $T_9 = 90$ B) $T_9 = 36$ C) $T_9 = 45$ D) $T_9 = 40.5$ 10) _____

11) the 6th pentagonal number
A) $P_6 = 57$ B) $P_6 = 36$ C) $P_6 = 21$ D) $P_6 = 51$ 11) _____

Find $n(A)$ for the set.

12) $A = \{x \mid x \text{ is a number on a clock face}\}$
A) $n(A) = 6$ B) $n(A) = 3$ C) $n(A) = 24$ D) $n(A) = 12$ 12) _____

13) $A = \{x \mid x \text{ is a second in a minute}\}$
A) $n(A) = 12$ B) $n(A) = 120$ C) $n(A) = \text{Infinite}$ D) $n(A) = 60$ 13) _____

Complete the blank with either \in or \notin to make the statement true.

14) $4 _ \{10, 9, 8, 7\}$
A) \notin B) \in 14) _____

15) $8 _ \{5, 10, 4, 8, 19\}$
A) \in B) \notin 15) _____

Tell whether the statement is true or false.

16) $\{8\} = \{x \mid x \text{ is an even counting number between 10 and 16}\}$
A) True B) False 16) _____

17) $\{54, 55, 54, 55\} = \{54, 55\}$
A) True B) False 17) _____

Decide whether \subset , \subseteq , both, or neither can be placed in the blank to make a true statement.

18) $\{0\} _ \emptyset$
A) \subset B) Neither C) \subseteq D) Both \subset and \subseteq 18) _____

19) $\{a, b\} _ \{z, a, y, b, x, c\}$
A) \subset B) Both \subset and \subseteq C) \subseteq D) Neither 19) _____

20) $\{s, r, t\} _ \{s, r, t\}$
A) Neither B) \subseteq C) \subset D) Both \subseteq and \subset 20) _____

Find the number of proper subsets of the set.

21) $\{\text{poetry, drama, speech, art, film}\}$
A) 16 B) 31 C) 32 D) 24 21) _____

22) $\{x \mid x \text{ is a day of the week}\}$
A) 127 B) 128 C) 256 D) 64 22) _____

23) $\{1, 2, 3, \dots, 6\}$
A) 64 B) 127 C) 58 D) 63 23) _____

Let $U = \{1, 2, 4, 5, a, b, c, d, e\}$. Find the complement of the set.

24) $S = \{1, 2, 4, 5, a, b, c, e\}$

A) $\{d\}$

B) $\{3, d\}$

C) $\{u\}$

D) \emptyset

24) _____

25) $Q = \{a, b, c, d\}$

A) $\{1, 2, 4, 5, e\}$

B) $\{e\}$

C) $\{1, 2, 4, 5\}$

D) $\{1, 2, 3, 4, 5, e\}$

25) _____

List the elements in the set .

Let $U = \{q, r, s, t, u, v, w, x, y, z\}$

$A = \{q, s, u, w, y\}$

$B = \{q, s, y, z\}$

$C = \{v, w, x, y, z\}$.

26) $A \cup (B \cap C)$

A) $\{q, r, w, y, z\}$

B) $\{q, y, z\}$

C) $\{q, w, y\}$

D) $\{q, s, u, w, y, z\}$

26) _____

27) $A \cap (B \cup C)$

A) $\{q, r, w, y, z\}$

B) $\{q, s, u, w, y, z\}$

C) $\{q, s, w, y\}$

D) $\{q, y, z\}$

27) _____

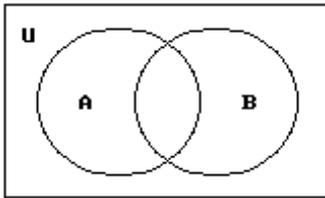
For the given sets, construct a Venn diagram and place the elements in the proper region.

28) Let $U = \{c, e, f, j, q, m, w\}$

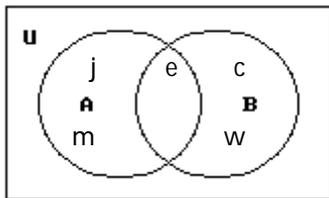
$A = \{e, f, j, m\}$

$B = \{c, e, f, w\}$

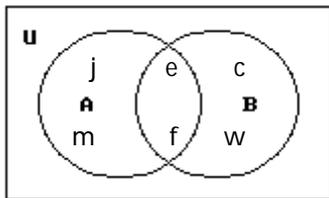
28) _____



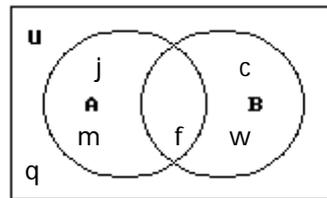
A)



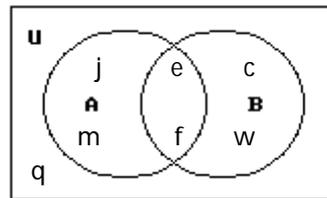
C)



B)

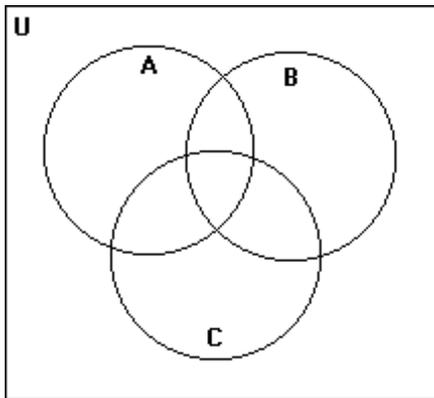


D)

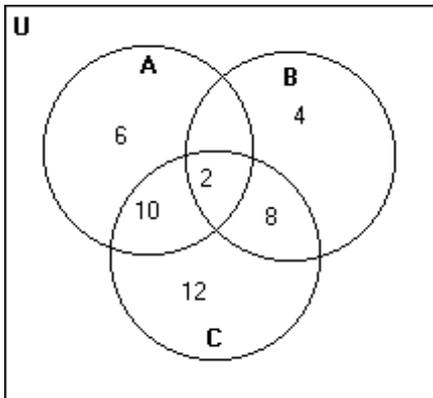


29) $U = \{2, 4, 6, 8, 10, 12\}$
 $A = \{2, 6, 10\}$
 $B = \{2, 4, 8\}$
 $C = \{2, 8, 10, 12\}$

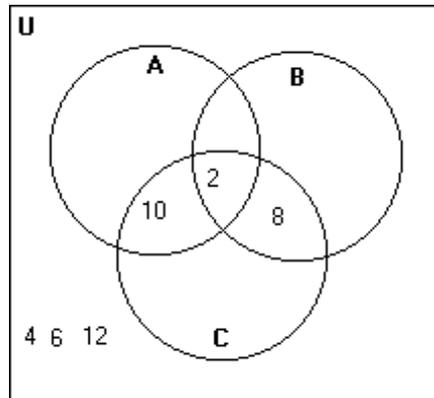
29) _____



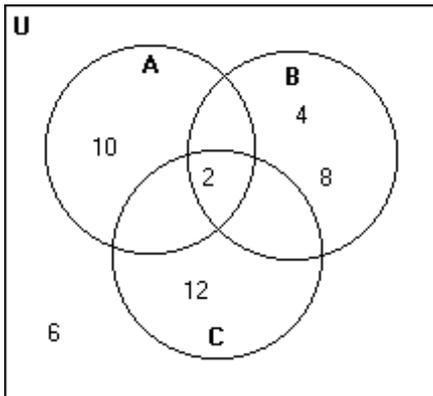
A)



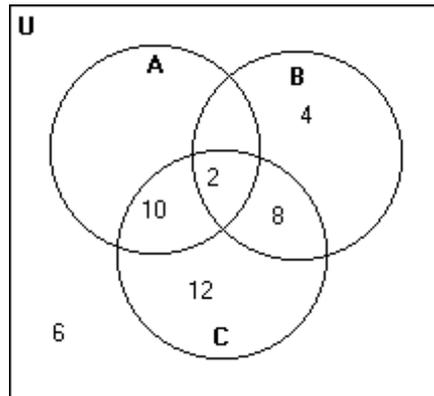
B)



C)

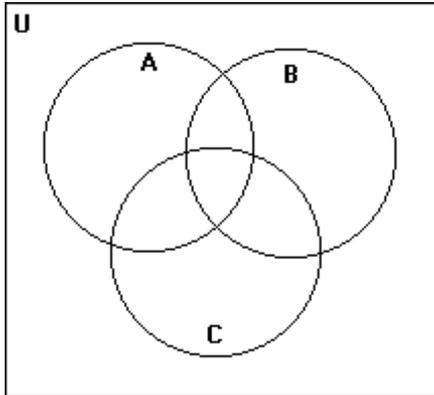


D)

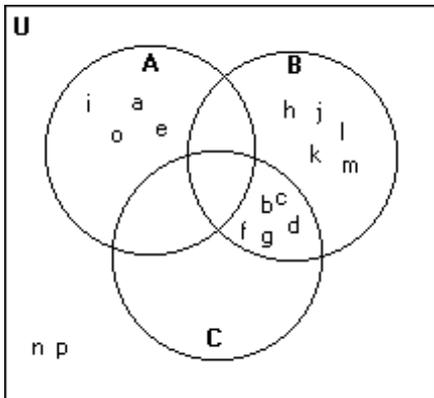


30) $U = \{a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p\}$
 $A = \{a, e, i, o\}$
 $B = \{b, c, d, f, g, h, j, k, l, m\}$
 $C = \{a, b, c, d, e, f, g\}$

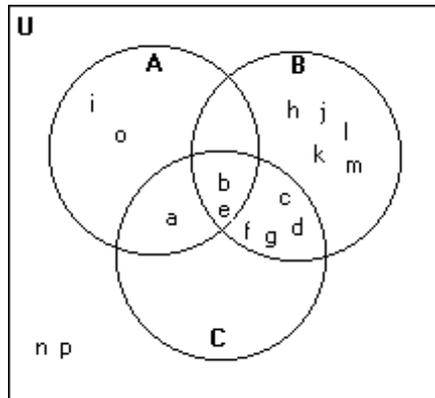
30) _____



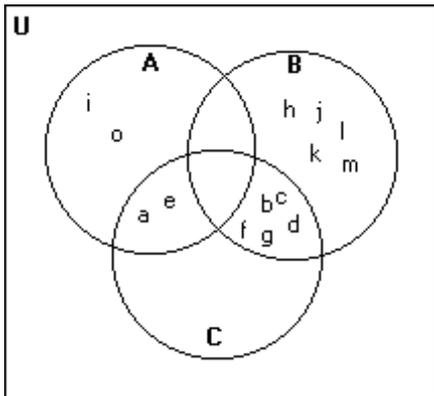
A)



B)



C)



D)

