Exam

Name_____

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

List the elements in the set.

1) {x | x is a whole number between 6 and 10}   1) _____
     A) {6, 7, 8, 9}   B) {7, 8, 9}   C) {7, 8, 9, 10}   D) {6, 7, 8, 9, 10}
     Answer: B

2) {x | x is an integer between -2 and 2}   2) _____
     A) {-1, 0, 1}   B) {-1, 0, 1, 2}   C) {-2, -1, 0, 1}   D) {-2, -1, 0, 1, 2}
     Answer: A

3) {x | x is a negative multiple of 8}   3) _____
     A) {-8, -64, -512, ...}   B) {-8, -16, -24, ...}
     C) {0, -8, -16, ...}   D) {8, 16, 24, ...}
     Answer: B

4) {x | x is an integer greater than 0}   4) _____
     A) {-1, -2, -3}   B) {-1, -2, -3, ...}   C) {1, 2, 3, 4}   D) {1, 2, 3, ...}
     Answer: D

5) The set of all whole numbers greater than 6 and less than 10   5) _____
     A) {7, 8, 9, 10}   B) {6, 7, 8, 9, 10}   C) {7, 8, 9}   D) {6, 7, 8, 9}
     Answer: C

6) {x | x is a counting number multiple of 2}   6) _____
     A) {4, 6, 8, ...}   B) {0, 2, 4, 6, ...}   C) {2, 4, 6, ...}   D) ∅
     Answer: C

7) {x | x is a counting number less than -2}   7) _____
     A) {..., -5, -4, -3}   B) {-1, 0, 1, ...}   C) {-3, -4, -5, ...}   D) ∅
     Answer: D

8) The set of all positive integer powers of 3.   8) _____
     A) {1, 3, 9, 27, 81, 243, ...}   B) {3, 6, 9, 12, 15, ...}
     C) {1, 8, 27, 64, 125, ...}   D) {3, 9, 27, 81, 243, ...}
     Answer: D

9) { x | x is an even integer smaller than 8}   9) _____
     A) {2, 4, 6}   B) {0, 2, 4, 6}
     C) {..., -6, -4, -2, 2, 4, 6}   D) {..., -6, -4, -2, 0, 2, 4, 6}
     Answer: D

10) The set of the days of the week

    A) {Tuesday, Thursday}

    B) {Friday, Monday, Saturday, Sunday, Thursday, Tuesday, Wednesday}

    C) {Saturday, Sunday}

    D) {Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Sunday}

    Answer: B

10) _____

Write the set in set-builder notation.

11) {4}

    A) {x | x is the natural number 4}   B) {x | x is a natural number}

    C) {x}   D) {x is a constant}

    Answer: A

11) _____

12) {2, 4, 6, 8}

    A) {2, 4, 6, 8}

    B) {x | x is an even natural number less than 10}

    C) {x | x is any even integer less than 10}

    D) {x | x is any even natural number}

    Answer: B

12) _____

13) {17, 18, 19, 20}

    A) {x | x is an integer between 17 and 20}   B) {x | x is an integer less than 21}

    C) {17, 18, 19, 20}   D) {x | x is an integer between 16 and 21}

    Answer: D

13) _____

14) {-2, -1, 0, 1, ...}

    A) {x | x is an integer greater than -3}   B) {x | x is an integer between -3 and 2}

    C) {-2, -1, 0, 1}   D) {x | x is any integer}

    Answer: A

14) _____

15) {..., -3, -2, -1, 0, 1, 2, 3, ...}

    A) {-3, -2, -1, 0, 1, 2, 3}   B) {x | x is a natural number}

    C) {x | x is any integer greater than -3}   D) {x | x is an integer}

    Answer: D

15) _____

16) {9, 12, 15, 18, ..., 39}

    A) {x | x is a multiple of 3 between 6 and 42}   B) {x | x is a multiple of 3 greater than 9}

    C) {x | x is a multiple of 3}   D) {x | x is a multiple of 3 between 9 and 39}

    Answer: A

16) _____

17) {-3, -1, 1, 3, 5, ...}

    A) {x | x is an odd integer greater than -4}

    B) {x | x is an odd integer between -4 and 6}

    C) {x | x is an odd integer}

    D) {x | x is an integer greater than -4}

    Answer: A

17) _____

18) {2, 4, 8, 16, 32, ...}   18) _____
   A) {x | x is a positive multiple of 2}
   B) {x | x is a positive multiple of 4}
   C) {x | x is a positive integer power of 2}
   D) {x | x is an integer power of 2}
   Answer: C

19) The set of all calculus books   19) _____
   A) {any calculus book}   B) {x | x is a calculus book}
   C) {x is a calculus book}   D) {a calculus book}
   Answer: B

20) The set of all cars owned by students   20) _____
   A) {x is a student with a car}   B) {x | x is a car owned by a student}
   C) {x | x is a student with a car}   D) {x is a car}
   Answer: B

Identify the set as finite or infinite.
21) {7, 8, 9, ..., 28}   21) _____
   A) Finite   B) Infinite
   Answer: A

22) $\left\{1, \dfrac{1}{4}, \dfrac{1}{16}, \dfrac{1}{64}, ...\right\}$ 22) _____
   A) Finite   B) Infinite
   Answer: B

23) {x | x is a counting number larger than 398}   23) _____
   A) Infinite   B) Finite
   Answer: A

24) {x | x is an odd counting number}   24) _____
   A) Finite   B) Infinite
   Answer: B

25) {x | x is a 12-headed lizard}   25) _____
   A) Infinite   B) Finite
   Answer: B

26) {x | x is a fraction between 52 and 53}   26) _____
   A) Infinite   B) Finite
   Answer: A

27) {x | x is a prime number}   27) _____
   A) Infinite   B) Finite
   Answer: A

28) $\left\{ 1, \dfrac{3}{7}, \dfrac{9}{49}, \dfrac{27}{343}, ..., \dfrac{243}{16807} \right\}$

    A) Infinite   B) Finite

    Answer: B

28) _____

Find n(A) for the set.

29) A = {2, 4, 6, 8, 10}

    A) n(A) = 2   B) n(A) = 4   C) n(A) = 5   D) n(A) = 10

    Answer: C

29) _____

30) A = {700, 701, 702, ..., 7000}

    A) n(A) = 6301   B) n(A) = 4   C) n(A) = 6300   D) n(A) = 7000

    Answer: A

30) _____

31) A = {x | x is a month in the year}

    A) n(A) = 1   B) n(A) = 24   C) n(A) = 12   D) n(A) = 52

    Answer: C

31) _____

32) A = {x | x is a number on a clock face}

    A) n(A) = 12   B) n(A) = 3   C) n(A) = 24   D) n(A) = 6

    Answer: A

32) _____

33) A = {x | x is a second in a minute}

    A) n(A) = 12   B) n(A) = 60   C) n(A) = Infinite   D) n(A) = 120

    Answer: B

33) _____

34) A = {3, 3, 4, 4, ..., 7, 7}

    A) n(A) = 6   B) n(A) = 5   C) n(A) = 3   D) n(A) = 10

    Answer: B

34) _____

35) A = {-9, -8, -7, ..., 0}

    A) n(A) = 10   B) n(A) = 4   C) n(A) = 9   D) n(A) = 1

    Answer: A

35) _____

36) $A = \left\{ \dfrac{1}{2}, \dfrac{1}{3}, \dfrac{1}{4}, \dfrac{1}{5}, ..., \dfrac{1}{29}, \dfrac{1}{30} \right\}$

    A) n(A) = 29   B) n(A) = 31   C) n(A) = Infinite   D) n(A) = 30

    Answer: A

36) _____

37) $A = \left\{ \dfrac{1}{2}, -\dfrac{1}{2}, \dfrac{2}{3}, -\dfrac{2}{3}, \dfrac{3}{4}, -\dfrac{3}{4}, ..., \dfrac{19}{20}, -\dfrac{19}{20} \right\}$

    A) n(A) = 38   B) n(A) = Infinite   C) n(A) = 40   D) n(A) = 19

    Answer: A

37) _____

Determine whether or not the set is well defined.

38) {x | x is a tennis player who has won at Wimbledon}

    A) Not well defined   B) Well defined

    Answer: B

38) _____

39) {x | x is a low-fat ice cream}   39) _____
    A) Not well defined   B) Well defined

    Answer: A

40) {x | x is a football team that has won the Super Bowl}   40) _____
    A) Well defined   B) Not well defined

    Answer: A

41) {x | x is a adventure book in the library}   41) _____
    A) Well defined   B) Not well defined

    Answer: B

42) {x | x is a stock on the AmEx today}   42) _____
    A) Well defined   B) Not well defined

    Answer: A

43) {x | x is an expensive boat on the Great Lakes}   43) _____
    A) Well defined   B) Not well defined

    Answer: B

44) {x | x is a four-year college in Utah}   44) _____
    A) Not well defined   B) Well defined

    Answer: B

Complete the blank with either $\in$ or $\notin$ to make the statement true.
45) -8 _ {8, 10, 12, ..., 20}   45) _____
    A) $\in$ B) $\notin$

    Answer: B

46) 0 _ {-1, 1, 3, 16, 26}   46) _____
    A) $\notin$ B) $\in$

    Answer: A

47) {8} _ {{5}, {6}, {7}, {8}, {9}}   47) _____
    A) $\in$ B) $\notin$

    Answer: A

48) 2 _ {11, 10, 9, 8}   48) _____
    A) $\in$ B) $\notin$

    Answer: B

49) 7 _ {4, 20, 5, 7, 12}   49) _____
    A) $\notin$ B) $\in$

    Answer: B

50) 5 _ {3, 4, 5, 6}   50) _____
    A) $\notin$ B) $\in$

    Answer: B

51) a __ {A, B, C, ..., Z}   51) _____
    A) ∈   B) ∉
    Answer: B

52) 9 __ {4, 5, 6, ..., 9}   52) _____
    A) ∈   B) ∉
    Answer: A

53) {-5} __ {-4 - 3, -3 - 3, -2 - 3, -1 - 3}   53) _____
    A) ∉   B) ∈
    Answer: A

54) 4 __ {5 + 5, 3 + 5, 1 + 5, -1 + 5}   54) _____
    A) ∉   B) ∈
    Answer: B

Tell whether the statement is true or false.
    55) 9 ∈ {18, 27, 36, 45, 54}   55) _____
        A) True   B) False
        Answer: B

    56) {2, 8, 13} = {0, 2, 8, 13}   56) _____
        A) True   B) False
        Answer: B

    57) 17 ∉ {16, 14, 13, ..., 1}   57) _____
        A) True   B) False
        Answer: A

    58) {8} = {x | x is an even counting number between 10 and 16}   58) _____
        A) True   B) False
        Answer: B

    59) {52, 53, 52, 53} = {52, 53}   59) _____
        A) True   B) False
        Answer: A

    60) {2, 17, 28, 7, 36} = {36, 17, 7, 82, 2}   60) _____
        A) True   B) False
        Answer: B

    61) {x | x is a counting number greater than 35} = {35, 36, 37, ...}   61) _____
        A) True   B) False
        Answer: B

    62) 9 ∉ {x | x is an even counting number}   62) _____
        A) True   B) False
        Answer: A

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63) k ∉ {p, a, k, h, v}   63) _____
    A) True   B) False

Answer: B

64) {s, q, y, o, d} = {o, d, q, s, y}   64) _____
    A) True   B) False

Answer: A

Write true or false for the following statement.
Let A = {3, 5, 7, 9, 11, 13}
   B = {3, 5, 9, 11}
   C = {5, 9, 13}

65) 9 ∉ C   65) _____
    A) True   B) False

Answer: B

66) 9 ∈ B   66) _____
    A) True   B) False

Answer: A

67) Every element of B is also an element of C.   67) _____
    A) True   B) False

Answer: B

68) A = {x | x is an odd counting number greater than 1 and less than 15}   68) _____
    A) True   B) False

Answer: A

69) 0 ∈ A   69) _____
    A) True   B) False

Answer: B

70) Every element of C is also an element of A.   70) _____
    A) True   B) False

Answer: A

71) {x | x is an odd counting number less than 15} = A   71) _____
    A) True   B) False

Answer: B

72) {13} ∈ B   72) _____
    A) True   B) False

Answer: B

Use ⊆ or ⊄ in the blank to make a true statement.
73) {4, 6, 8} ___ {3, 4, 5, 6, 8}   73) _____
    A) ⊆   B) ⊄

Answer: A

74) {12, 39, 44} __ {9, 39, 44, 54} 74) _____

    A) ⊄   B) ⊆

    Answer: A

75) {b, d, f, h} __ {b, d, f, h, k} 75) _____

    A) ⊄   B) ⊆

    Answer: B

76) ∅ __ ∅ 76) _____

    A) ⊄   B) ⊆

    Answer: B

77) {3, 5, 7} __ {x | x is an odd counting number} 77) _____

    A) ⊄   B) ⊆

    Answer: B

78) {e, n, j} __ {e, e, n, n, j, j} 78) _____

    A) ⊄   B) ⊆

    Answer: B

79) {x | x is a counting number larger than 5} __ {7, 8, 9, ...} 79) _____

    A) ⊄   B) ⊆

    Answer: A

Decide whether ⊆, ⊂, both, or neither can be placed in the blank to make a true statement.

80) {9, 10, 11} __ {8, 9, 10, 11} 80) _____

    A) ⊆   B) Neither   C) Both ⊂ and ⊆   D) ⊂

    Answer: C

81) ∅ __ {7, 15, 24, 34} 81) _____

    A) Neither   B) ⊂   C) ⊆   D) Both ⊂ and ⊆

    Answer: D

82) {5, 6, 7} __ {5, 6, 7} 82) _____

    A) ⊂   B) Both ⊂ and ⊆   C) Neither   D) ⊆

    Answer: D

83) {0} __ ∅ 83) _____

    A) ⊂   B) ⊆   C) Both ⊂ and ⊆   D) Neither

    Answer: D

84) {a, b} __ {z, a, y, b, x, c} 84) _____

    A) Both ⊂ and ⊆   B) ⊆   C) ⊂   D) Neither

    Answer: A

85) {s, r, t} __ {s, r, t} 85) _____

    A) Both ⊆ and ⊂   B) ⊂   C) ⊆   D) Neither

    Answer: C

Determine whether the statement is true or false.

Let A = {1, 3, 5, 7}

B = {5, 6, 7, 8}

C = {5, 8}

D = {2, 5, 8}

U = {1, 2, 3, 4, 5, 6, 7, 8}

86) C ⊂ D
    A) True   B) False

    Answer: A

86) _____

87) ∅ ⊆ A
    A) True   B) False

    Answer: A

87) _____

88) {6, 5, 8, 7} ⊆ B
    A) True   B) False

    Answer: A

88) _____

89) D ⊆ B
    A) True   B) False

    Answer: B

89) _____

90) A ≠ {7, 5, 3, 1}
    A) True   B) False

    Answer: B

90) _____

91) {5} ⊆ D
    A) True   B) False

    Answer: A

91) _____

92) {0} ⊆ U
    A) True   B) False

    Answer: B

92) _____

93) {8, 5, 2} ⊂ D
    A) True   B) False

    Answer: B

93) _____

94) C ⊄ B
    A) True   B) False

    Answer: B

94) _____

95) C ⊄ A
    A) True   B) False

    Answer: A

95) _____

Find the number of subsets of the set.

96) {5, 6, 7}

    A) 3   B) 6   C) 8   D) 7

    Answer: C

96) _____

97) {x | x is an even number between 11 and 27}

    A) 256   B) 7   C) 53   D) 128

    Answer: A

97) _____

98) {0}

    A) 2   B) 0   C) 1   D) 4

    Answer: A

98) _____

99) {mom, dad, son, daughter}

    A) 8   B) 12   C) 16   D) 14

    Answer: C

99) _____

100) {math, English, history, science, art}

    A) 24   B) 16   C) 32   D) 28

    Answer: C

100) _____

101) {x | x is a day of the week}

    A) 124   B) 127   C) 256   D) 128

    Answer: D

101) _____

102) {1, 2, 3, ..., 9}

    A) 16   B) 508   C) 512   D) 1024

    Answer: C

102) _____

Find the number of proper subsets of the set.

103) {7, 8, 9}

    A) 2   B) 5   C) 6   D) 7

    Answer: D

103) _____

104) {x | x is an even number between 19 and 33}

    A) 128   B) 64   C) 127   D) 32

    Answer: C

104) _____

105) {0}

    A) 2   B) 4   C) 0   D) 1

    Answer: D

105) _____

106) {car, boat, truck, train}

    A) 16   B) 14   C) 15   D) 8

    Answer: C

106) _____

107) {poetry, drama, speech, art, film}

    A) 24   B) 16   C) 31   D) 32

    Answer: C

107) _____

108) {x | x is a day of the week}
    A) 128   B) 64   C) 127   D) 256   108) _____

Answer: C

109) {1, 2, 3, ..., 8}
    A) 250   B) 511   C) 256   D) 255   109) _____

Answer: D

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

110) A = {2, 4, b, d}   110) _____
    A) {1, 5, a, e}   B) {1, 2, 4, 5, a, b, c, d, e}
    C) {1, 5, a, c, e}   D) {1, 3, 5, a, c, e}

Answer: C

111) S = {1, 5, e, d, a}   111) _____
    A) {2, 4, b, c}   B) {2, 3, 4, a, b, c}   C) {1, 2, 4, b, c}   D) {2, 3, 4, b, c}

Answer: A

112) V = {1, 2, 4, 5, a, b, c, e}   112) _____
    A) {3, d}   B) {u}   C) ∅   D) {d}

Answer: D

113) T = {a, b, c, d}   113) _____
    A) {1, 2, 3, 4, 5, e}   B) {e}   C) {1, 2, 4, 5}   D) {1, 2, 4, 5, e}

Answer: D

114) N = {a}   114) _____
    A) {1, 2, 4, 5, b, c, d, e}   B) {1, 2, 5, b, c, d, e}
    C) {1, 2, 3, 4, 5, b, c, d, e}   D) {u, v}

Answer: A

115) S = ∅   115) _____
    A) ∅   B) {0}   C) U   D) ∅

Answer: C

116) P = {a, b, d, e, 1, 2, 4, 5}   116) _____
    A) {c, 3}   B) ∅   C) {c}   D) U

Answer: C

117) R = {1, 2, 5, b, d}   117) _____
    A) {3, 4, a, b, c, e}   B) {4, a, b, c, e}   C) {4, a, c, e}   D) {3, 4, a, c, e}

Answer: C

118) T = U   118) _____
    A) T   B) ∅   C) {U - T'}   D) U

Answer: B

119) O = {e, a, c, 4, 5}   119) _____
    A) {1, 2, 3, b, d}   B) {b, d, 1, 2, 3}   C) {1, 2, b, d}   D) {1, 2, b, c, d}

Answer: C

The lists below show five agricultural crops in Alabama, Arkansas, and Louisiana.

Alabama	Arkansas	Louisiana
soybeans (s)	soybeans (s)	soybeans (s)
peanuts (p)	rice (r)	sugarcane (n)
corn (c)	cotton (t)	rice (r)
hay (h)	hay (h)	corn (c)
wheat (w)	wheat (w)	cotton (t)

Let U be the smallest possible universal set that includes all of the crops listed, and let A, K and L be the sets of five crops in Alabama, Arkansas, and Louisiana, respectively. Find each of the following sets.

120) The set of crops in U.   120) _____
    A) {s, p, c, w, r, t, n}   B) {s, p, c, h, w, s, r, t, h, w, s, n, r, c, t}
    C) {s, p, c, h, w, r, t, n, c}   D) {c, h, n, p, r, s, t, w}

    Answer: D

121) The set of crops in A'.   121) _____
    A) {n, r, t}   B) {c, h, n, r, s, t, w}
    C) {h, n, r, t}   D) {r, t}

    Answer: A

122) The set of crops in both A and K   122) _____
    A) {c, p, r, t}   B) {c, h, s, t, w}
    C) {c, h, p, r, s, t, w}   D) {h, s, w}

    Answer: D

123) The set of crops in both L and K   123) _____
    A) {c, h, n, r, s, t, w}   B) {c, n, r, s, t}
    C) {r, s, t}   D) {c, h, n, w}

    Answer: C

124) The set of crops in both L and K'   124) _____
    A) {c, n, p}   B) {r, s, t}   C) {c, n}   D) {h, w}

    Answer: C

125) The set of crops in both A and L'   125) _____
    A) {c, s}   B) {h, n, t, w}   C) {n, r, t}   D) {h, p, w}

    Answer: D

126) The set of crops in both A' and K'   126) _____
    A) ∅   B) {n}   C) {c, p, r, t}   D) {c, n, p, r, t}

    Answer: B

127) The set of crops common to A, K, and L   127) _____
    A) {s}   B) {c, h, n, p, r, s, t, w}
    C) {n, p, s}   D) {n, p}

    Answer: A

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128) The set of crops in either A or L or both 128) _____
    A) {c, n, p}   B) {c,s}
    C) {h, n, p, r, t, w}   D) {c, h, n, p, r, s, t, w}

Answer: D

129) The set of crops in either A' or L or both 129) _____
    A) {n, r, t}   B) {h, p, w}   C) {h, n, p, r, t, w}   D) {c, n, r, s, t}

Answer: D

Solve the problem.

130) List all possible subsets of the set {m, n}. 130) _____
    A) {m}, {n}, ∅   B) {m}, {n}, {m, n}, ∅
    C) {m}, {n}, {m, n}   D) {m}, {n}

Answer: B

131) List all possible proper subsets of the set {2, 6, 7}. 131) _____
    A) {2}, {6}, {7}, {2, 6}, {2, 7}, {6, 7}, {2, 6, 7}   B) ∅, {2}, {6}, {7}, {2, 6}, {2, 7}, {6, 7}, {2, 6, 7}
    C) ∅, {2}, {6}, {7}, {2, 6}, {2, 7}, {6, 7}   D) {2}, {6}, {7}, {2, 6}, {2, 7}, {6, 7}

Answer: C

132) A committee is to be formed. Possible candidates for the committee are Eric, Frances, Greg, and 132) _____
Jose. Denoting these four people by e, f, g, j, list all possible committees of two people (ie list all
possible subsets of size two).
    A) {e, f}, {e, g}, {e, j}, {f, g}, {f, j}, {g, j}, {f, e}, {g, e}
    B) {e, f}, {e, g}, {f, g}, {g, j}
    C) {e, f}, {e, g}, {e, j}, {f, g}, {f, j}, {g, j}
    D) {e, f}, {e, g}, {e, j}, {f, j}, {g, j}

Answer: C

133) A committee is to be formed. Possible candidates for the committee are Eric, Frances, Greg, and 133) _____
Jose. Denoting these four people by e, f, g, j, list all possible committees if the committee is to
contain at least two people and may contain up to four people.
    A) {e, f}, {e, g}, {e, j}, {f, g}, {f, j}, {g, j}, {e, f, g}, {e, f, j}, {f, g, j}, {e, f, g, j}
    B) {e, f}, {e, g}, {e, j}, {f, g}, {f, j}, {g, j}, {e, f, g}, {e, f, j}, {e, g, j}, {f, g, j}
    C) {e, f}, {e, g}, {e, j}, {f, j}, {e, f, g}, {e, f, j}, {e, g, j}, {f, g, j}, {e, f, g, j}
    D) {e, f}, {e, g}, {e, j}, {f, g}, {f, j}, {g, j}, {e, f, g}, {e, f, j}, {e, g, j}, {f, g, j}, {e, f, g, j}

Answer: D

134) An adventure travel company has reservations from four people (Lee, Maria, Nancy, and Pablo) for 134) _____
its white water rafting trip on June 1st. However the company knows that any of these people may
fail to show up on the day of the trip. Denoting these four people by l, m, n, p, list all possibilities
for the group of people who show up on June 1st for the rafting trip (ie list all possible subsets of
{l, m, n, p}).
    A) {l}, {m}, {n}, {p}, {l, m}, {l, n}, {l, p}, {m, n}, {m, p}, {n, p}, {l, m, n}, {l, m, p}, {l, n, p}, {m, n, p}, {m, n, l}, {l, m, n, p}
    B) ∅, {l}, {m}, {n}, {p}, {l, m}, {l, n}, {m, n}, {m, p}, {n, p}, {l, m, n}, {l, m, p}, {l, n, p}, {m, n, p}
    C) ∅, {l}, {m}, {n}, {p}, {l, m}, {l, n}, {l, p}, {m, n}, {m, p}, {n, p}, {l, m, n}, {l, m, p}, {l, n, p}, {m, n, p}, {l, m, n, p}
    D) {l}, {m}, {n}, {p}, {l, m}, {l, n}, {l, p}, {m, n}, {m, p}, {n, p}, {l, m, n}, {l, m, p}, {l, n, p}, {m, n, p}, {l, m, n, p}

Answer: C

135) A committee is to be formed. Possible candidates for the committee are Anne, Daniel, Raul, Sarah, and Teresa. Denoting these five people by a, d, r, s, t, list all possible committees of three people (ie list all possible subsets of size three).
 A) {a, d, r}, {a, d, s}, {a, d, t}, {a, r, s}, {a, r, t}, {a, s, t}, {d, r, s}, {d, r, t}, {d, s, t}, {r, s, t}, {d, a, r}, {s, t, d}
 B) {a, d, r}, {a, d, s}, {a, d, t}, {a, r, s}, {a, r, t}, {a, s, t}, {d, r, t}, {d, s, t}, {r, s, t}
 C) {a, d, r}, {a, d, s}, {a, d, t}, {a, r, s}, {d, r, s}, {d, r, t}, {d, s, t}, {r, s, t}
 D) {a, d, r}, {a, d, s}, {a, d, t}, {a, r, s}, {a, r, t}, {a, s, t}, {d, r, s}, {d, r, t}, {d, s, t}, {r, s, t}

135) _____

Answer: D

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}.

136) A ∪ C
 A) {q, s, u, v, w, x, y, z}   B) {q, s, u, w, y, v, w, x, y, z}
 C) {w, y}   D) {q, s, u, v, w, y, z}

136) _____

Answer: A

137) B ∩ C
 A) {y, z}   B) {y}
 C) {w, y, z}   D) {q, s, v, w, x, y, z}

137) _____

Answer: A

138) A ∩ B'
 A) {r, s, t, u, v, w, x, z}   B) {u, w}
 C) {q, s, t, u, v, w, x, y}   D) {t, v, x}

138) _____

Answer: B

139) (A ∪ B)'
 A) {s, u, w}   B) {t, v, x}
 C) {r, t, v, x}   D) {r, s, t, u, v, w, x, z}

139) _____

Answer: C

140) (A ∩ B)'
 A) {s, u, w}   B) {q, s, t, u, v, w, x, y}
 C) {t, v, x}   D) {r, t, u, v, w, x, z}

140) _____

Answer: D

141) A' ∪ B
 A) {s, u, w}   B) {q, s, t, u, v, w, x, y}
 C) {q, r, s, t, v, x, y, z}   D) {r, s, t, u, v, w, x, z}

141) _____

Answer: C

142) C' ∪ A'
 A) {w, y}   B) {q, r, s, t, u, v, x, z}
 C) {q, s, u, v, w, x, y, z}   D) {s, t}

142) _____

Answer: B

143) C' ∩ A'

143) _____

    A) {q, s, u, v, w, x, y, z}   B) {r, t}

    C) {w, y}   D) {q, r, s, t, u, v, x, z}

Answer: B

144) C - A

144) _____

    A) {v, x, z}   B) {q, s, u, v, x, z}   C) {w, y}   D) {q, s, u}

Answer: A

145) A' - C

145) _____

    A) {v, x, z}   B) {r, t}   C) {q, s, u, v, x, z}   D) {q, s, u}

Answer: B

146) A ∪ (B ∩ C)

146) _____

    A) {q, s, u, w, y, z}   B) {q, y, z}   C) {q, r, w, y, z}   D) {q, w, y}

Answer: A

147) A ∩ (B ∪ C)

147) _____

    A) {q, s, u, w, y, z}   B) {q, y, z}   C) {q, s, w, y}   D) {q, r, w, y, z}

Answer: C

148) (A' ∪ C) ∩ B'

148) _____

    A) {r, t, v, w, x}   B) {v, x}

    C) {r, t, u, v, w, s, y, z}   D) {y, z}

Answer: A

149) (B' ∩ C)' ∪ A

149) _____

    A) {q, s, u, v, w, x, y}   B) {q, s, u, y}

    C) {q, r, s, t, u, v, w, x, y}   D) {q, r, s, t, u, w, y, z}

Answer: D

150) (A ∪ B')' ∩ C'

150) _____

    A) {q, r, s, t, u, z}   B) ∅   C) {q, r, s, t, u}   D) {v, w, x, y}

Answer: B

151) B ∩ (A - C)

151) _____

    A) {q, s, u, y, z}   B) {q, s}

    C) {q, s, u, y}   D) {q, r, s, t, u, v, w, x, y}

Answer: B

152) (A ∩ B') ∪ (B ∩ A')

152) _____

    A) {q, s, u, w, y, z}   B) {q, s, y}   C) {u, w, z}   D) {u, w, y, z}

Answer: C

Let U = {all soda pops}, A = {all diet soda pops}, B = {all cola soda pops}, C = {all soda pops in cans}, and D = {all caffeine-free soda pops}. Describe the set in words.

153) A ∩ B

153) _____

    A) All diet cola soda pops   B) All diet or all cola soda pops

    C) All diet and all cola soda pops   D) All soda pops

Answer: A

154) A' ∩ C   154) _____
    A) All non-diet soda pops and all soda pops in cans
    B) All diet soda pops and all soda pops in cans
    C) All diet soda pops in cans
    D) All non-diet soda pops in cans
    Answer: D

155) A ∩ B ∩ D   155) _____
    A) All diet, caffeine-free cola pops in cans
    B) All diet and all cola and all caffeine-free soda pops
    C) All soda pops not in cans
    D) All diet, caffeine-free cola soda pops
    Answer: D

156) (A ∪ B) ∪ D   156) _____
    A) All soda pops
    B) All soda pops not in cans
    C) All diet, caffeine-free cola soda pops
    D) All diet or all cola or all caffeine-free soda pops
    Answer: D

157) (A ∩ B) ∩ C'   157) _____
    A) All cola soda pops not in cans
    B) All diet cola soda pops not in cans
    C) All non-diet, non-cola soda pops not in cans
    D) All diet and all cola soda pops not in cans
    Answer: B

158) (A ∪ D) ∩ C'   158) _____
    A) All diet soda pops not in cans or all caffeine-free soda pops not in cans
    B) All non-cola soda pops not in cans
    C) All non-diet, non-caffeine-free soda pops not in cans
    D) All diet, caffeine-free soda pops not in cans
    Answer: A

159) (A' ∩ B') ∪ C   159) _____
    A) All non-diet soda pops and all non-cola soda pops in cans
    B) All non-diet non-cola soda pops in cans
    C) All non-diet non-cola soda pops and all soda pops not in cans
    D) All non-diet non-cola soda pops or all soda pops in cans
    Answer: D

160) (A - D) ∩ B   160) _____
    A) All non-diet, caffeine-free cola soda pops
    B) All diet soda pops that contain caffeine and all cola soda pops
    C) All diet cola soda pops that contain caffeine
    D) All diet caffeine-free cola soda pops
    Answer: C

161) $(B \cap C') \cup (C \cap B')$ 161) _____
   A) All cola soda pops and all soda pops in cans
   B) All non-cola soda pops not in cans
   C) All cola soda pops not in cans or all non-cola soda pops in cans
   D) All cola soda pops in cans and all non-cola soda pops not in cans

   Answer: C

The lists below show five agricultural crops in Alabama, Arkansas, and Louisiana.

Alabama	Arkansas	Louisiana
soybeans (s)	soybeans (s)	soybeans (s)
peanuts (p)	rice (r)	sugarcane (n)
corn (c)	cotton (t)	rice (r)
hay (h)	hay (h)	corn (c)
wheat (w)	wheat (w)	cotton (t)

Let U be the smallest possible universal set that includes all of the crops listed, and let A, K and L be the sets of five crops in Alabama, Arkansas, and Louisiana, respectively. Find each of the following sets.

162) $A \cap K$ 162) _____
   A) {c, h, p, r, s, t, w}   B) {c, p, r, t}
   C) {h, s, w}   D) {c, h, s, t, w}

   Answer: C

163) $L \cap K$ 163) _____
   A) {c, h, n, r, s, t, w}   B) {c, n, r, s, t}
   C) {c, h, n, w}   D) {r, s, t}

   Answer: D

164) $K' \cap L$ 164) _____
   A) {h, w}   B) {r, s, t}   C) {c, n, p}   D) {c, n}

   Answer: D

165) $L' \cap A$ 165) _____
   A) {n, r, t}   B) {c, s}   C) {h, p, w}   D) {h, n, t, w}

   Answer: C

166) $A' \cap K'$ 166) _____
   A) {n}   B) {c, p, r, t}   C) {c, n, p, r, t}   D) ∅

   Answer: A

167) $A \cap K \cap L$ 167) _____
   A) {n, p, s}   B) {s}
   C) {c, h, n, p, r, s, t, w}   D) {n, p}

   Answer: B

168) $A \cup L$ 168) _____
   A) {h, n, p, r, t, w}   B) {c, s}
   C) {c, n, p}   D) {c, h, n, p, r, s, t, w}

   Answer: D

169) K ∪ L   169) _____
    A) {c, h, n, w}   B) {r, s, t}
    C) {c, h, n, r, s, t, w}   D) {n, r, t}
    Answer: C

170) A' ∪ L   170) _____
    A) {c, n, r, s, t}   B) {h, n, p, r, t, w}   C) {h, p, w}   D) {n, r, t}
    Answer: A

171) L' ∪ K'   171) _____
    A) {r, s, t}   B) {c, h, n, p, w}   C) {c, h, p, s, w}   D) {p}
    Answer: B

Let A and B be sets with cardinal numbers, n(A) = a and n(B) = b, respectively. Decide whether the statement is true or false.

172) n(A ∪ B) = n(A) - n(B)   172) _____
    A) True   B) False
    Answer: B

173) n(A - B) = n(B - A)   173) _____
    A) True   B) False
    Answer: B

174) If B ⊆ A, n(B) = n(A - B).   174) _____
    A) True   B) False
    Answer: B

175) If B ⊆ A, n(B) = n(A) - n(A - B).   175) _____
    A) True   B) False
    Answer: A

176) n(A ∩ B) = n(B ∩ A)   176) _____
    A) True   B) False
    Answer: A

177) n(A ∪ B) = n(A) + n(B) - n(A ∩ B)   177) _____
    A) True   B) False
    Answer: A

178) n(A ∩ B) = n(A) - n(B)   178) _____
    A) True   B) False
    Answer: B

179) n(A ∪ B) + n(A ∩ B) = n(A) + n(B)   179) _____
    A) True   B) False
    Answer: A

Tell whether the statement is true or false.

180) {3, 6, 11} = {0, 3, 6, 11}   180) _____
    A) True   B) False

    Answer: B

181) {54, 55, 54, 55} = {54, 55}   181) _____
    A) True   B) False

    Answer: A

182) {4, 17, 23, 10, 36} = {36, 17, 10, 32, 4}   182) _____
    A) True   B) False

    Answer: B

183) (11, 7) = (7, 11)   183) _____
    A) True   B) False

    Answer: B

184) (12 - 8, 16 - 11) = (4, 5)   184) _____
    A) True   B) False

    Answer: A

185) (9 + 17, 15 + 17) = (9, 15)   185) _____
    A) True   B) False

    Answer: B

186) {(3, 1), (0, 6), (-4, -2)} = {(-4, -2), (3, 1), (6, 0)}   186) _____
    A) True   B) False

    Answer: B

Find the Cartesian product.

187) A = {5, 15, 2}   187) _____
B = {6, 10}
Find A × B.
    A) {(5, 6), (15, 10)}
    B) {(5, 6), (5, 10), (15, 6), (15, 10), (2, 6), (2, 10)}
    C) {(6, 5), (6, 15), (6, 2), (10, 5), (10, 15), (10, 2)}
    D) {(5, 6), (15, 2), (2, 6)}

    Answer: B

188) A = {i, a}   188) _____
B = {t, d, m}
Find A × B.
    A) {(i, t), (t, a), (i, d), (d, a), (i, m), (m, a)}   B) {(i, t), (a, t), (i, d), (a, d)}
    C) {(i, t), (i, d), (i, m), (a, t), (a, d), (a, m)}   D) {(t, i), (t, a), (d, i), (d, a), (m, i), (m, a)}

    Answer: C

189) A = {0}
   B = {20, 30, 40}
   Find B × A.
      A) {0, 0, 0}   B) {(20, 0), (30, 0), (40, 0)}
      C) {(0, 20), (0, 30), (0, 40)}   D) {0}
   Answer: B

190) A = {2, 4, 7, 6}
   B = {0, 1}
   Find B × A.
      A) {(0, 2), (0, 4), (0, 7), (0, 6), (1, 2), (1, 4), (1, 7), (1, 6)}
      B) {(2, 0), (2, 1), (4, 0), (4, 1)}
      C) {(2, 0), (4, 0), (7, 0), (6, 0), (2, 1), (4, 1), (7, 1), (6, 1)}
      D) {0, 1, 2, 4, 7, 6}
   Answer: A

Find the indicated cardinal number.
   191) Find n(A × B) given that A = {2} and B = {1, 3}.
      A) 1   B) 2   C) 3   D) 4
   Answer: B

192) Find n(A × C) given that A = {2} and C = {4, 5, 6}.
      A) 4   B) 3   C) 2   D) 1
   Answer: B

193) Find n(D × B) given that B = {1, 3} and D = {7, 8, 9, 10}.
      A) 12   B) 16   C) 7   D) 8
   Answer: D

194) Find n(C × D) given that C = {4, 5, 6} and D = {7, 8, 9, 10}.
      A) 27   B) 12   C) 81   D) 7
   Answer: B

195) Find n(E), given that n(C × E) = 18 and C = {4, 5, 6}.
      A) 54   B) 9   C) 6   D) 3
   Answer: C

196) Find n(F), given that n(B × F) = 18 and B = {1, 3}.
      A) 6   B) 54   C) 9   D) 36
   Answer: C

197) Find n(G), given that n(D × G) = 20 and D = {7, 8, 9, 10}.
      A) 9   B) 4   C) 24   D) 5
   Answer: D

198) Find n(A × B) given that n(A) = 34 and n(B) = 10.
      A) 54   B) 340   C) 44   D) 24
   Answer: B

199) Find n(B) given that n(A × B) = 90 and n(A) = 9 .

199) _____

    A) 9   B) 81   C) 99   D) 10

Answer: D

200) Find n(A) given that n(A × B) = 36 and n(B) = 3.

200) _____

    A) 12   B) 3   C) 39   D) 33

Answer: A

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

201) Let U = {c, d, g, h, k, u, q}

201) _____

    A = {d, h, g, q}

    B = {c, d, h, u}
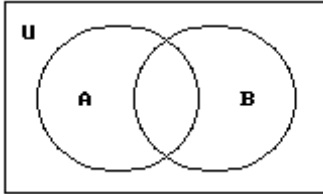
A)
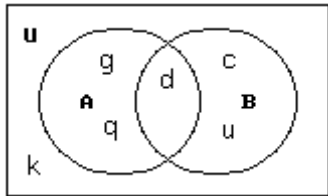
B)
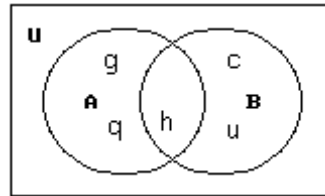
C)
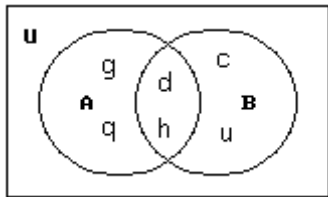
D)
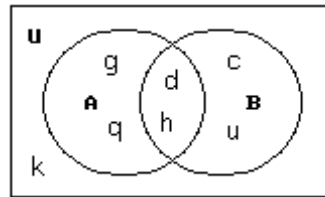
Answer: D

202) Let U = {1, 2, 3, 4, 5, 6, 7, 8}
   A = {3, 6, 8}
   B = {4, 6}
   C = {1, 6, 7, 8}
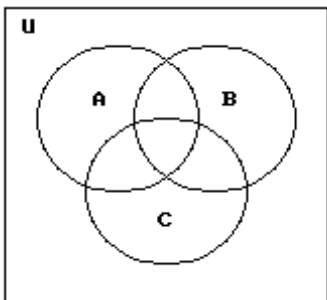
A)
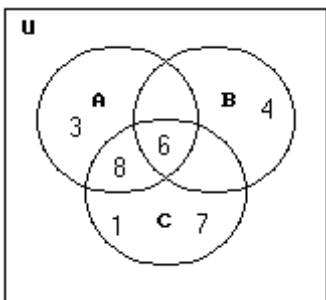
B)
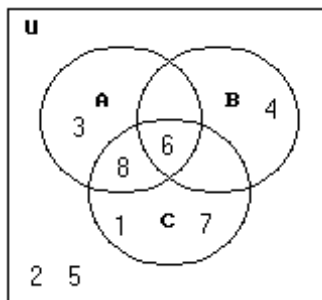
C)
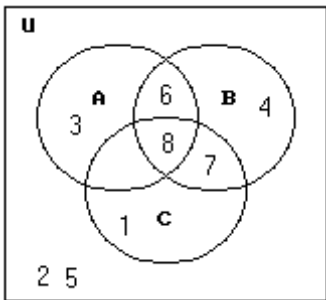
D)
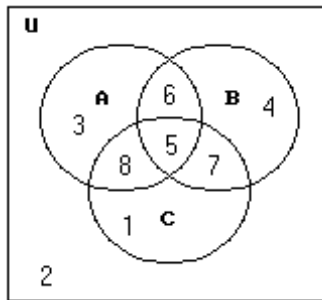
Answer: B

203) Let U = {b, d, j, i, m, n, t}
A = {d, j, i, n}
B = {b, d, j, t}
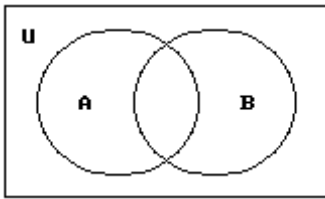
A)

B)
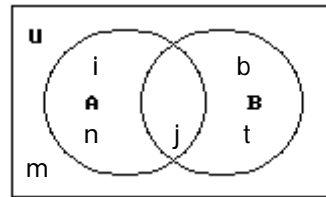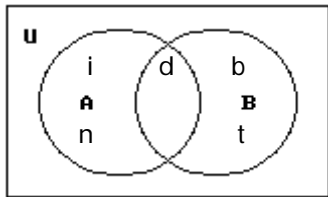
C)

D)
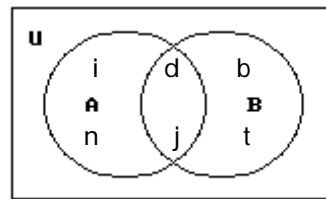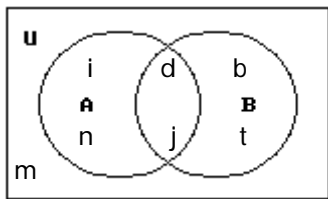
Answer: C

204) U = {2, 4, 6, 8, 10, 12}
A = {2, 6, 10}
B = {2, 4, 8}
C = {2, 8, 10, 12}

23

A)

B)

C)

D)
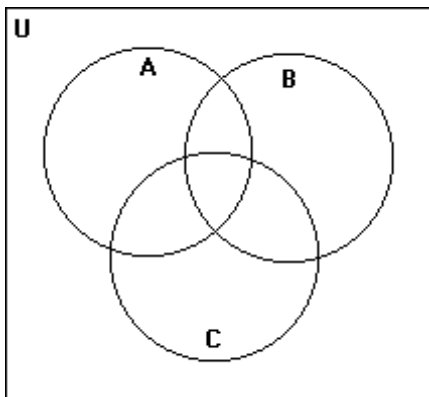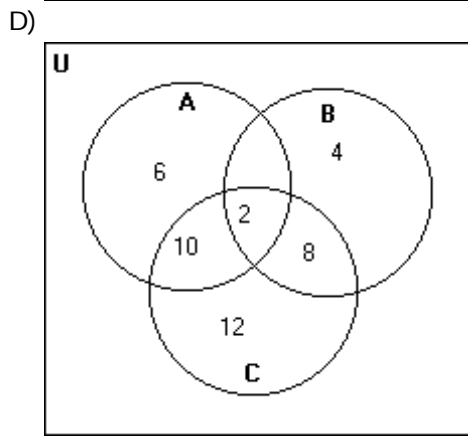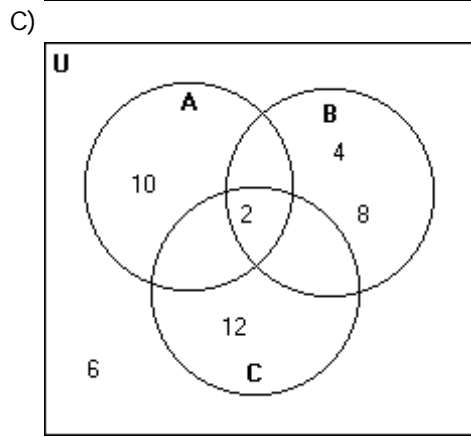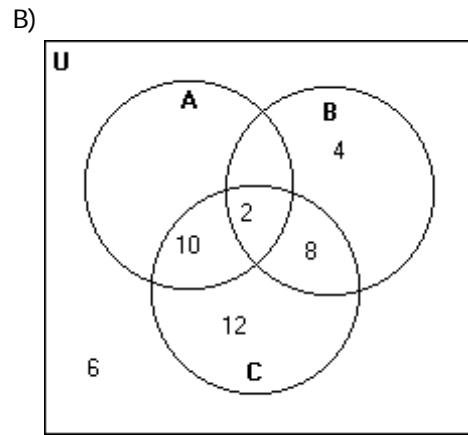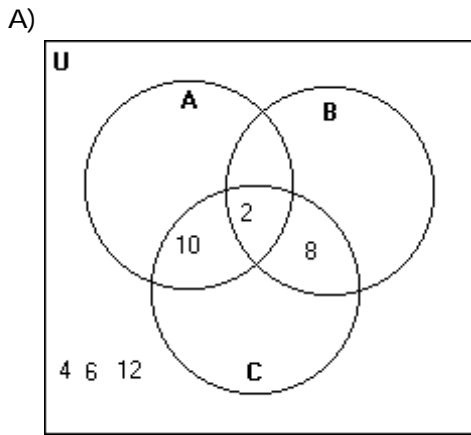
Answer: D

205) 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}

A)

U

A

i
o

B

h j
k
l
m

a e

b c
f g d

C

n p

B)

U

A

i
a
o e

B

h j
k
l
m

b c
f g d

C

n p

C)

U

A

i
o

B

h j
k
l
m

b
e
a
c
f g d

C

n p

D)

U

A

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B

h j
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l
m

a e

b c
f g d

C
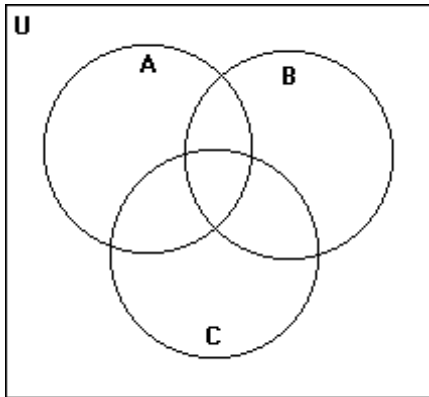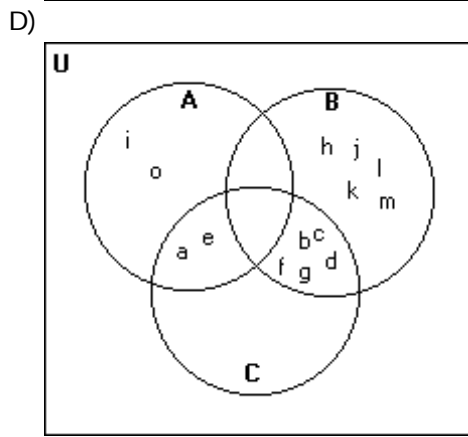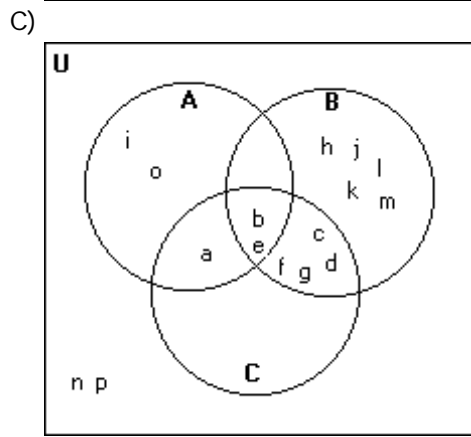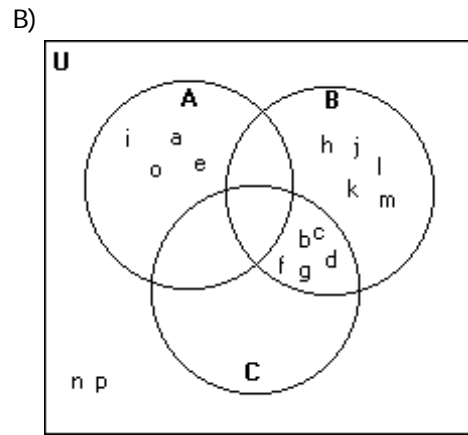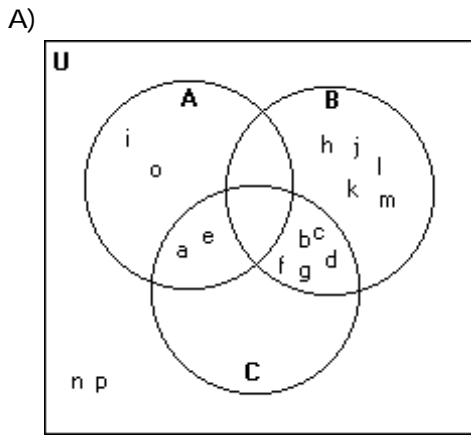
Answer: A

Shade the regions representing the set.

206) A' ∩ B'

A
B

A)

A
B

B)

A
B

C)

A
B

D)

A
B
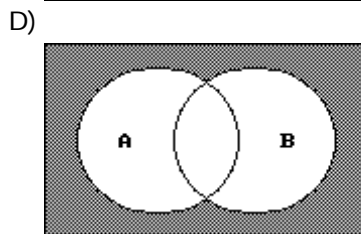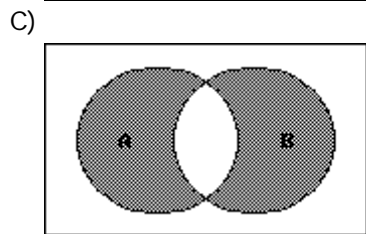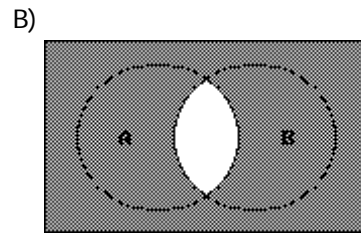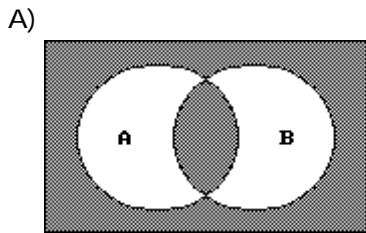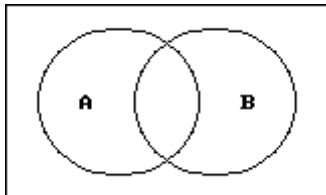
Answer: D

207) A' ∪ B'

A)

B)

C)

D)
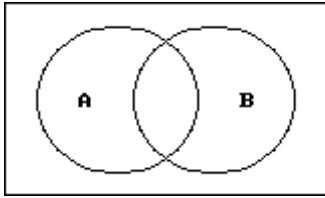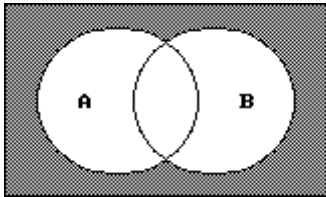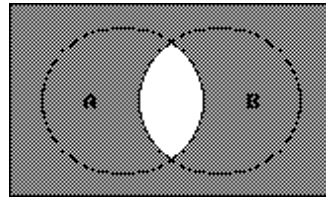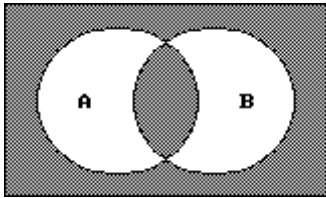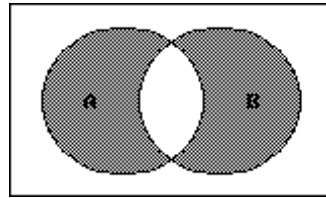
Answer: B

208) (A ∪ B) ∩ (A ∩ B)'
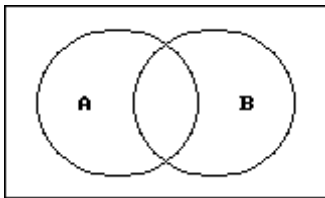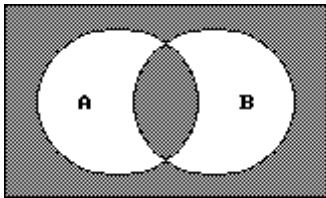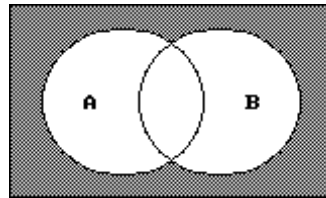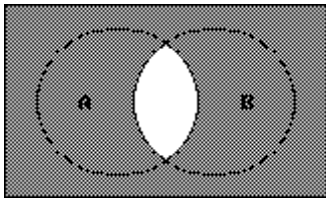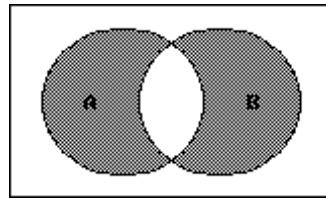
A)

B)

C)

D)

Answer: D

207) _____
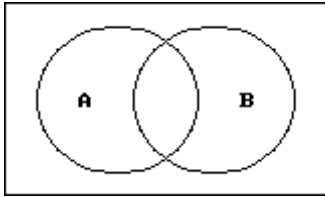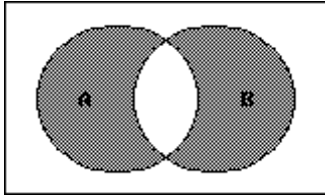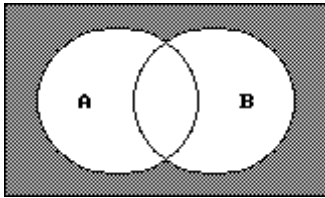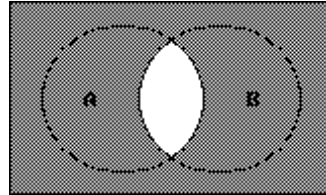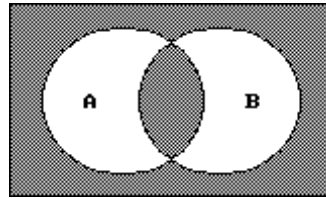
208) _____

209) $(A \cap B) \cup (A \cup B)'$

A)

B)

C)

D)

Answer: D

210) $(A \cap B \cap C')'$

A)

B)

C)

D)

Answer: A

211) $(A \cup B \cup C')'$

A)

B)

C)

D)

Answer: A

212) $C' \cap (A \cup B)$

A)

B)

C)

D)
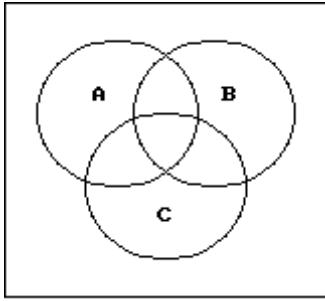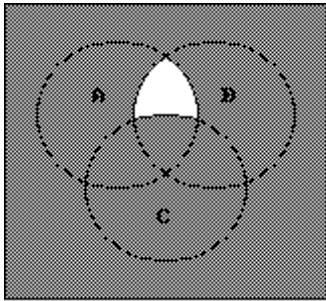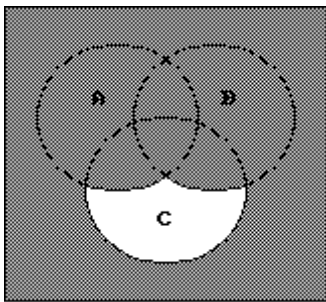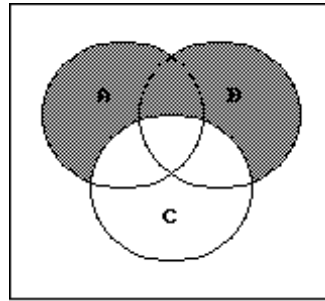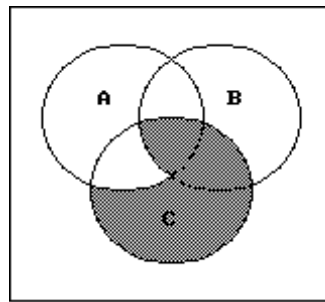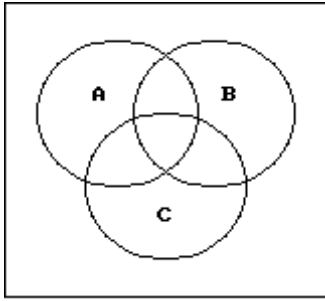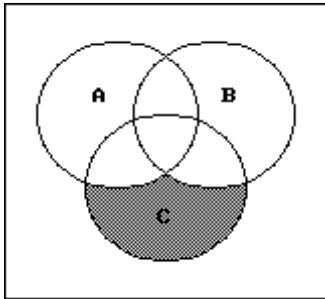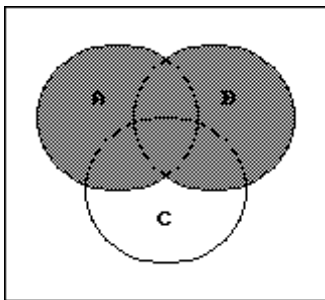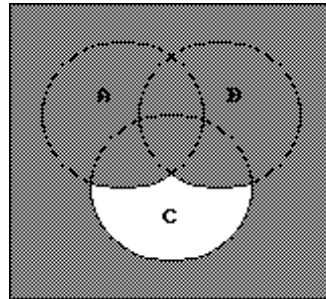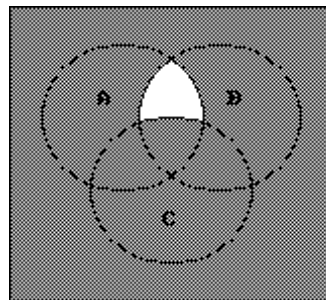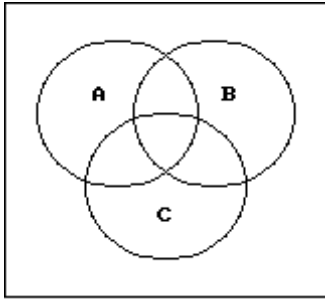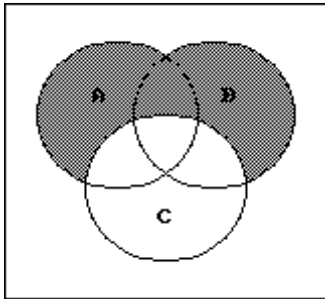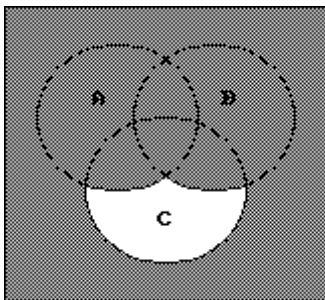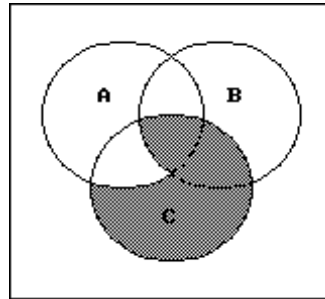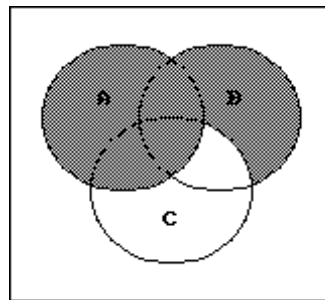
Answer: A

213) (A' ∪ B) ∩ C
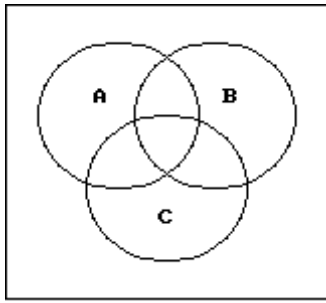
A)
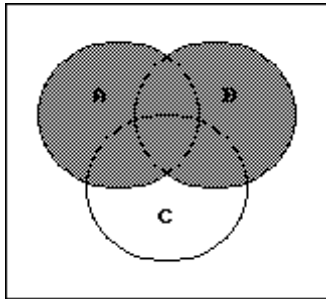
B)

C)

D)
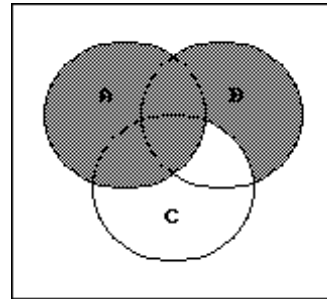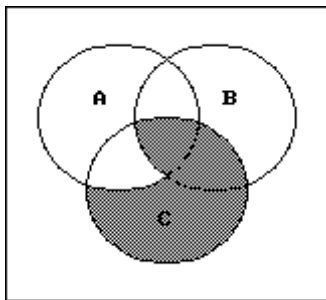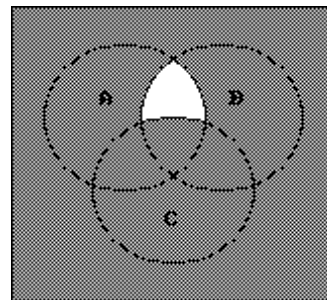
Answer: C

214) A ∪ (B ∩ C')
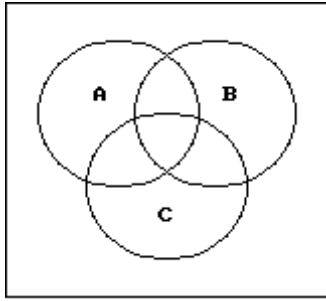
A)
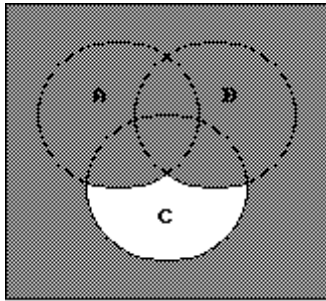
B)
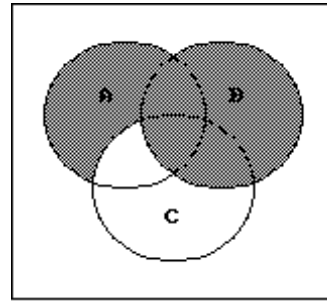
C)
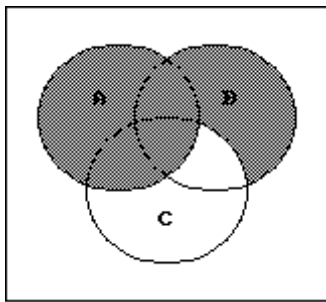
D)
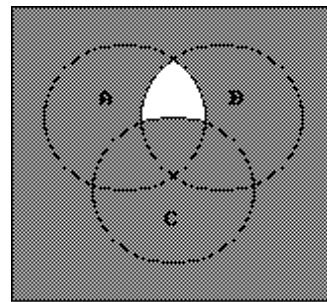
Answer: C

215) B ∪ (A ∩ C')   215) _____
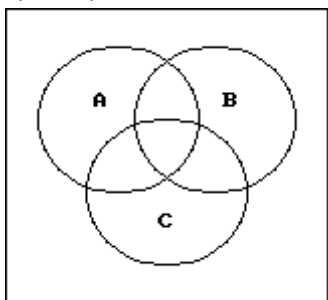
A)
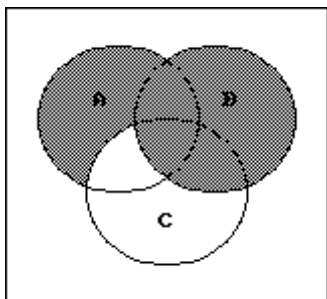
B)
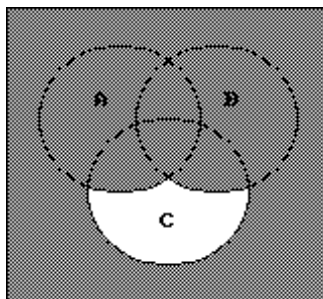
C)
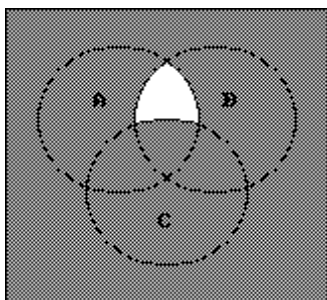
D)
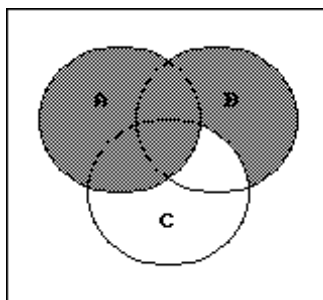
Answer: A

Write a description of the shaded region using the symbols A, B, C, ∪, ∩, -, and ' as needed.

216)   216) _____
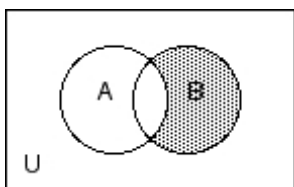
   A) A ∩ B'   B) B - A'   C) B ∩ A'   D) A - B

Answer: C

217)   217) _____
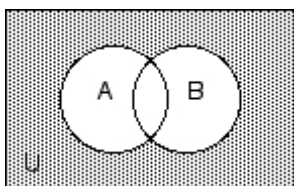
   A) A ∪ B   B) A - B   C) (A ∩ B)'   D) A' ∩ B'

Answer: D

218)
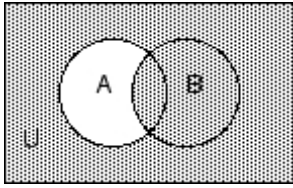
A) A′ ∪ B   B) A′ ∩ B   C) (A ∩ B)′   D) B - A

Answer: A

219)

A) (A ∪ B)'   B) A' ∩ B'   C) A ∩ B   D) (A ∩ B)'

Answer: D

220)
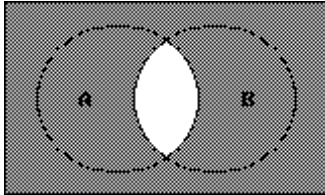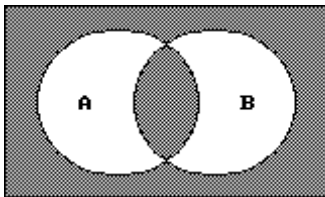
A) A' ∩ B'   B) (A ∩ B) ∪ (A ∩ B)'
C) (A - B) ∪ (B - A)   D) (A ∩ B) ∪ (A ∪ B)'

Answer: D

221)
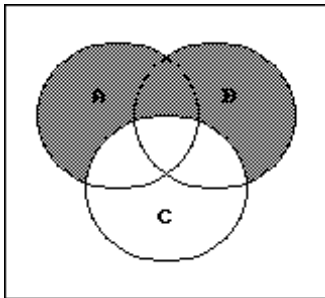
A) (A ∩ B) ∩ C'   B) (A ∪ B) ∪ C'   C) (A ∪ B) ∩ C   D) (A ∪ B) ∩ C'

Answer: D

222)
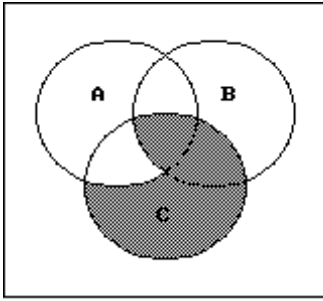
A) A' ∩ C   B) (A ∪ B') ∩ C   C) (A' ∩ B) ∪ C   D) (A' ∪ B) ∩ C

Answer: D

223)
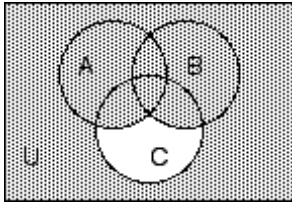
A) (A ∪ B) ∪ C'   B) (A ∪ B ∪ C)'   C) A ∪ B ∩ C'   D) (A ∩ B) ∪ C'

Answer: A

224)
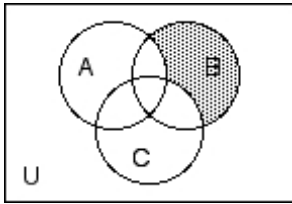
A) B - (A ∩ C)   B) (B - A) ∪ C   C) B ∩ (A ∩ C)'   D) A' ∩ C' ∩ B

Answer: D

225)
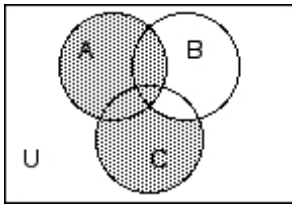
A) C ∩ B' ∪ A   B) A ∪ C   C) B' ∩ A ∪ C   D) A ∪ C - B

Answer: A

Decide whether the given statement is always true or not always true.

226) A ∩ A' = ∅

A) Always true   B) Not always true

Answer: A

227) (A ∪ B) ⊆ A

A) Always true   B) Not always true

Answer: B

35

228) $(A \cap B) \subseteq B$ 228) _____

    A) Not always true   B) Always true

    Answer: B

229) $(A \cap B)' = A' \cup B'$ 229) _____

    A) Always true   B) Not always true

    Answer: A

230) $(A \cup B)' = A' \cup B'$ 230) _____

    A) Not always true   B) Always true

    Answer: A

231) If $A \subseteq B$, then $A \cup B = A$ 231) _____

    A) Not always true   B) Always true

    Answer: A

232) If $B \subseteq A$, then $A \cap B = A$ 232) _____

    A) Always true   B) Not always true

    Answer: B

233) $A - A' = A$ 233) _____

    A) Not always true   B) Always true

    Answer: B

234) $A \cup (B \cap C)' = A \cup (B' \cup C')$ 234) _____

    A) Not always true   B) Always true

    Answer: B

235) $A \cap (B \cup C) = (A \cap B) \cup C$ 235) _____

    A) Not always true   B) Always true

    Answer: A

Describe the conditions under which the statement is true.

236) $A \cap B = A$ 236) _____

    A) $A \subseteq B$ B) Always true   C) $B = \varnothing$ D) $B \subseteq A$

    Answer: A

237) $A \cup \varnothing = U$ 237) _____

    A) $A = \varnothing$ B) $A \neq \varnothing$ C) Always true   D) $A = U$

    Answer: D

238) $A \cup B = B$ 238) _____

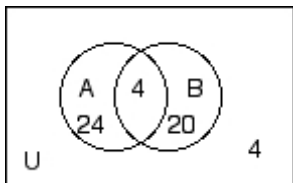   A) $B \subseteq A$ B) $A \subseteq B$ C) Always true   D) $A = \varnothing$

    Answer: B

239) $A \cap A' = A$ 239) _____

    A) $A = U$ B) Always true   C) $A \neq \varnothing$ D) $A = \varnothing$

    Answer: D

240) A ∩ B' = A

240) _____

    A) A ∩ B = ∅   B) B ⊆ A   C) Always true   D) B = ∅

Answer: A

241) A ∪ B = A

241) _____

    A) B ⊆ A   B) B = ∅   C) A ⊆ B   D) Always true

Answer: A

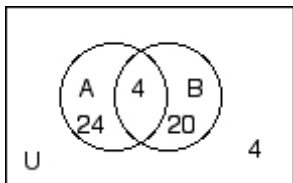Find the cardinal number of the set.

242) The numbers in the Venn Diagram below represent cardinalities.

242) _____

Find n(A ∪ B).

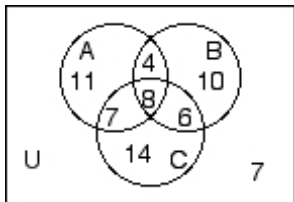   A) 4   B) 48   C) 52   D) 24

Answer: B

243) The numbers in the Venn Diagram below represent cardinalities.

243) _____

Find n(A ∩ B').

    A) 24   B) 28   C) 4   D) 20

Answer: A

244) The numbers in the Venn Diagram below represent cardinalities.

244) _____

Find n(A' ∩ B' ∩ C)
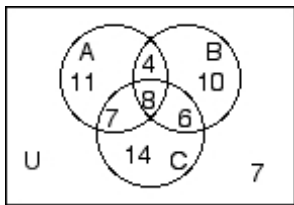
    A) 14   B) 21   C) 27   D) 13

Answer: A

245) The numbers in the Venn Diagram below represent cardinalities.   245) _____

Find n(A ∩ B' ∩ C)
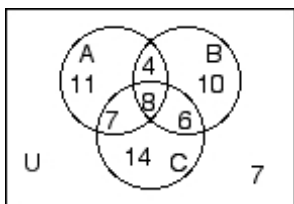 A) 7   B) 11   C) 15   D) 6
Answer: A

246) The numbers in the Venn Diagram below represent cardinalities.   246) _____

Find n(B ∪ C)
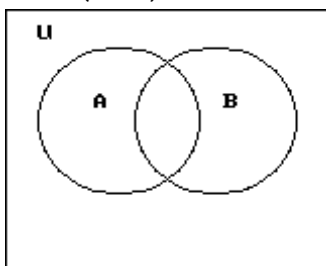 A) 49   B) 14   C) 60   D) 42
Answer: A

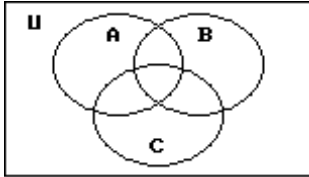247) Given: n(U) = 60   247) _____
              n(A) = 35
              n(B) = 20
         n(A ∩ B) = 4
      Find n(A ∪ B)'.

  A) 51   B) 55   C) 9   D) 5
Answer: C

248) Given:

$$n(U) = 213$$
$$n(A) = 72$$
$$n(B) = 92$$
$$n(A \cap B) = 31$$
$$n(A \cap C) = 34$$
$$n(A \cap B \cap C) = 16$$
$$n(A' \cap B \cap C') = 45$$
$$n(A' \cap B' \cap C') = 54$$

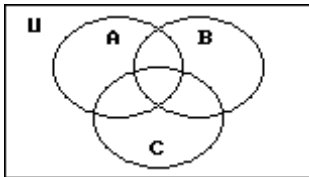Find n(C).

A) 26   B) 76   C) 44   D) 42

Answer: B

249) Given:

$$n(A) = 80$$
$$n(B) = 88$$
$$n(C) = 82$$
$$n(A \cap B) = 16$$
$$n(A \cap C) = 18$$
$$n(B \cap C) = 12$$
$$n(A \cap B \cap C) = 10$$
$$n(A' \cap B' \cap C') = 161$$

Find n(U)

A) 385   B) 375   C) 214   D) 294
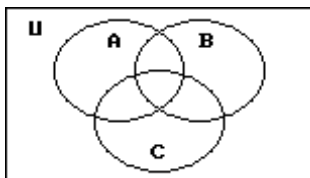
Answer: B

250) Given: $n(A \cup B \cup C) = 69$

$n(A \cap B \cap C) = 10$

$n(A \cap B) = 22$

$n(A \cap C) = 19$

$n(B \cap C) = 17$

$n(A) = 51$

$n(B) = 34$

$n(C) = 32$

Find $n(A' \cap B \cap C)$

250) _____

    A) 6   B) 7   C) 8   D) 9

Answer: B

Find the cardinal number of the indicated set. Use the cardinal number formula.

251) If $n(A) = 7$, $n(B) = 15$ and $n(A \cap B) = 5$, what is $n(A \cup B)$?   251) _____

    A) 16   B) 18   C) 22   D) 17

Answer: D

252) If $n(A) = 8$, $n(B) = 21$ and $n(A \cup B) = 25$, what is $n(A \cap B)$?   252) _____

    A) 4   B) 12   C) 6   D) 2

Answer: A

253) If $n(B) = 60$, $n(A \cap B) = 11$, and $n(A \cup B) = 105$, find $n(A)$.   253) _____

    A) 54   B) 56   C) 45   D) 58

Answer: B

254) If $n(A) = 20$, $n(A \cup B) = 58$, and $n(A \cap B) = 16$, find $n(B)$.   254) _____

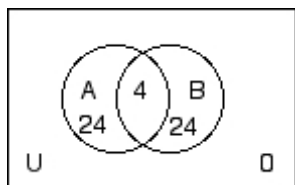   A) 53   B) 38   C) 55   D) 54

Answer: D

Draw an appropriate Venn diagram and use the given information to fill in the number of elements in each region.
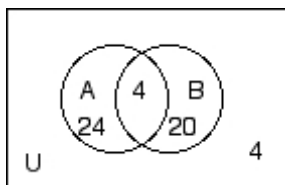
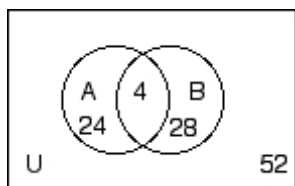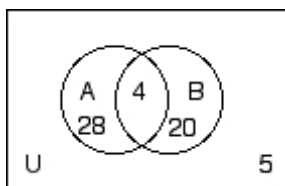255) $n(U) = 52$, $n(A) = 28$, $n(A \cap B) = 4$, $n(B') = 28$ 255) _____

A)

B)

C)

D)

Answer: B

40

(top left, diagram) A 10 B / 4 11 / U 5

(top right, diagram) A 10 B / 4 21 / U 9

(second left) A 10 B / 4 21 / U 5

(second right) A 0 B / 14 21 / U 9

) = 35

A)

A 11 B / 9 21 / U 5

B)

A 11 B / 15 21 / U 5

C)

A 11 B / 9 21 / U 35

D)

A 11 B / 9 32 / U 5
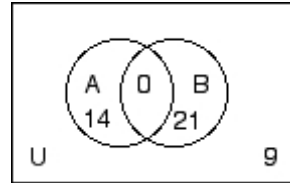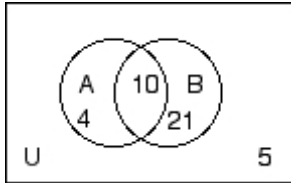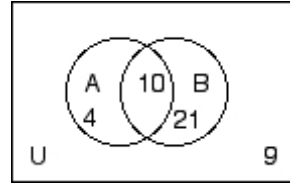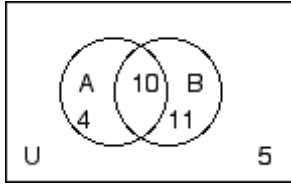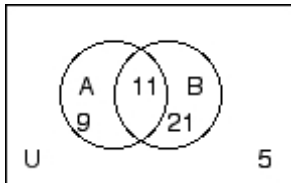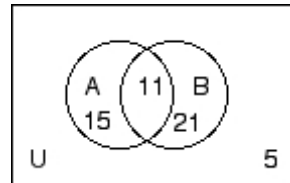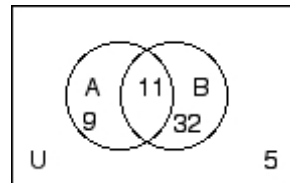
Answer: A

258) n(A) = 30, n(B) = 28, n(C) = 35, n(A ∩ B) = 12, n(A ∩ C) = 15, n(B ∩ C) = 14, n(U) = 67

A)

A 12 B / 11 9 10 / 15 14 / U 14 C 7

B)

A 4 B / 11 8 10 / U
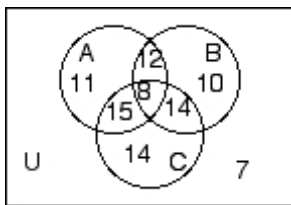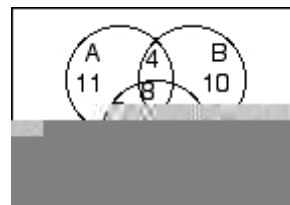
C)

D)

Answer: C

259) n(A) = 48, n(B′) = 60, n(C) = 51, n(A ∩ B) = 20, n(B ∩ C) = 19, n(A ∩ C) = 18,   259) _____
    n(A ∩ B ∩ C) = 12, n(A ∪ B) = 70

A)
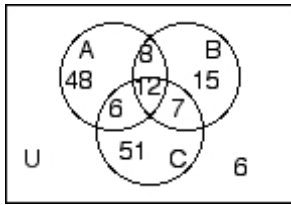
B)
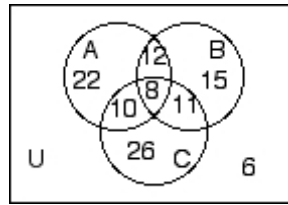
C)
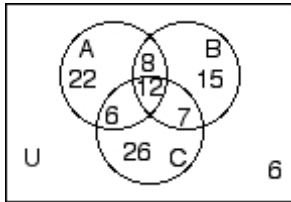
D)
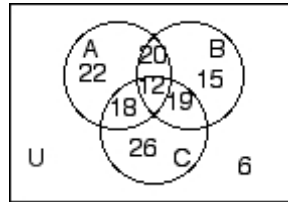
Answer: C

260) n(A) = 35, n(A ∩ B′) = 24, n(A ∩ C) = 15, n(B ∩ C) = 14, n(A′ ∩ B′ ∩ C′) = 10, n(A ∩ B ∩ C) = 6,   260) _____
    n(B ∪ C) = 52, n(B ∩ C′) = 18

A)
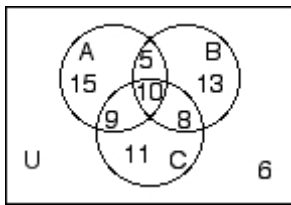
B)
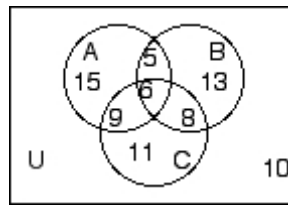
C)
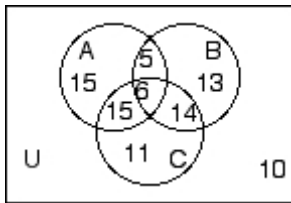
D)
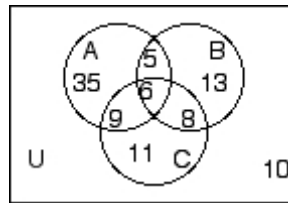
Answer: B

Solve the problem.

261) Mrs. Bollo's second grade class of thirty students conducted a pet ownership survey. Results of the   261) _____
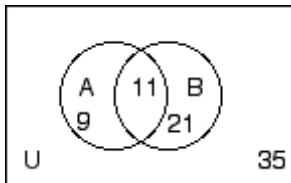   survey indicate that 8 students own a cat, 15 students own a dog, and 5 students own both a cat and
    a dog. How many of the students surveyed own only a cat?
    A) 8   B) 18   C) 15   D) 3

Answer: D

262) Monticello residents were surveyed concerning their preferences for candidates Moore and Allen in   262) _____
    an upcoming election. Of the 800 respondents, 300 support neither Moore nor Allen, 100 support
    both Moore and Allen, and 250 support only Moore. How many residents support Moore or Allen?
    A) 400   B) 300   C) 100   D) 500

Answer: D

263) A local television station sent out questionnaires to determine if viewers would rather see a documentary, an interview show, or reruns of a game show. There were 800 responses with the following results:

240 were interested in an interview show and a documentary, but not reruns.

32 were interested in an interview show and reruns but not a documentary.

112 were interested in reruns but not an interview show.

192 were interested in an interview show but not a documentary.

80 were interested in a documentary and reruns.

48 were interested in an interview show and reruns.

64 were interested in none of the three.

How many are interested in exactly one kind of show?
  A) 394   B) 364   C) 374   D) 384

Answer: D

264) A survey of 280 families showed that
  107 had a dog;
  82 had a cat;
  37 had a dog and a cat;
  105 had neither a cat nor a dog nor a parakeet;
  9 had a cat, a dog, and a parakeet.

How many had a parakeet only?
  A) 33   B) 38   C) 28   D) 23

Answer: D

265) A survey of a group of 112 tourists was taken in St. Louis. The survey showed the following:
  63 of the tourists plan to visit Gateway Arch;
  44 plan to visit the zoo;
  9 plan to visit the Art Museum and the zoo, but not the gateway Arch;
  14 plan to visit the Art Museum and the Gateway Arch, but not the zoo;
  16 plan to visit the Gateway Arch and the zoo, but not the Art Museum;
  7 plan to visit the Art Museum, the zoo, and the Gateway Arch;
  14 plan to visit none of the three places.

How many plan to visit the Art Museum only?
  A) 14   B) 32   C) 98   D) 44

Answer: A

266) In a survey of 280 people, a travel company asked people about places they plan to visit in the next 5 years. The results were as follows:

48 plan to visit Europe
58 plan to visit Latin America
34 plan to visit Asia
14 plan to visit Europe and Latin America
12 plan to visit Latin America and Asia
11 plan to visit Europe and Asia
4 plan to visit all three

How many people plan to visit exactly two of these places?

   A) 25   B) 37   C) 18   D) 29

266) _____

Answer: A

267) A survey of 134 college students was done to find out what elective courses they were taking. Let A = the set of those taking art, B = the set of those taking basketweaving, and C = the set of those taking canoeing. The study revealed the following information.

$n(A) = 45$ $n(A \cap B) = 12$
$n(B) = 55$ $n(A \cap C) = 15$
$n(C) = 40$ $n(B \cap C) = 23$
$n(A \cap B \cap C) = 2$

How many students were not taking any of these electives?

   A) 52   B) 10   C) 44   D) 42

267) _____

Answer: D

Decide whether or not it is possible to set up a one-to-one correspondence between the elements of the sets.

268) {3, 4, 8, 9} and {-3, 4, -8, 9}

   A) Not possible   B) Possible

268) _____

Answer: B

269) {0, 9, 12, 16} and {9, 12, 16}

   A) Possible   B) Not possible

269) _____

Answer: B

270) {Mon, Tue, Wed} and {Oct, Nov, Dec}

   A) Not possible   B) Possible

270) _____

Answer: B

271) ∅ and {69}

   A) Not possible   B) Possible

271) _____

Answer: A

272) {0, 0.5, 0.25, 0.2} and $\left\{\dfrac{1}{2}, \dfrac{1}{4}, \dfrac{1}{5}\right\}$

   A) Not possible   B) Possible

272) _____

Answer: A

273) {a, b, c, d} and {A, B, C, D}   273) _____
    A) Possible   B) Not possible

Answer: A

274) {0} and {856}   274) _____
    A) Possible   B) Not possible

Answer: A

275) {1, 2, 3, 4, ...} and {0, 1, 2, 3, 4}   275) _____
    A) Possible   B) Not possible

Answer: B

Find the cardinal number of the set.

276) {8, 9, 10, 11, ...}   276) _____
    A) $\aleph_0$ B) c   C) 4   D) 11

Answer: A

277) {6, 6, 7, 7, 8, 8, ..., 12, 12}   277) _____
    A) 14   B) $\aleph_0$ C) 7   D) 4

Answer: C

278) $\left\{ \dfrac{1}{4}, \dfrac{1}{16}, \dfrac{1}{64}, \dfrac{1}{256}, ... \right\}$ 278) _____
    A) 4   B) c   C) 16   D) $\aleph_0$

Answer: D

279) {m, i, s, s, i, s, s, i, p, p, i}   279) _____
    A) 8   B) 5   C) 11   D) 4

Answer: D

280) {x | x is a decimal between 63 and 64}   280) _____
    A) 2 $\aleph_0$ B) 2   C) $\aleph_0$ D) c

Answer: D

281) {The set of points on a straight line}   281) _____
    A) $\aleph_0$ B) c   C) 1   D) 0

Answer: B

282) {Monday, Tuesday, ..., Saturday}   282) _____
    A) 7   B) 3   C) 4   D) 6

Answer: D

283) {x| x is an even integer number smaller than 100}   283) _____
    A) 99   B) 49   C) $\aleph_0$ D) c

Answer: C

284) {x| x is a real number between 1.1 and 1.2}   284) _____
    A) c   B) $\aleph_0$ C) 10   D) 0

Answer: A

285) {-4, -8, -12, -16, ...}   285) _____
    A) $\aleph_0$ B) 100   C) 4   D) c

Answer: A

Determine whether the sets are equal, equivalent, both, or neither.

286) {72, 40, 27} and {40, 27, 72}   286) _____
    A) Neither   B) Both   C) Equal   D) Equivalent

Answer: B

287) {L, M, N, O} and {l, m, n, o}   287) _____
    A) Equivalent   B) Both   C) Equal   D) Neither

Answer: A

288) {x | x is a whole number} and {x | x is an integer}   288) _____
    A) Equivalent   B) Both   C) Equal   D) Neither

Answer: A

289) {brake} and {break}   289) _____
    A) Equivalent   B) Both   C) Neither   D) Equal

Answer: A

290) {4, 12} and {41, 2}   290) _____
    A) Neither   B) Equivalent   C) Both   D) Equal

Answer: B

291) {4, 12} and {4, 1, 2}   291) _____
    A) Neither   B) Equivalent   C) Equal   D) Both

Answer: A

292) {first, second, third} and {1, 2, 3}   292) _____
    A) Both   B) Neither   C) Equivalent   D) Equal

Answer: C

293) $\left\{ \dfrac{1}{10}, \dfrac{2}{10}, \dfrac{3}{10} \right\}$ and {0.1, 0.2, 0.3}   293) _____
    A) Neither   B) Equivalent   C) Both   D) Equal

Answer: C

294) {x | x is a real number} and {x | x is a rational number}   294) _____
    A) Equivalent   B) Both   C) Neither   D) Equal

Answer: C

295) {x |x is an even integer } and {x |x is an odd integer }   295) _____
    A) Both   B) Equal   C) Neither   D) Equivalent

Answer: D

Show that the set has cardinal number $\aleph_0$ by establishing a one-to-one correspondence between the set of counting numbers and the given set. Be sure to show the pairing of the general terms in the sets.

296) {4, 8, 12, 16, ...}

296) _____

A) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 4,   8, 12, 16,   ..., 4n, ...}
C) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 4,   8, 12, 16,   ..., 5n, ...}

B) { 0,   1,   2,   3,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 4,   8, 12, 16,   ..., 4n, ...}
D) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 4,   8, 12, 16,   ..., n, ...}

Answer: A

297) {0, 2, 4, 6, 8, ...}

297) _____

A) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 0,   2,   4,   6,   ..., 2n + 2, ...}
C) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 0,   2,   4,   6,   ..., 2n - 2, ...}

B) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 0,   2,   4,   6,   ..., 2n - 1, ...}
D) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 0,   2,   4,   6,   ..., 2n, ...}

Answer: C

298) {3, 7, 11, 15, ...}

298) _____

A) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 3,   7, 11, 15,   ..., 4n - 1, ...}
C) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 3,   7, 11, 15,   ..., 4n + 1, ...}

B) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 3,   7, 11, 15,   ..., 3n - 2, ...}
D) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 3,   7, 11, 15,   ..., 3n + 2, ...}

Answer: A

299) {7, 12, 17, 22, ...}

299) _____

A) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 7, 12, 17, 22,   ..., 4n - 1, ...}
C) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 7, 12, 17, 22,   ..., 5n + 1, ...}

B) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 7, 12, 17, 22,   ..., 5n + 2, ...}
D) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  { 7, 12, 17, 22,   ..., 4n + 2, ...}

Answer: B

300) $\left\{\dfrac{1}{4}, \dfrac{1}{5}, \dfrac{1}{6}, \dfrac{1}{7}, ...\right\}$

300) _____

A) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  $\left\{\dfrac{1}{4}, \dfrac{1}{5}, \dfrac{1}{6}, \dfrac{1}{7}, ..., \dfrac{1}{n - 3}, ...\right\}$
C) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  $\left\{\dfrac{1}{4}, \dfrac{1}{5}, \dfrac{1}{6}, \dfrac{1}{7}, ..., \dfrac{1}{n + 3}, ...\right\}$

B) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  $\left\{\dfrac{1}{4}, \dfrac{1}{5}, \dfrac{1}{6}, \dfrac{1}{7}, ..., \dfrac{1}{n}, ...\right\}$
D) { 1,   2,   3,   4,   ...,   n,   ...}
    ↓   ↓   ↓   ↓   ↓
  $\left\{\dfrac{1}{4}, \dfrac{1}{5}, \dfrac{1}{6}, \dfrac{1}{7}, ..., \dfrac{1}{n + 2}, ...\right\}$

Answer: C

301) $\left\{ \dfrac{1}{3}, \dfrac{3}{5}, \dfrac{5}{7}, \dfrac{7}{9}, ... \right\}$

A) $\{ 1, \quad 2, \quad 3, \quad 4, \quad ..., \qquad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad\qquad \downarrow$
$\left\{ \dfrac{1}{3}, \dfrac{3}{5}, \dfrac{5}{7}, \dfrac{7}{9}, \quad ..., \quad \dfrac{2n-1}{2n+1}, ... \right\}$

B) $\{ 1, \quad 2, \quad 3, \quad 4, \quad ..., \qquad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad\qquad \downarrow$
$\left\{ \dfrac{1}{3}, \dfrac{3}{5}, \dfrac{5}{7}, \dfrac{7}{9}, \quad ..., \quad \dfrac{2n+1}{2n-1}, ... \right\}$

C) $\{ 1, \quad 2, \quad 3, \quad 4, \quad ..., \qquad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad\qquad \downarrow$
$\left\{ \dfrac{1}{3}, \dfrac{3}{5}, \dfrac{5}{7}, \dfrac{7}{9}, \quad ..., \quad \dfrac{n+1}{3n-1}, ... \right\}$

D) $\{ 1, \quad 2, \quad 3, \quad 4, \quad ..., \qquad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad\qquad \downarrow$
$\left\{ \dfrac{1}{3}, \dfrac{3}{5}, \dfrac{5}{7}, \dfrac{7}{9}, \quad ..., \quad \dfrac{3n-1}{n+1}, ... \right\}$

Answer: A

301) ____

302) $\{1, 8, 27, 64, ...\}$

A) $\{ 1, \quad 2, \quad 3, \quad 4, \quad ..., \quad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad \downarrow$
$\{ 1, \quad 8, 27, 64, \quad ..., \quad 2n^3, \quad ...\}$

B) $\{ 1, \quad 2, \quad 3, \quad 4, \quad ..., \quad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad \downarrow$
$\{ 1, \quad 8, 27, 64, \quad ..., \quad n^4, \quad ...\}$

C) $\{ 1, \quad 2, \quad 3, \quad 4, \quad ..., \quad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad \downarrow$
$\{ 1, \quad 8, 27, 64, \quad ..., \quad n^2, \quad ...\}$

D) $\{ 1, \quad 2, \quad 3, \quad 4, \quad ..., \quad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad \downarrow$
$\{ 1, \quad 8, 27, 64, \quad ..., \quad n^3, \quad ...\}$

Answer: D

302) ____

303) $\{5, 25, 125, 625, ...\}$

A) $\{ 1, \quad 2, \quad 3, \quad 4, ..., \quad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad \downarrow$
$\{ 5, \quad 25, \quad 125, \quad 625, ..., \quad 5^n, \quad ...\}$

B) $\{ 1, \quad 2, \quad 3, \quad 4, ..., \quad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad \downarrow$
$\{ 5, \quad 25, \quad 125, \quad 625, ..., \quad 5^{2n}, \quad ...\}$

C) $\{ 1, \quad 2, \quad 3, \quad 4, ..., \quad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad \downarrow$
$\{ 5, \quad 25, \quad 125, \quad 625, ..., \quad n^5, \quad ...\}$

D) $\{ 1, \quad 2, \quad 3, \quad 4, ..., \quad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad \downarrow$
$\{ 5, \quad 25, \quad 125, \quad 625, ..., \quad 5n, \quad ...\}$

Answer: A

303) ____

304) $\left\{ \dfrac{1}{2}, \dfrac{1}{6}, \dfrac{1}{18}, \dfrac{1}{54}, ... \right\}$

A) $\{ 1, \quad 2, \quad 3, \quad 4, \quad ..., \qquad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad\qquad \downarrow$
$\left\{ \dfrac{1}{2}, \dfrac{1}{6}, \dfrac{1}{18}, \dfrac{1}{54}, \quad ..., \quad \dfrac{1}{2(3^n)}, ... \right\}$

B) $\{ 1, \quad 2, \quad 3, \quad 4, \quad ..., \qquad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad\qquad \downarrow$
$\left\{ \dfrac{1}{2}, \dfrac{1}{6}, \dfrac{1}{18}, \dfrac{1}{54}, \quad ..., \quad \dfrac{1}{3(2^n)}, ... \right\}$

C) $\{ 1, \quad 2, \quad 3, \quad 4, \quad ..., \qquad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad\qquad \downarrow$
$\left\{ \dfrac{1}{2}, \dfrac{1}{6}, \dfrac{1}{18}, \dfrac{1}{54}, \quad ..., \quad \dfrac{1}{2(3^{n-1})}, ... \right\}$

D) $\{ 1, \quad 2, \quad 3, \quad 4, \quad ..., \qquad n, \quad ...\}$
$\quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \qquad\qquad \downarrow$
$\left\{ \dfrac{1}{2}, \dfrac{1}{6}, \dfrac{1}{18}, \dfrac{1}{54}, \quad ..., \quad \dfrac{1}{3(2^{n-1})}, ... \right\}$

Answer: C

304) ____

A one-to-one correspondence between the set of counting numbers and the given set has been established. Find an expression for the nth term of the given set that corresponds to the counting number n.

305)

$\{1,\ 3,\ 5,\ 7,\ ...,\ \square\ ...\}$

↕ ↕ ↕ ↕ ↕ ↕

$\{1,\ 2,\ 3,\ 4,\ ...,\ n,\ ...\}$

  A) 2n - 1   B) 2n + 1   C) 2n   D) 2^n

Answer: A

305) _____

306)

$\{100,\ 200,\ 300,\ 400,\ ...,\ \square\ ...\}$

↕ ↕ ↕ ↕ ↕ ↕

$\{1,\ \ \ 2,\ \ \ 3,\ \ \ 4,\ \ ...,\ n,\ ...\}$

  A) n^{100} B) -100n   C) 100n   D) 100^n

Answer: C

306) _____

307)

$\{-1000,\ -2000,\ -3000,\ -4000,\ ...,\ \square\ ...\}$

↕   ↕   ↕   ↕   ↕   ↕

$\{1,\ \ \ \ \ 2,\ \ \ \ 3,\ \ \ \ 4,\ \ \ ...,\ n,\ ...\}$

  A) 1000^n B) n^{1000} C) -1000n   D) 1000n

Answer: C

307) _____

308)

$\{3,\ 9,\ 27,\ 81,\ ...,\ \square\ ...\}$

↕ ↕ ↕ ↕ ↕ ↕

$\{1,\ 2,\ 3,\ \ 4,\ \ ...,\ n,\ ...\}$

  A) n^3 B) 3^n C) 3 + n   D) n^2

Answer: B

308) _____

309)

$\{200,\ 400,\ 600,\ 800,\ ...,\ \square\ ...\}$

↕ ↕ ↕ ↕ ↕ ↕

$\{1,\ \ \ 2,\ \ \ 3,\ \ \ 4,\ \ ...,\ n,\ ...\}$

  A) -200n   B) n - 200   C) n + 200   D) 200n

Answer: D

309) _____

310)

$\{-11,\ -22,\ -33,\ -44,\ ...,\ \square\ ...\}$

↕ ↕ ↕ ↕ ↕ ↕

$\{1,\ \ \ 2,\ \ \ 3,\ \ \ 4,\ \ ...,\ n,\ ...\}$

  A) -11n   B) n + 11   C) 11n   D) n - 11

Answer: A

310) _____

311)

{5, 12, 19, 26, ..., □ ...}

↕ ↕ ↕ ↕ ↕   ↕

{1, 2, 3, 4, ..., n, ...}

   A) -7n - 2   B) 7n + 2   C) 7n - 2   D) -7n + 2

Answer: C

312)

{-3, -8, -13, -18, ..., □ ...}

↕ ↕ ↕ ↕ ↕   ↕

{1, 2, 3, 4, ..., n, ...}

   A) 5n + 2   B) -5n + 2   C) -5n - 2   D) 5n - 2

Answer: B

313)

{7, 49, 343, 2401, ..., □ ...}

↕ ↕ ↕ ↕ ↕   ↕

{1, 2, 3, 4, ..., n, ...}

   A) n^2 B) 7^n C) 7 + n   D) n^7

Answer: B

314)

{2, 5, 8, 11, ..., □ ...}

↕ ↕ ↕ ↕ ↕   ↕

{1, 2, 3, 4, ..., n, ...}

   A) 3n   B) 3n - 2   C) 3n + 1   D) 3n - 1

Answer: D

Show that the set is infinite by placing it in a one-to-one correspondence with a proper subset of itself. Be sure to show the pairing of the general terms in the sets.

315) {5, 6, 7, 8, ...}

   A) { 5, 6, 7, 8, ..., n + 4, ...}   B) { 5, 6, 7, 8, ..., n + 4, ...}
      ↓ ↓ ↓ ↓   ↓   ↓ ↓ ↓ ↓   ↓
    { 4, 5, 6, 7, ..., n + 3, ...}   { 6, 7, 8, 9, ..., n + 5, ...}
   C) { 5, 6, 7, 8, ..., n + 5, ...}   D) { 5, 6, 7, 8, ..., n + 4, ...}
      ↓ ↓ ↓ ↓   ↓   ↓ ↓ ↓ ↓   ↓
    { 4, 5, 6, 7, ..., n + 3, ...}   { 6, 7, 8, 9, ..., n + 6, ...}

Answer: B

316) {3, 5, 7, 9, ...}

   A) { 3, 5, 7, 9, ..., 2n + 5, ...}   B) { 3, 5, 7, 9, ..., 2n + 2, ...}
      ↓ ↓ ↓ ↓   ↓   ↓ ↓ ↓ ↓   ↓
    { 5, 7, 9, 11, ..., 2n + 3, ...}   { 5, 7, 9, 11, ..., 2n + 4, ...}
   C) { 3, 5, 7, 9, ..., 2n + 1, ...}   D) { 3, 5, 7, 9, ..., 2n + 1, ...}
      ↓ ↓ ↓ ↓   ↓   ↓ ↓ ↓ ↓   ↓
    { 4, 6, 8, 10, ..., 2n + 3, ...}   { 5, 7, 9, 11, ..., 2n + 3, ...}

Answer: D

317) {1, 8, 15, 22, ...}   317) _____

A) { 1,   8, 15, 22, ...,   7n - 8, ...}   B) { 1,   8, 15, 22, ...,   7n - 6, ...}
     ↓   ↓   ↓   ↓   ↓   ↓   ↓   ↓   ↓   ↓
   { 8, 15, 22, 29, ...,   7n - 1, ...}   { 8, 15, 22, 29, ...,   7n + 0, ...}

C) { 1,   8, 15, 22, ...,   7n - 6, ...}   D) { 1,   8, 15, 22, ...,   7n + 6, ...}
     ↓   ↓   ↓   ↓   ↓   ↓   ↓   ↓   ↓   ↓
   { 8, 15, 22, 29, ...,   7n + 1, ...}   { 8, 15, 22, 29, ...,   7n + 1, ...}

Answer: C

318) $\left\{\dfrac{4}{9}, \dfrac{5}{9}, \dfrac{6}{9}, \dfrac{7}{9}, ...\right\}$ 318) _____

A) $\left\{\dfrac{4}{9}, \dfrac{5}{9}, \dfrac{6}{9}, \dfrac{7}{9}, ..., \dfrac{n+3}{9}, ...\right\}$

    ↓   ↓   ↓   ↓   ↓

$\left\{\dfrac{5}{9}, \dfrac{6}{9}, \dfrac{7}{9}, \dfrac{8}{9}, ..., \dfrac{n+4}{9}, ...\right\}$

B) $\left\{\dfrac{4}{9}, \dfrac{5}{9}, \dfrac{6}{9}, \dfrac{7}{9}, ..., \dfrac{n}{9}, ...\right\}$

    ↓   ↓   ↓   ↓   ↓

$\left\{\dfrac{5}{9}, \dfrac{6}{9}, \dfrac{7}{9}, \dfrac{8}{9}, ..., \dfrac{n+1}{9}, ...\right\}$

C) $\left\{\dfrac{4}{9}, \dfrac{5}{9}, \dfrac{6}{9}, \dfrac{7}{9}, ..., \dfrac{n+4}{9}, ...\right\}$

    ↓   ↓   ↓   ↓   ↓

$\left\{\dfrac{5}{9}, \dfrac{6}{9}, \dfrac{7}{9}, \dfrac{8}{9}, ..., \dfrac{n+5}{9}, ...\right\}$

D) $\left\{\dfrac{4}{9}, \dfrac{5}{9}, \dfrac{6}{9}, \dfrac{7}{9}, ..., \dfrac{n-4}{9}, ...\right\}$

    ↓   ↓   ↓   ↓   ↓

$\left\{\dfrac{5}{9}, \dfrac{6}{9}, \dfrac{7}{9}, \dfrac{8}{9}, ..., \dfrac{n-5}{9}, ...\right\}$

Answer: A