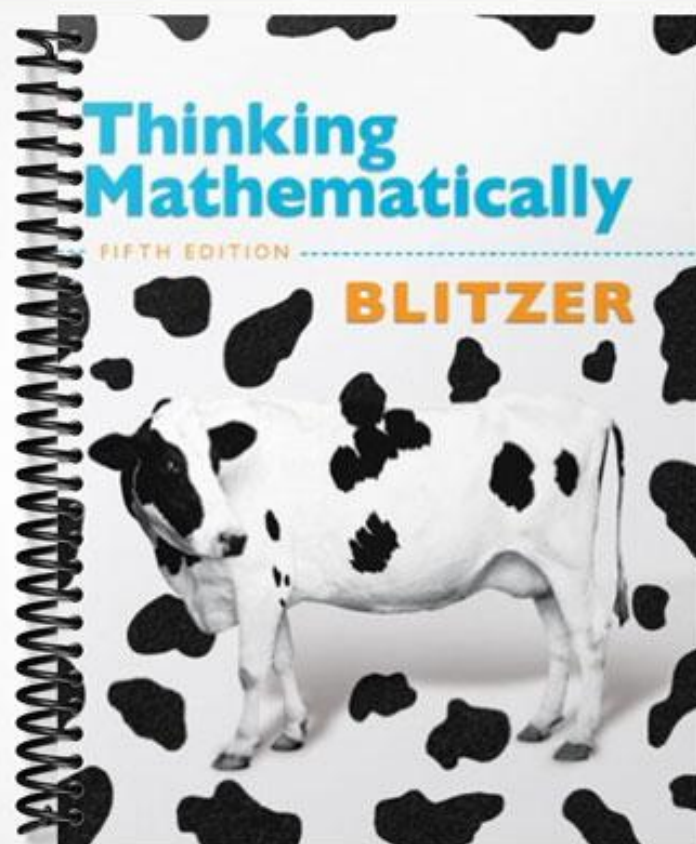


TEST BANK



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

Write a word description of the set.

- 1) {January, February, March, April, May, June, July, August, September, October, November, December} 1) _____

A) seasons of the year

B) months of the year

C) days of the year

D) days of the week

Answer: B

- 2) { 10, 12, 14, 16, ..., 100} 2) _____

A) all even numbers

B) numbers from 10 to 100

C) odd numbers from 10 to 100

D) even numbers from 10 to 100

Answer: D

List the elements in the set.

- 3) The set of the days of the week 3) _____

A) {Saturday, Sunday}

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

C) {Tuesday, Thursday}

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

Answer: D

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Express the set using the roster method.

- 4) { x | x is a city in the country where you live} 4) _____

Answer: Answers may vary. Possible answers are:

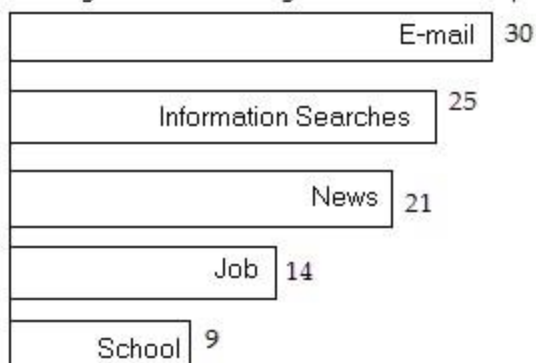
{Chicago}, {Los Angeles}, {New York City}, and {Springfield}

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

The bar graph shows the percentage of adults that use the Internet for specific tasks. Use the graph to represent the given set using the roster method.

- 5) 5) _____

Percentage of Adults Using the Internet for a Specific Task



the set of tasks in which usage exceeds 19%

A) {e-mail, information searches, news, job}

B) {e-mail, information searches}

C) {e-mail, information searches, news}

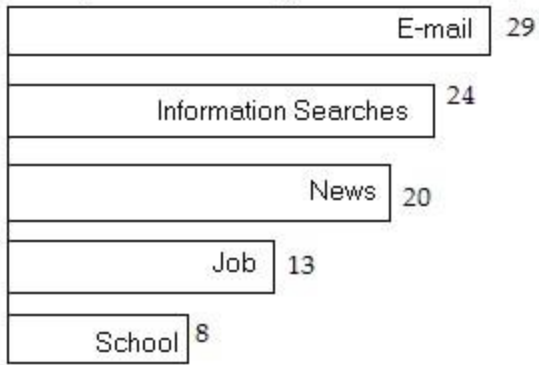
D) {job, school}

Answer: C

6)

6) _____

Percentage of Adults Using the Internet for a Specific Task



$\{x \mid x \text{ is a task in which usage lies between } 10\% \text{ and } 28\%\}$

- A) {news, job}
- B) {news}
- C) {email, information searches, news, job, school}
- D) {information searches, news, job}

Answer: D

The line graph shows the percentage of obese young adults in a certain city over time. Based on the information in the graph, represent the set using the roster method.

7)

7) _____



$\{x \mid x \text{ is a year in which } 20\% \text{ of young Americans in city X are obese}\}$

- A) {1980}
- B) {1990}
- C) {1970}
- D) {2000}

Answer: B

Determine if the set is the empty set.

8) $\{0, \emptyset\}$

8) _____

A) Yes, it is the empty set.

B) No, it is not the empty set.

Answer: B

9) $\{x \mid x \text{ is a living U.S. president born after 1700}\}$

9) _____

A) Yes, it is the empty set.

B) No, it is not the empty set.

Answer: B

- 10) $\{x \mid x \text{ is the number of living U.S presidents born before 1700}\}$ 10) _____
 A) Yes, it is the empty set. B) No, it is not the empty set.
 Answer: B
- 11) $\{x \mid x \text{ is a day of the week whose name begins with thte letter Y}\}$ 11) _____
 A) Yes, it is the empty set. B) No, it is not the empty set.
 Answer: A
- 12) $\{x \mid x < 12 \text{ and } x > 16\}$ 12) _____
 A) Yes, it is the empty set. B) No, it is not the empty set.
 Answer: A
- 13) $\{x \mid x \in \mathbb{N} \text{ and } 2 < x < 6\}$ 13) _____
 A) Yes, it is the empty set. B) No, it is not the empty set.
 Answer: B
- 14) $\{x \mid x \text{ is a number less than 8 or greater than 12}\}$ 14) _____
 A) Yes, it is the empty set. B) No, it is not the empty set.
 Answer: B

Determine whether the statement is true or false.

- 15) $1 \in \{1, 3, 5, 7, 9\}$ 15) _____
 A) True B) False
 Answer: A
- 16) $4 \in \{1, 2, 3, \dots, 15\}$ 16) _____
 A) True B) False
 Answer: A
- 17) $19 \in \{2, 4, 6, \dots, 20\}$ 17) _____
 A) True B) False
 Answer: B
- 18) $15 \notin \{1, 2, 3, \dots, 10\}$ 18) _____
 A) True B) False
 Answer: A
- 19) $21 \notin \{1, 2, 3, \dots, 40\}$ 19) _____
 A) True B) False
 Answer: B

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

- 20) Saskatchewan _____ the set of states in the United States 20) _____
 A) $\in$ B) $\notin$
 Answer: B
- 21) 72,544 _____ the set of even natural numbers 21) _____
 A) $\notin$ B) $\in$
 Answer: B
- 22) 0 _____ $\emptyset$ 22) _____
 A) $\notin$ B) $\in$

Answer: A

Express the set using the roster method.

23) the set of natural numbers less than or equal to 11

23) _____

A) $\{0, 1, 2, 3, \dots, 11\}$

B) $\{0, 1, 2, 3, \dots, 10\}$

C) $\{1, 2, 3, \dots, 10\}$

D) $\{1, 2, 3, \dots, 11\}$

Answer: D

24) the set of odd natural numbers less than 19

24) _____

A) $\{1, 3, 5, \dots, 19\}$

B) $\{2, 4, 6, \dots, 18\}$

C) $\{1, 3, 5, \dots, 17\}$

D) $\{0, 1, 3, 5, \dots, 17\}$

Answer: C

25) $\{x \mid x \in \mathbb{N} \text{ and } x \text{ is greater than } 1\}$

25) _____

A) $\{2, 3, 4\}$

B) $\{2, 3, 4, \dots\}$

C) $\{2, 4, 6, \dots\}$

D) $\{1, 2, 3, \dots\}$

Answer: B

26) $\{x \mid x \in \mathbb{N} \text{ and } x \text{ lies between } 2 \text{ and } 6\}$

26) _____

A) $\{2, 3, 4, 5, 6\}$

B) $\{3, 4, 5, 6\}$

C) $\{2, 3, 4, 5\}$

D) $\{3, 4, 5\}$

Answer: D

Express the set using set-builder notation. Use inequality notation to express the condition x must meet in order to be a member of the set.

27) $A = \{18, 19, 20, 21, 22, \dots\}$

27) _____

A) $\{x \mid x \in \mathbb{N} \text{ and } x > 18\}$

B) $\{x \mid x \in \mathbb{N} \text{ and } x \geq 22\}$

C) $\{x \mid x \in \mathbb{N} \text{ and } x \geq 18\}$

D) $\{x \mid x \in \mathbb{N} \text{ and } x \leq 18\}$

Answer: C

28) $A = \{200, 201, 202, \dots, 2000\}$

28) _____

A) $\{x \mid x \in \mathbb{N} \text{ and } x \geq 200\}$

B) $\{x \mid x \in \mathbb{N} \text{ and } 200 \leq x \leq 2000\}$

C) $\{x \mid x \in \mathbb{N} \text{ and } x \leq 2000\}$

D) $\{x \mid 200 < x < 2000\}$

Answer: B

Find the cardinal number for the set.

29) $\{27, 29, 31, 33, 35\}$

29) _____

A) 4

B) 27

C) 6

D) 5

Answer: D

30) $\{8, 10, 12, \dots, 66\}$

30) _____

A) 15

B) 20

C) 60

D) 30

Answer: D

31) $\{x \mid x \text{ is a day of the week that begins with the letter N}\}$

31) _____

A) 0

B) 2

C) 3

D) 1

Answer: A

32) Determine the cardinal number of the set $\{x \mid x \text{ is a letter of the alphabet}\}$

32) _____

A) 30

B) 25

C) 26

D) 23

Answer: C

Are the sets equivalent?

33) A is the set of residents age 70 or older living in the United States
 B is the set of residents age 70 or older registered to vote in the United States
 A) Yes B) No
 Answer: B

34) $A = \{6, 7, 8, 9, 10\}$
 $B = \{5, 6, 7, 8, 9\}$
 A) Yes B) No
 Answer: A

35) $A = \{23, 25, 27, 29, 31\}$
 $B = \{24, 26, 28, 30, 32\}$
 A) Yes B) No
 Answer: A

36) $A = \{13, 14, 14, 15, 15, 15, 16, 16, 16, 16\}$
 $B = \{16, 15, 14, 13\}$
 A) Yes B) No
 Answer: B

37) $A = \{\text{Larry, Moe, Curly, Shemp}\}$
 $B = \{\text{Posh, Sporty, Baby, Scary}\}$
 A) Yes B) No
 Answer: A

Determine whether the set is finite or infinite.

38) $\{x \mid x \in \mathbb{N} \text{ and } x \geq 1000\}$
 A) Finite B) Infinite
 Answer: B

39) $\{x \mid x \in \mathbb{N} \text{ and } x \leq 100\}$
 A) Finite B) Infinite
 Answer: A

40) The set of natural numbers less than 100
 A) Finite B) Infinite
 Answer: A

41) The set of natural numbers less than 1
 A) Finite B) Infinite
 Answer: A

Are the sets equal?

42) $\{e, f, g, h\} = \{f, h, g, e\}$
 A) Yes B) No
 Answer: A

43) $\{50, 52, 54, 56, 58\} = \{52, 54, 56, 58\}$
 A) Yes B) No
 Answer: B

44) $\{7, 7, 10, 10, 14\} = \{7, 10, 14\}$
 Answer: A

A) Yes
Answer: A

B) No

- 45) A is the set of residents age 26 or older living in the United States
B is the set of residents age 26 or older registered to vote in the United States
A) Yes
Answer: B

45) _____

- 46) $A = \{14, 15, 16, 17, 18\}$
 $B = \{13, 14, 15, 16, 17\}$
A) Yes
Answer: B

B) No

46) _____

- 47) $A = \{17, 19, 21, 23, 25\}$
 $B = \{18, 20, 22, 24, 26\}$
A) Yes
Answer: B

B) No

47) _____

- 48) $A = \{18, 19, 19, 20, 20, 20, 21, 21, 21, 21\}$
 $B = \{21, 20, 19, 18\}$
A) Yes
Answer: A

B) No

48) _____

Write $\subseteq$ or $\not\subseteq$ in the blank so that the resulting statement is true.

- 49) $\{2, 4, 6\}$ _____ $\{1, 2, 3, 4, 6\}$
A) $\subseteq$
Answer: A

B) $\not\subseteq$

49) _____

- 50) $\{4, 34, 39\}$ _____ $\{15, 34, 39, 49\}$
A) $\subseteq$
Answer: B

B) $\not\subseteq$

50) _____

- 51) $\{\text{red, blue, green}\}$ _____ $\{\text{blue, green, yellow, black}\}$
A) $\subseteq$
Answer: B

B) $\not\subseteq$

51) _____

- 52) $\{x \mid x \text{ is a tree}\}$ _____ $\{x \mid x \text{ is a maple tree}\}$
A) $\subseteq$
Answer: B

B) $\not\subseteq$

52) _____

- 53) $\{c, a, n, d, i, d, a, t, e\}$ _____ $\{a, c, d, e, i, t, a, n, d\}$
A) $\subseteq$
Answer: A

B) $\not\subseteq$

53) _____

- 54) $\left\{\frac{9}{13}, \frac{5}{7}\right\}$ _____ $\left\{\frac{13}{9}, \frac{7}{5}\right\}$
A) $\subseteq$
Answer: B

B) $\not\subseteq$

54) _____

Determine whether the statement is true or false.

- 55) $\text{Bob} \subseteq \{\text{Bob, Carol, Ted, Alice}\}$
A) True

B) False

55) _____

Answer: B

56) $\{ \text{Ted} \} \subseteq \{ \text{Bob}, \text{Carol}, \text{Ted}, \text{Alice} \}$

A) True

B) False

56) _____

Answer: A

57) $\emptyset \subseteq \{ \text{France}, \text{Germany}, \text{Switzerland} \}$

A) True

B) False

57) _____

Answer: A

Use $\subseteq$, $\not\subseteq$, $\subset$, or both $\subset$ and $\subseteq$ to make a true statement.

58) $\{a, b\}$ _____ $\{z, a, y, b, x, c\}$

A) $\not\subseteq$

B) $\subset$ and $\subseteq$

C) $\subseteq$

D) $\subset$

58) _____

Answer: B

59) $\{11, 12, 13\}$ _____ $\{11, 12, 13\}$

A) $\subset$

B) $\subseteq$

C) $\subset$ and $\not\subseteq$

D) $\not\subseteq$

59) _____

Answer: B

60) $\{x \mid x \text{ is a male who is registered with Selective Service}\}$ _____ $\{x \mid x \text{ is a male who is in the Army}\}$

A) $\not\subseteq$

B) $\subseteq$ and $\subset$

C) $\subset$

D) $\subseteq$

60) _____

Answer: A

List all the subsets of the given set.

61) {Siamese, domestic shorthair}

A) {Siamese}, {domestic shorthair}, { }

B) {Siamese, domestic shorthair}, {Siamese}, {domestic shorthair},

C) {Siamese, domestic shorthair}, {domestic shorthair}, { }

D) {Siamese, domestic shorthair}, {Siamese}, {domestic shorthair}, { }

61) _____

Answer: D

62) {8}

A) { }

B) {0}, {8}, { }

C) {8}

D) {8}, { }

62) _____

Answer: D

63) $\emptyset$

A) $\emptyset$

B) { }, {0}

C) no subsets

D) $\{\emptyset\}$

63) _____

Answer: A

Calculate the number of subsets and the number of proper subsets for the set.

64) $\left\{ \frac{1}{6}, \frac{1}{7}, \frac{1}{8}, \frac{1}{9} \right\}$

A) 15; 16

B) 16; 15

C) 14; 15

D) 15; 14

64) _____

Answer: B

65) {1, 3, 5, 7, 9, 11}

A) 62; 63

B) 63; 64

C) 64; 63

D) 63; 62

65) _____

Answer: C

66) the set of natural numbers less than 10

A) 511; 510

B) 511; 512

C) 512; 511

D) 510; 511

66) _____

Answer: C

67) the set of words describing the colors on a stoplight

A) 7; 8

B) 15; 16

C) 16; 15

D) 8; 7

67) _____

Answer: D

68) $\{x \mid x \text{ is a day of the week}\}$

A) 128; 127

B) 127; 126

C) 64; 65

D) 128; 129

68) _____

Answer: A

Provide an appropriate response.

69) If set A is equivalent to the set of natural numbers, then $n(A) < \aleph_0$.

A) True

B) False

69) _____

Answer: B

70) If set A is equivalent to the set of odd natural numbers, then $n(A) = \aleph_0$.

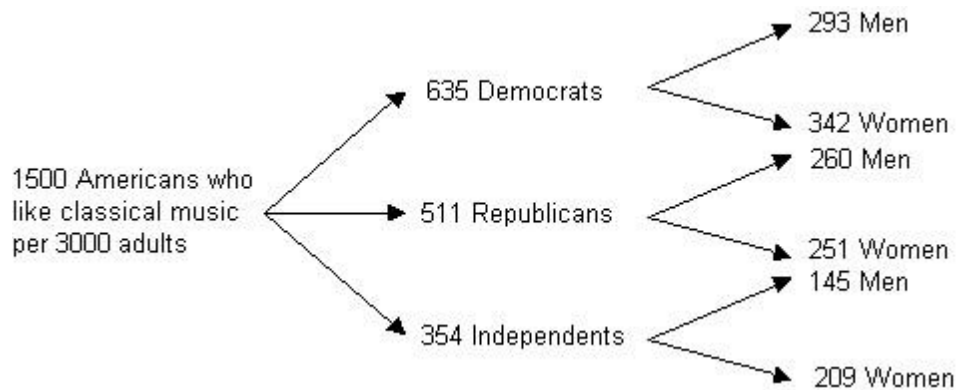
A) True

B) False

70) _____

Answer: A

Consider below the branching tree diagram based on the number per 3000 American adults.



Let T = the set of Americans who like classical music
 R = the set of Republicans who like classical music
 D = the set of Democrats who like classical music
 I = the set of Independents who like classical music

Determine whether the statement is true or false.

71) $I \in T$

A) True

B) False

71) _____

Answer: B

72) $D \subset T$

A) True

B) False

72) _____

Answer: A

73) Let M = the set of Democratic men who like classical music

W = the set of Democratic women who like classical music

$M \subset T$

A) True

B) False

73) _____

Answer: A

- 74) Let M = the set of Independent men who like classical music 74) _____
 W = the set of Independent women who like classical music
 If $x \in I$, then $x \in W$.
 A) True B) False
 Answer: B
- 75) Let M = the set of Republican men who like classical music 75) _____
 W = the set of Republican women who like classical music
 If $x \in M$, then $x \in R$.
 A) True B) False
 Answer: A
- 76) If $x \in D$, then $x \notin R$. 76) _____
 A) True B) False
 Answer: A
- 77) Let M = the set of Independent men who like classical music 77) _____
 W = the set of Independent women who like classical music
 The set of elements in M and W combined is equivalent to set I .
 A) True B) False
 Answer: A

Use the formula for the number of subsets of a set with n elements to solve the problem.

- 78) Pasta comes with tomato sauce and can be ordered with some, all, or none of these ingredients in the sauce: {onions, garlic, carrots, broccoli, shrimp, mushrooms, zucchini, green pepper}. How many different variations are available for ordering pasta with tomato sauce? 78) _____
 A) 256 B) 127 C) 128 D) 255
 Answer: A
- 79) A village has 4 fire engines. If a radio dispatcher receives a call, depending on the nature of the situation, no engines, one engine, two engines, three engines, or all four engines can be sent to a fire. How many options does the dispatcher have for sending the fire engines to the scene of the caller? 79) _____
 A) 16 B) 7 C) 8 D) 15
 Answer: A

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

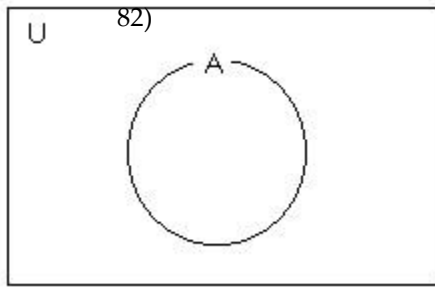
Describe a universal set U that includes all elements in the given sets. Answers may vary.

- 80) $A = \{\text{Copeland, Gershwin, Bernstein}\}$ 80) _____
 $B = \{\text{Strauss, Mendelssohn}\}$
 Answer: Answers may vary. One possible answer is: U = the set of all famous composers.
- 81) $A = \{\text{fruit juice, coffee}\}$ 81) _____
 $B = \{\text{tea, spring water}\}$
 Answer: Answers may vary. One possible answer is: U = the set of all non-carbonated beverages.

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

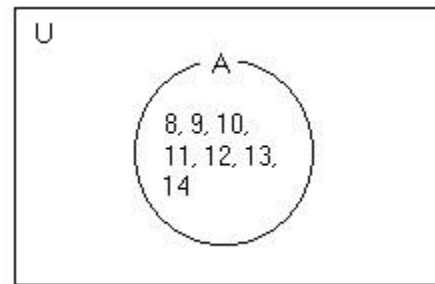
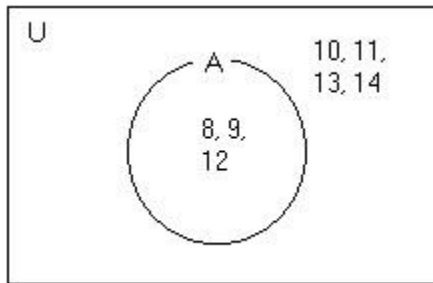
Place the various elements in the proper regions of the Venn diagram.

- 82) Let $U = \{8, 9, 10, 11, 12, 13, 14\}$ and $A = \{8, 9, 12\}$. Find A' and place the elements in the proper region.



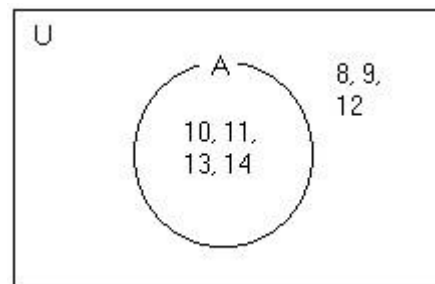
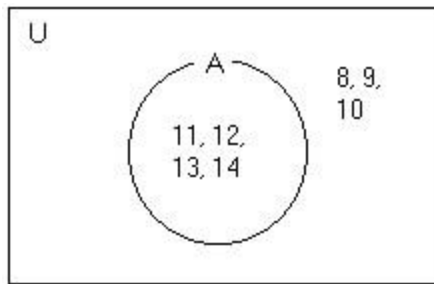
A) $A' = \{10, 11, 13, 14\}$

B) $A' = \{8, 9, 10, 11, 12, 13, 14\}$



C) $A' = \{11, 12, 13, 14\}$

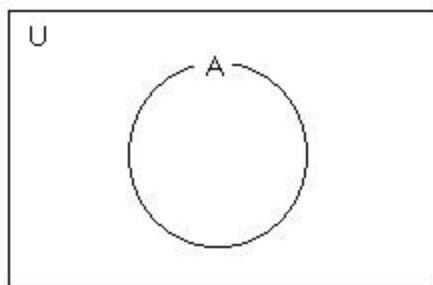
D) $A' = \{8, 9, 12\}$



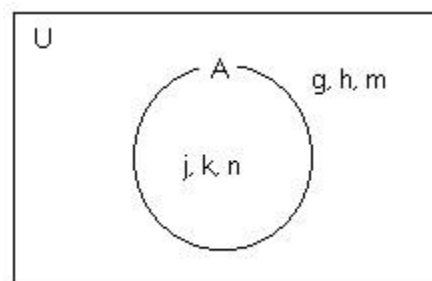
Answer: A

83) Let $U = \{g, h, j, k, m, n\}$ and $A = \{g, h, n\}$. Find A' . Then use a Venn diagram to illustrate the relationship among the sets U , A , and A' .

83) _____

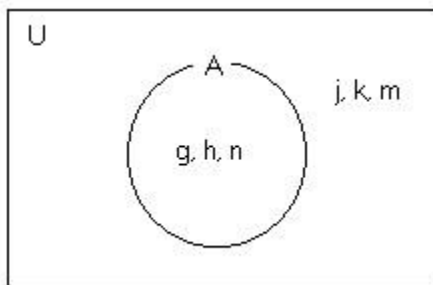


A) $A' = \{g, h, m\}$



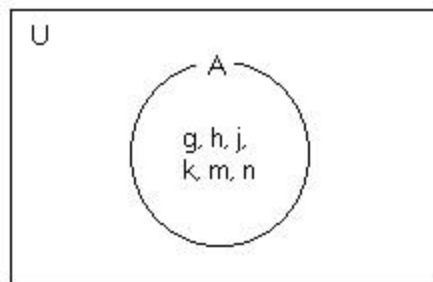
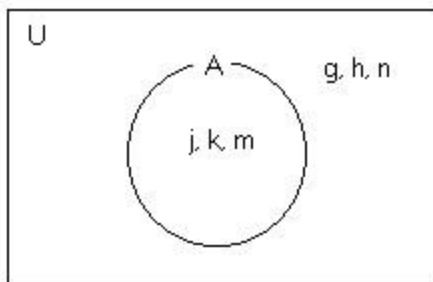
B)

$$A' = \{j, k, m\}$$



C) $A' = \{g, h, n\}$

D) $A' = \emptyset$

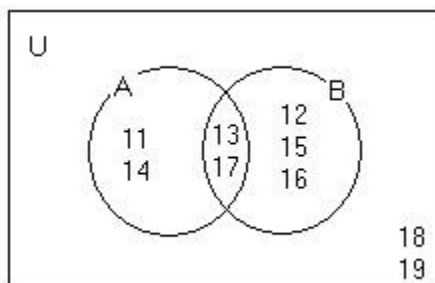


Answer: B

Use the Venn diagram to list the elements of the set in roster form.

84) List the elements of A.

84) _____



A) $\{12, 15, 16\}$

B) $\{11, 12, 13\}$

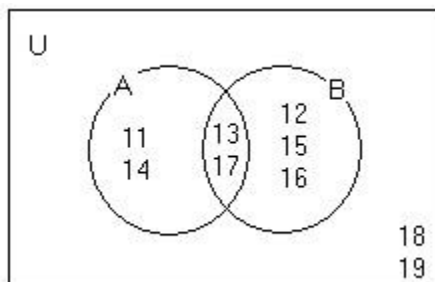
C) $\{11, 13, 14, 17\}$

D) $\{13, 17\}$

Answer: C

85) List the elements of B.

85) _____



A) $\{11, 14\}$

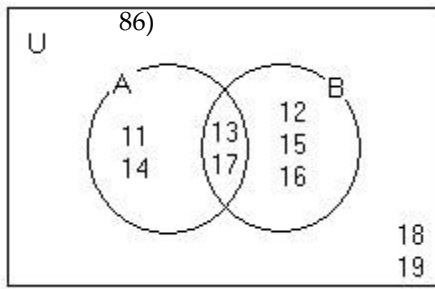
B) $\{13, 17\}$

C) $\{12, 13, 15, 16, 17\}$

D) $\{14, 16, 17\}$

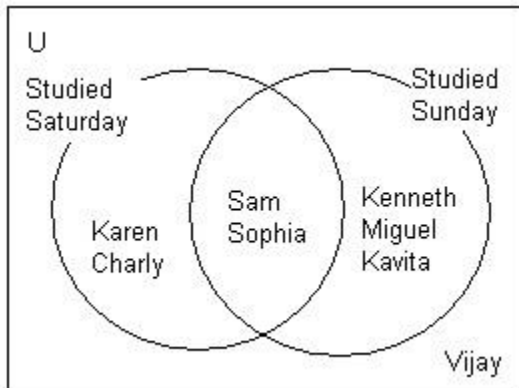
Answer: C

86) List the elements of U.



- A) {13, 17} B) {12, 15, 16}
 C) {11, 12, 13, 14, 15, 16, 17, 18, 19} D) {11, 14}
 Answer: C

Use the Venn diagram to list the elements of the set in roster form.



- 87) The set of students who studied Saturday 87) _____
 A) { Karen, Charly, Vijay} B) { Sam, Sophia}
 C) { Karen, Charly, Sam, Sophia} D) { Karen, Charly}
 Answer: C
- 88) The set of students who studied Saturday and Sunday 88) _____
 A) { Karen, Charly, Kenneth, Miguel, Kavita}
 B) { Karen, Charly, Kenneth, Miguel, Kavita, Sam, Sophia}
 C) { Sam, Sophia}
 D) { Sam, Sophia, Vijay}
 Answer: C
- 89) The set of students who studied Saturday and not Sunday 89) _____
 A) { Sam, Sophia}
 B) { Karen, Charly}
 C) { Karen, Charly, Vijay} D) { Kenneth, Miguel, Kavita}
 Answer: B
- 90) The set of students who studied neither Saturday nor Sunday 90) _____
 A) {} B) {U, Vijay}
 C) {Vijay} D) {Vijay, Karen, Charly}
 Answer: C

Use the following definition to place the indicated natural number in the correct region of the Venn diagram.

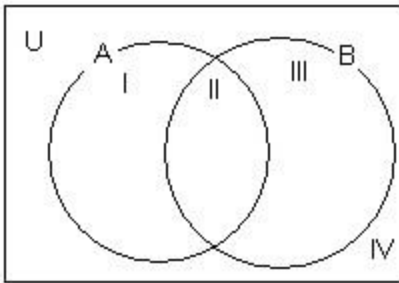
A palindromic number is a natural number whose value does not change if its digits are reversed.
 U = the set of natural numbers

A = the set of palindromic numbers

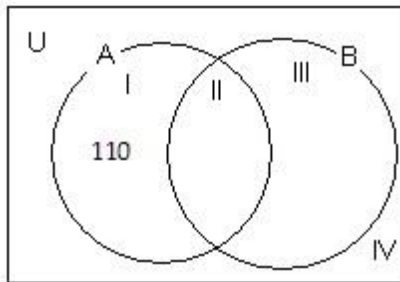
B = the set of odd numbers

91) 110

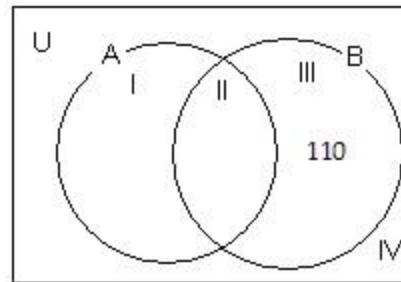
91) _____



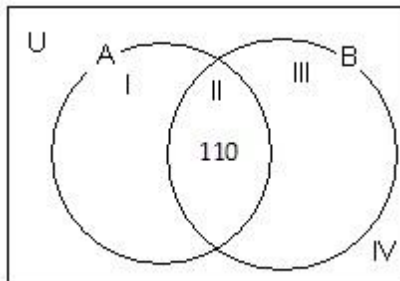
A)



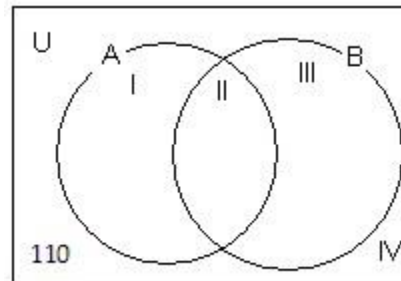
B)



C)



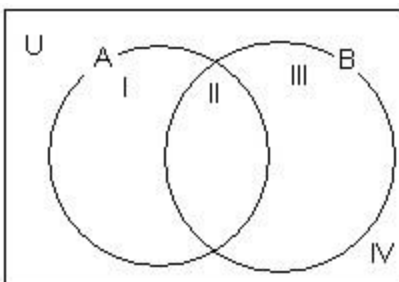
D)



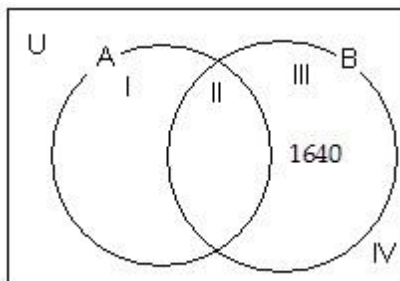
Answer: D

92) 1640

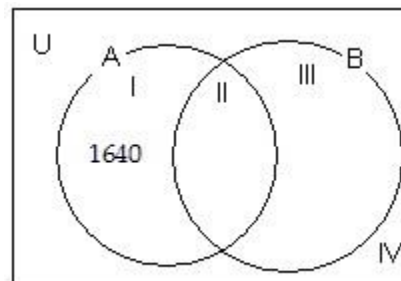
92) _____



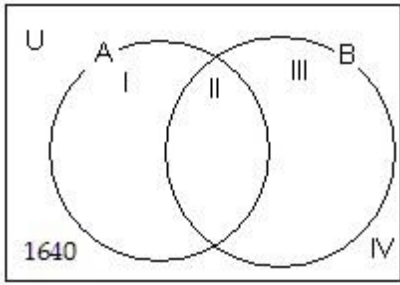
A)



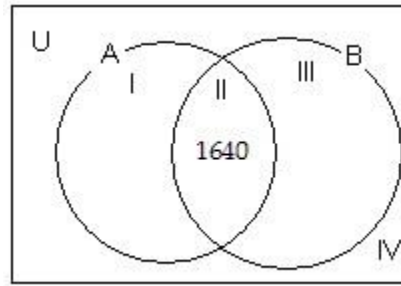
B)



C)

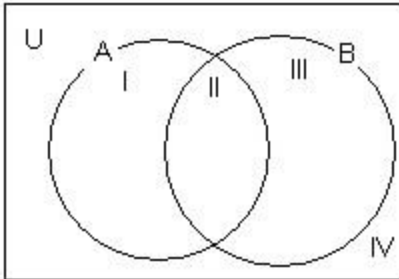


D)



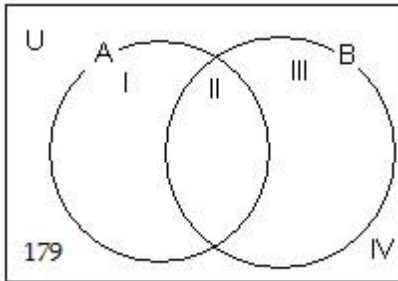
Answer: C

93) 179

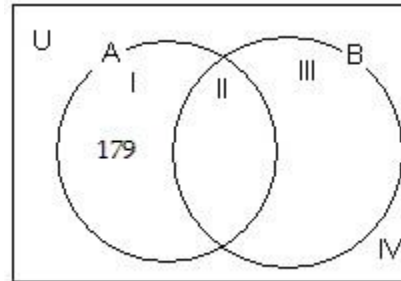


93) _____

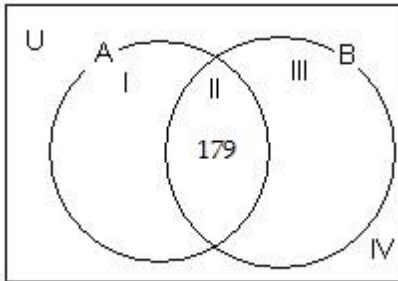
A)



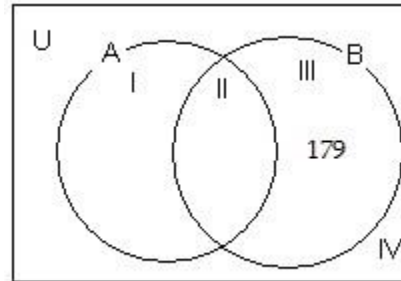
B)



C)

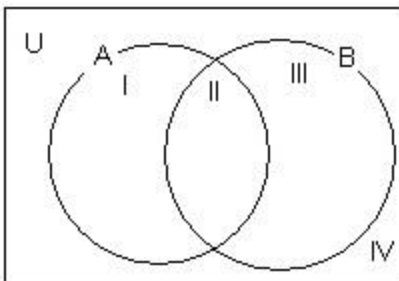


D)



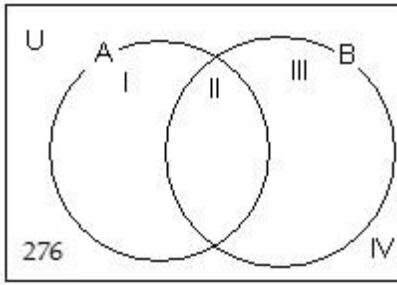
Answer: D

94) 276

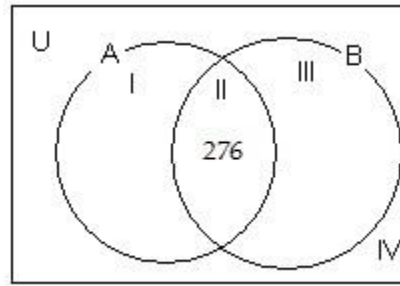


94) _____

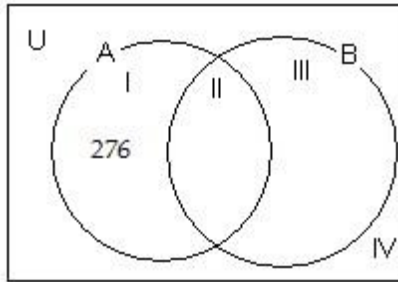
A)



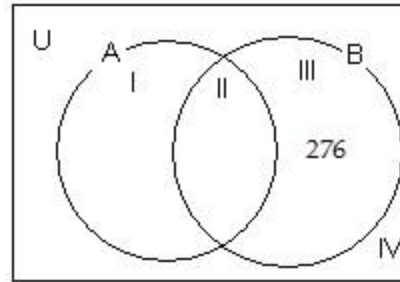
B)



C)



D)



Answer: A

Let $U = \{1, 2, 4, 5, a, b, c, d, e\}$. Use the roster method to write the complement of the set.

95) $A = \{2, 4, b, d\}$

A) $\{1, 3, 5, a, c, e\}$

C) $\{1, 5, a, c, e\}$

B) $\{1, 5, a, e\}$

D) $\{1, 2, 4, 5, a, b, c, d, e\}$

95) _____

Answer: C

Let $U = \{21, 22, 23, \dots, 40\}$, $A = \{21, 22, 23, 24, 25\}$, $B = \{26, 27, 28, 29\}$, $C = \{21, 23, 25, 27, \dots, 39\}$ and $D = \{22, 24, 26, 28, \dots, 40\}$. Use the roster method to write the following set.

96) A'

A) $A' = \{27, 29, 31, \dots, 39\}$

C) $A' = \{26, 28, 30, \dots, 40\}$

B) $A' = \{21, 22, 23, \dots, 40\}$

D) $A' = \{26, 27, 28, \dots, 40\}$

96) _____

Answer: D

Let $U = \{21, 22, 23, 24, \dots\}$, $A = \{21, 22, 23, 24, \dots, 40\}$, $B = \{21, 22, 23, 24, \dots, 50\}$, $C = \{22, 24, 26, 28, \dots\}$ and $D = \{21, 23, 25, 27, \dots\}$. Use the roster method to write the following set.

97) C'

A) $C' = \{22, 24, 26, 28, \dots\}$

C) $C' = \{21, 23, 25, 27, \dots, 39\}$

B) $C' = \{21, 22, 23, 24, \dots\}$

D) $C' = \{21, 23, 25, 27, \dots\}$

97) _____

Answer: D

Solve the problem.

98) If the universal set is the set of the days of the week and set A is the set of days that begin with the letter T, write A' using the roster method. Describe A' in words.

A) $A' = \{\text{Sunday, Monday, Wednesday, Friday, Saturday}\}$; A' is the days of the week that do not begin with the letter T.

B) $A' = \{\text{Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday}\}$; A' is the days of the week that do not begin with the letter T.

C) $A' = \{\text{Sunday, Monday, Friday, Saturday}\}$; A' is the days of the week that do not begin with the letter T.

D) $A' = \{\text{Tuesday, Thursday}\}$; A' is the days of the week that begin with the letter T.

98) _____

Answer: A

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

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

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

$C = \{v, w, x, y, z\}$. List the elements in the set.

99) $A \cap B'$

A) $\{u, w\}$

C) $\{t, v, x\}$

Answer: A

B) $\{q, s, t, u, v, w, x, y\}$

D) $\{r, s, t, u, v, w, x, z\}$

99) _____

100) $(A \cap B)'$

A) $\{q, s, t, u, v, w, x, y\}$

C) $\{s, u, w\}$

Answer: D

B) $\{t, v, x\}$

D) $\{r, t, u, v, w, x, z\}$

100) _____

101) $C' \cap A'$

A) $\{w, y\}$

C) $\{r, t\}$

Answer: C

B) $\{q, r, s, t, u, v, x, z\}$

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

101) _____

102) $A \cap B$

A) $\{v, w, x, y, z\}$

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

Answer: C

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

D) $\{r, t, u, v, w, x, z\}$

102) _____

103) $(A \cap C)'$

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

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

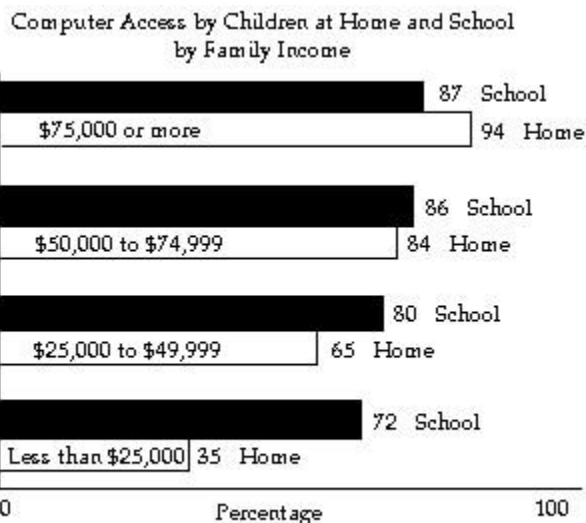
Answer: B

B) $\{q, r, s, t, u, v, x, z\}$

D) $\{w, y\}$

103) _____

Many children do not have access to computers at home. School has an equalizing effect. Family income is a strong factor in access. Use the information in the graph to write the set in the exercise in roster form or express the set as $\emptyset$.



104) $\{x \mid x \text{ is home access by more than 34\% of the students}\} \cap \{x \mid x \text{ is school access by less than 73\% of the students}\}$

104) _____

A) {\$25,000 to \$49,999}

B) {\$50,000 to \$74,999}

C) {Less than \$25,000}

D) {\$75,000 or more}

Answer: C

105) the set of home access by more than 80% of the students and school access by less than 70% of the students} 105) _____

A) {\$50,000 to \$74,999, \$75,000 or more}

B) {\$50,000 to \$74,999}

C) {Less than \$25,000}

D) $\emptyset$

Answer: D

Solve the problem.

106) Let U = the set of the days of the week, A = {Monday, Tuesday, Wednesday, Thursday, Friday} and B = {Friday, Saturday, Sunday} Find $(A \cap B)'$. 106) _____

A) {Monday, Tuesday, Wednesday, Thursday, Saturday, Sunday}

B) {Saturday, Sunday}

C) {Friday}

D) $\emptyset$

Answer: A

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

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

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

$C = \{v, w, x, y, z\}$. List the elements in the set.

107) $(A \cup B)'$ 107) _____

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

B) {s, u, w}

C) {r, t, v, x}

D) {t, v, x}

Answer: C

108) $A' \cup B$ 108) _____

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

B) {s, u, w}

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

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

Answer: D

109) $C' \cup A'$ 109) _____

A) {w, y}

B) {s, t}

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

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

Answer: C

110) $B \cup C$ 110) _____

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

B) {q, s, v, w, x, y, z}

C) {q, s, u, w, y}

D) {v, w, x, y, z}

Answer: B

111) $C \cup \emptyset$ 111) _____

A) {v, w, x, y, z}

B) { }

C) {q, s, y, z}

D) {q, s, u, w, y}

Answer: A

112) $B \cup U$ 112) _____

A) {q, s, u, w, y}

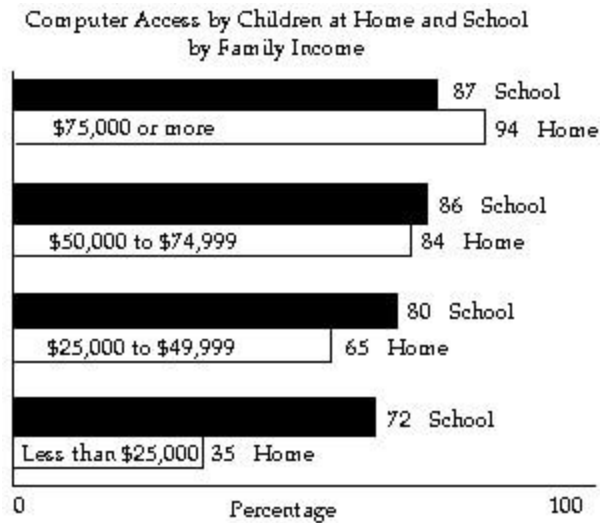
B) {q, s, y, z}

C) {v, w, x, y, z}

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

Answer: D

Many children do not have access to computers at home. School has an equalizing effect. Family income is a strong factor in access. Use the information in the graph to write the set in the exercise in roster form or express the set as $\emptyset$.



113) $\{x \mid x \text{ is home access by more than 34\% of the students}\} \cup \{x \mid x \text{ is school access by less than 81\% of the students}\}$ 113) _____

- A) $\{\$25,000 \text{ to } \$49,999, \$50,000 \text{ to } \$74,999\}$ B) $\{\text{Less than } \$25,000, \$25,000 \text{ to } \$49,999\}$
 C) $\{\$50,000 \text{ to } \$74,999, \$75,000 \text{ or more}\}$ D) $\{\text{Less than } \$25,000, \$75,000 \text{ or more}\}$

Answer: B

114) the set of home access by more than 80% of the students or school access by less than 87% of the students} 114) _____

- A) $\{\text{Less than } \$25,000, \$25,000 \text{ to } \$49,999\}$
 B) $\{\$50,000 \text{ to } \$74,999, \$75,000 \text{ or more}\}$
 C) $\{\$25,000 \text{ to } \$49,999, \$50,000 \text{ to } \$74,999, \$75,000 \text{ or more}\}$
 D) $\{\text{Less than } \$25,000, \$25,000 \text{ to } \$49,999, \$50,000 \text{ to } \$74,999\}$

Answer: B

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

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

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

$C = \{v, w, x, y, z\}$. List the elements in the set.

115) $A \cap B'$ 115) _____

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

Answer: C

116) $(A \cup B)'$ 116) _____

- A) $\{r, s, t, u, v, w, x, z\}$ B) $\{s, u, w\}$
 C) $\{r, t, v, x\}$ D) $\{t, v, x\}$

Answer: C

117) $(A \cap B)'$ 117) _____

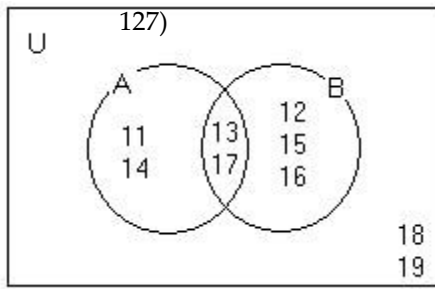
- A) $\{r, t, u, v, w, x, z\}$ B) $\{s, u, w\}$
 C) $\{t, v, x\}$ D) $\{q, s, t, u, v, w, x, y\}$

Answer: A

- 118) $A' \cup B$ 118) _____
 A) {r, s, t, u, v, w, x, z} B) {s, u, w}
 C) {q, r, s, t, v, x, y, z} D) {q, s, t, u, v, w, x, y}
 Answer: C
- 119) $C' \cup A'$ 119) _____
 A) {s, t} B) {q, s, u, v, w, x, y, z}
 C) {w, y} D) {q, r, s, t, u, v, x, z}
 Answer: D
- 120) $C' \cap A'$ 120) _____
 A) {r, t} B) {q, s, u, v, w, x, y, z}
 C) {w, y} D) {q, r, s, t, u, v, x, z}
 Answer: A
- 121) $A \cap B$ 121) _____
 A) {v, w, x, y, z} B) {q, s, y}
 C) {r, t, u, v, w, x, z} D) {q, s, u, w, y, z}
 Answer: B
- 122) $B \cup C$ 122) _____
 A) {q, s, v, w, x, y, z} B) {q, r, s, t, u, v, w, x, y, z}
 C) {v, w, x, y, z} D) {q, s, u, w, y}
 Answer: A
- 123) A' 123) _____
 A) {q, r, s, t, u, v, w, x, y, z} B) {s, u, w, y}
 C) {q, s, y, z} D) {r, t, v, x, z}
 Answer: D
- 124) $(A \cap C)'$ 124) _____
 A) {q, s, y, z} B) {q, r, s, t, u, v, x, z}
 C) {q, r, s, t, u, v, w, x, y, z} D) {w, y}
 Answer: B
- 125) $C \cup \emptyset$ 125) _____
 A) {v, w, x, y, z} B) {q, s, u, w, y} C) { } D) {q, s, y, z}
 Answer: A
- 126) $B \cup U$ 126) _____
 A) {q, s, y, z} B) {v, w, x, y, z}
 C) {q, s, u, w, y} D) {q, r, s, t, u, v, w, x, y, z}
 Answer: D

Use the Venn diagram to list the elements of the set in roster form.

127)



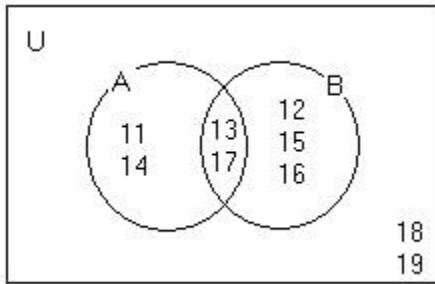
$A \cup B$

- A) {11, 12, 14, 15, 16}
 C) {11, 12, 13, 14, 15, 16, 17}

- B) {11, 12, 13, 14, 15, 16, 17, 18, 19}
 D) {13, 17}

Answer: C

128)



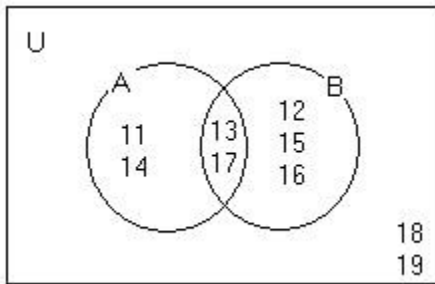
$A \cap B$

- A) {11, 12, 13, 14, 15, 16, 17}
 C) {11, 12, 14, 15, 16}

- B) {13, 17}
 D) {11, 12, 13, 14, 15, 16, 17, 18, 19}

Answer: B

129)



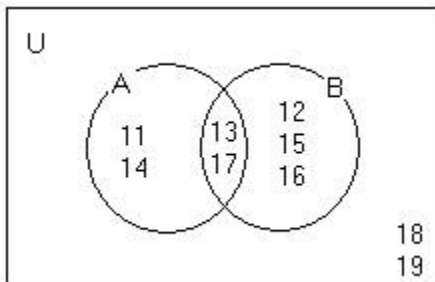
A'

- A) {11, 14, 18, 19}
 C) {12, 15, 16}

- B) {12, 15, 16, 18, 19}
 D) {11, 13, 14, 17}

Answer: B

130)



B'

A) {11, 13, 14, 17, 18, 19}

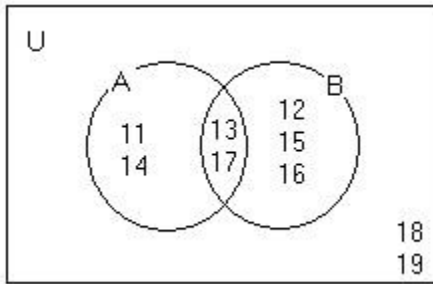
C) {11, 14}

Answer: B

B) {11, 14, 18, 19}

D) {12, 15, 16, 18, 19}

131)



131) _____

$(A \cap B)'$

A) {18, 19}

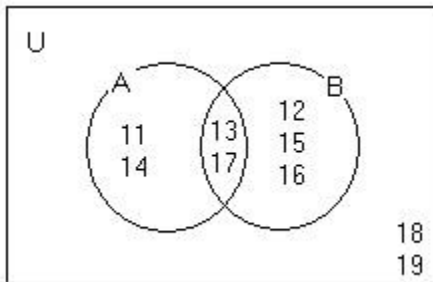
C) {11, 12, 14, 15, 16}

Answer: D

B) {13, 17}

D) {11, 12, 14, 15, 16, 18, 19}

132)



132) _____

$(A \cup B)'$

A) {11, 12, 14, 15, 16}

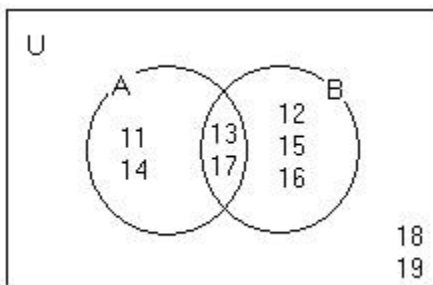
C) {11, 12, 13, 14, 15, 16, 17}

Answer: D

B) {13, 17}

D) {18, 19}

133)



133) _____

$A' \cap B$

A) {11, 14}

C) {12, 15, 16}

Answer: C

B) {12, 15, 16, 18, 19}

D) {11, 13, 14, 17, 18, 19}

Use sets to solve the problem.

134) Results of a survey of fifty students indicate that 30 like red jelly beans, 29 like green jelly beans, and 17 like both red and green jelly beans. How many of the students surveyed like no green jelly beans?

134) _____

A) 38

B) 30

C) 21

D) 17

Answer: C

- 135) Mrs. Bollo's second grade class of thirty students conducted a pet ownership survey. Results of the 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 neither a cat nor a dog? 135) _____
- A) 12 B) 3 C) 25 D) 10

Answer: A

- 136) Monticello residents were surveyed concerning their preferences for candidates Moore and Allen in 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 Allen? 136) _____
- A) 400 B) 250 C) 150 D) 100

Answer: B

Provide an appropriate response.

- 137) The word _____ refers to the union of sets; the word _____ refers to the intersection of sets. 137) _____
- A) common; universal B) or; and
C) universal; common D) and; or

Answer: B

Use the formula for the cardinal number of the union of two sets to solve the problem.

- 138) Set A contains 5 elements, set B contains 11 elements, and 3 elements are common to sets A and B. How many elements are in $A \cup B$? 138) _____
- A) 12 B) 16 C) 14 D) 13

Answer: D

- 139) Set A contains 7 letters and 11 numbers. Set B contains 10 letters and 11 numbers. Three letters and 4 numbers are common to both sets A and B. Find the number of elements in set A or set B. 139) _____
- A) 32 B) 46 C) 25 D) 39

Answer: A

- 140) Set A contains 35 elements and set B contains 22 elements. If there are 40 elements in $(A \cup B)$ then how many elements are in $(A \cap B)$? 140) _____
- A) 5 B) 13 C) 17 D) 8

Answer: C

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

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

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

$C = \{v, w, x, y, z\}$. List the elements in the set.

- 141) $A \cup (B \cap C)$ 141) _____
- A) $\{q, s, u, w, y, z\}$ B) $\{q, r, w, y, z\}$ C) $\{q, y, z\}$ D) $\{q, w, y\}$

Answer: A

- 142) $A \cap (B \cup C)$ 142) _____
- A) $\{q, s, w, y\}$ B) $\{q, s, u, w, y, z\}$ C) $\{q, r, w, y, z\}$ D) $\{q, y, z\}$

Answer: A

- 143) $(A \cup B) \cap (A \cup C)$ 143) _____

A) {q, s, w, y}

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

C) {r, t, v, x}

D) {q, s, u, w, y}

Answer: B

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

A) {r, t, u, v, x, z}

B) {q, s, w, y}

C) {q, s, u, w, y}

D) {q, s, v, w, y}

144) _____

Answer: B

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

A) {q, r, s, t, z}

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

C) {q, r, s}

D) {r, t, z}

145) _____

Answer: D

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

A) {q, r, t, y, z}

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

C) {r, t, z}

D) {r, s, t, y, z}

146) _____

Answer: C

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

A) {q, s}

B) {s, t}

C) {v, z}

D) {r, t}

147) _____

Answer: D

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

A) {q, s, u, w, z}

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

C) $\emptyset$

D) {r, t, v, x}

148) _____

Answer: B

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

A) {r, w}

B) {q, v, x}

C) {s, u, v, z}

D) {v, x}

149) _____

Answer: D

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

A) {u}

B) $\emptyset$

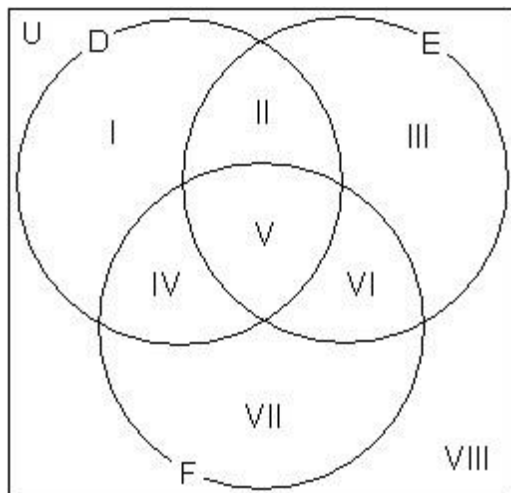
C) {v}

D) {w}

150) _____

Answer: A

Use the Venn diagram shown to answer the question.



151) Which regions represent set E?

A) III

B) VIII

C) I, IV, VII

D) II, III, V, VI

151) _____

Answer: D

152) Which regions represent set $D \cup F$?

- A) I, II, IV, V, VI, VII, VIII
C) VIII

Answer: B

- B) I, II, IV, V, VI, VII
D) III

152) ____

153) Which regions represent set $D \cap E$?

- A) VIII
B) II, V

Answer: B

- C) I, III, IV, VI
D) IV, V

153) ____

154) Which regions represent set E' ?

- A) VIII
B) II, V, VI

Answer: C

- C) I, IV, VII, VIII
D) II, III, V, VI

154) ____

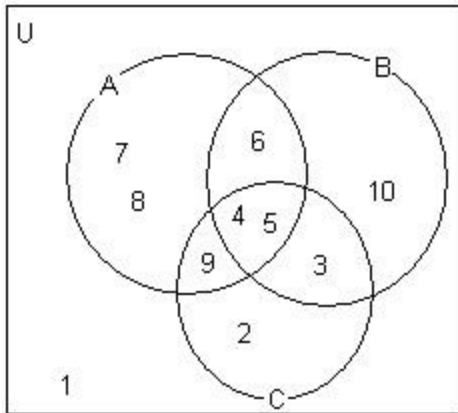
Construct a Venn diagram illustrating the given sets.

155) $A = [4, 5, 6, 7, 8, 9]$, $B = [3, 4, 5, 6, 10]$, $C = [2, 3, 4, 5, 9]$, $U = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]$

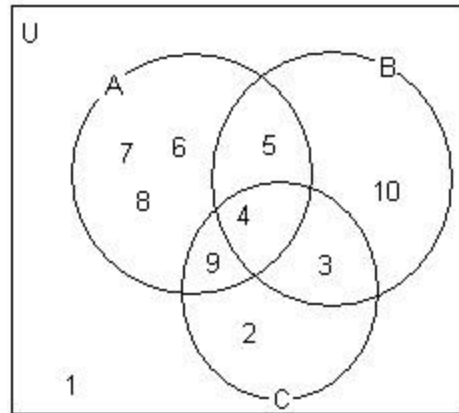
155) ____



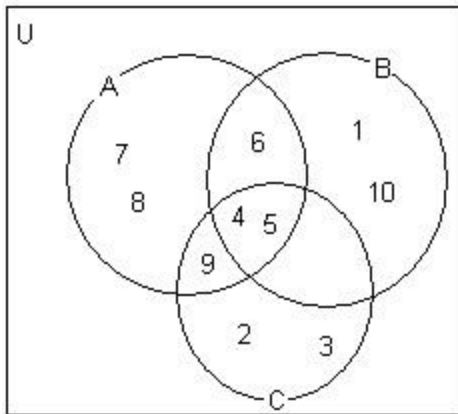
A)



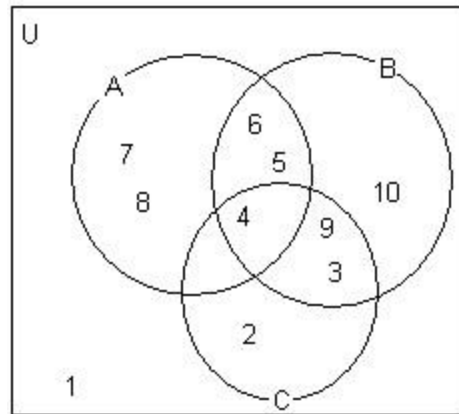
B)



C)



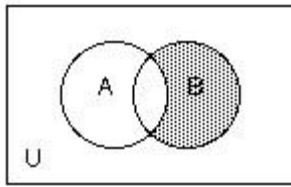
D)



Answer: A

Use set notation to identify the shaded region.

156)



A) $B - \bar{A}$

B) $A - B$

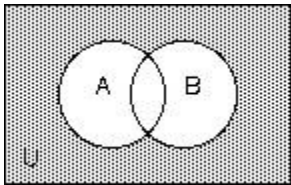
C) $A \cap \bar{B}$

D) $B \cap \bar{A}$

Answer: D

156) _____

157)



A) $A - B$

B) $\overline{A \cap B}$

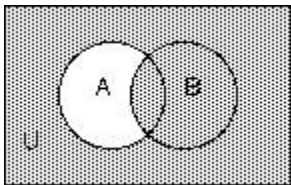
C) $\bar{A} \cap \bar{B}$

D) $A \cup B$

Answer: C

157) _____

158)



A) $B \cap A'$

B) $(A \cap B)'$

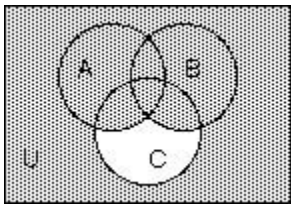
C) $A' \cap B$

D) $A' \cup B$

Answer: D

158) _____

159)



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

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

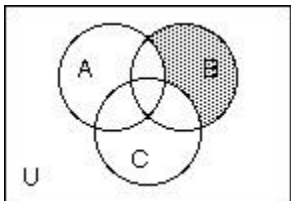
C) $(A \cup B \cup C)'$

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

Answer: B

159) _____

160)



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

B) $A \cap B \cap C$

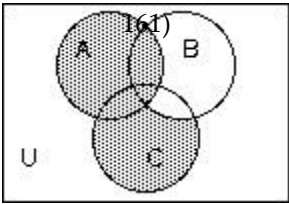
C) $B' \cap (A \cup B)$

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

Answer: A

160) _____

161)

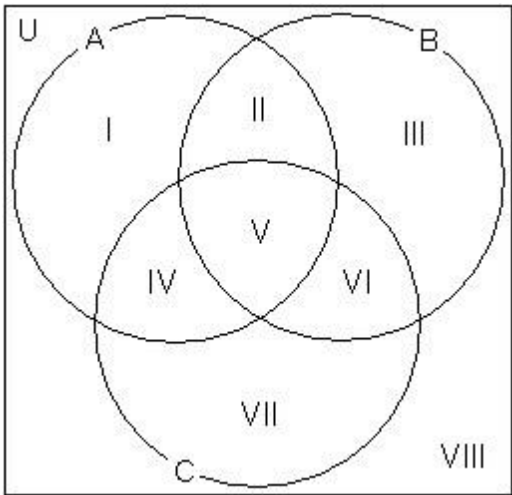


- A) $(A \cup C) \cap B'$ B) $A \cup C$ C) $B' \cap (A \cup C)$ D) $(C \cap B') \cup A$
 Answer: D

The chart shows the most common causes of death in certain areas of the United States.

Most Common Causes of Death in U.S.		
Region A	Region B	Region C
1. heart disease	1. heart disease	1. heart disease
2. cerebrovascular	2. cerebrovascular	2. cerebrovascular
3. COPD	3. COPD	3. COPD
4. pneumonia	4. accidents	4. accidents
5. accidents	5. pneumonia	5. liver disease

Use the Venn diagram to indicate in which region each cause should be placed.



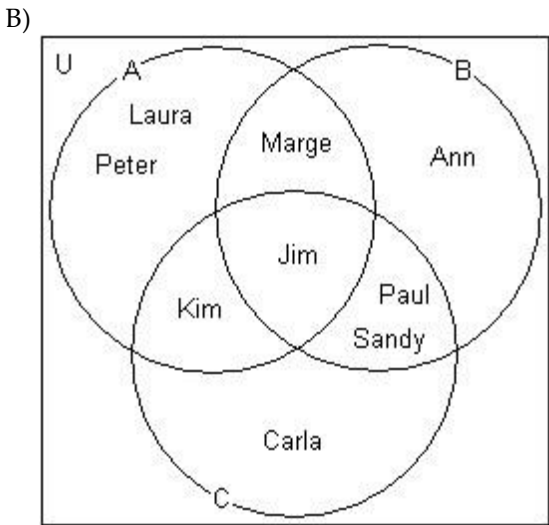
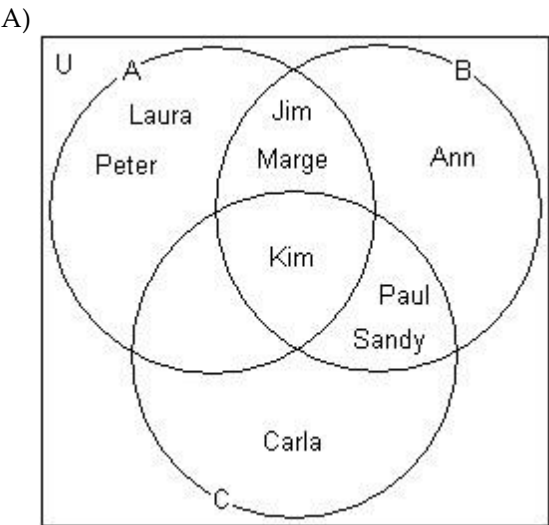
- 162) liver disease A) IV B) V C) VII D) VI 162) ____
 Answer: C
- 163) pneumonia A) VI B) V C) II D) IV 163) ____
 Answer: C
- 164) heart disease A) V B) II C) IV D) VI 164) ____
 Answer: A

Use the following information to construct a Venn Diagram that illustrates the given sets.

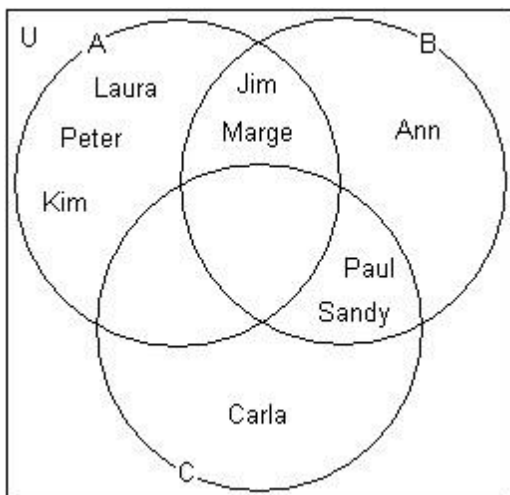
- 165) U = the set of members of the bookclub shown in the chart
 A = the set of members of the bookclub who read at least 25 books
 B = the set of members of the bookclub who suggested 5 or less books
- C = members of the set of the

bookclub 165)
who
started
their
members
hip after
2000

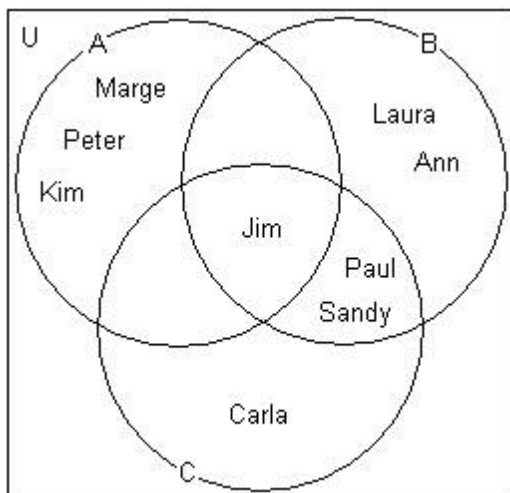
Members of the bookclub	Numbers of books read	Numbers of books suggested	Year of membership
Carla	24	7	2001
Marge	25	2	2000
Sandy	5	1	2004
Laura	45	15	1998
Kim	42	11	1998
Peter	29	9	1999
Jim	44	5	2000
Ann	24	1	1998
Paul	17	1	2002



C)

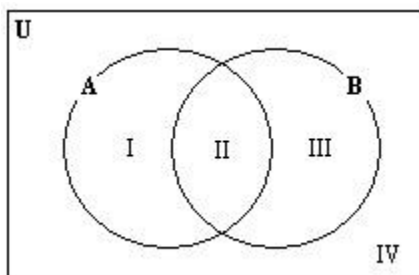


D)



Answer: C

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question. Use the Venn diagram shown below to solve the problem.



- 166) a) Which regions are represented by $A \cap B$?
 b) Which regions are represented by $(A' \cup B)$?
 c) Based on parts a) and b), what can you conclude about the relationship between $A \cap B$ and $(A' \cup B)$?
 Answer: a) I b) I c) They are equal.

166) _____

- 167) a) Which regions are represented by $(A' \cap B)$?
 b) Which regions are represented by $A \cap B$?
 c) Based on parts a) and b), what can you conclude about the relationship between $(A' \cap B)$ and $A \cap B$?

167) _____

Answer: a) I, II, and IV b) I c) They are not equal.

168) a) Which regions are represented by $(A \cup B)'$?

168) _____

b) Which regions are represented by $A' \cap B$?

c) Based on parts a) and b), what can you conclude about the relationship between $(A \cup B)'$ and $A' \cap B$?

Answer: a) III b) III c) They are equal.

169) a) Which regions are represented by $(A' \cup B)'$?

169) _____

b) Which regions are represented by $A' \cap B$?

c) Based on parts a) and b), what can you conclude about the relationship between $(A' \cup B)'$ and $A' \cap B$?

Answer: a) I b) III c) They are not equal.

170) Show that $(A' \cap B)' = A \cup B'$.

170) _____

Answer: $A' = \text{III, IV}$

$B = \text{II, III}$

$(A' \cap B) = \text{III}$

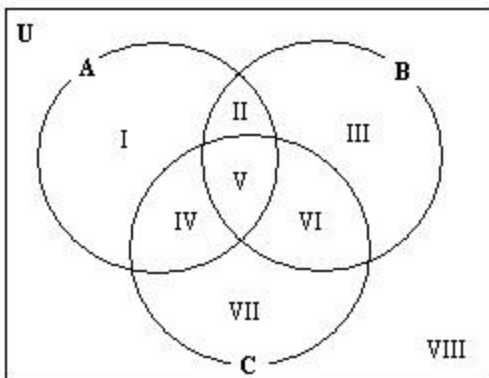
$(A' \cap B)' = \text{I, II, IV}$

$A = \text{I, II}$

$B' = \text{I, IV}$

$A \cup B' = \text{I, II, IV}$

Use the Venn diagram shown below to solve the problem.



171) a) Which regions are represented by $(A \cap B) \cup C$?

171) _____

b) Which regions are represented by $(A \cup C) \cap (A \cup B)$?

c) Based on parts a) and b), what can you conclude about the relationship between $(A \cap B) \cup C$ and $(A \cup C) \cap (A \cup B)$?

Answer: a) II, IV, V, VI, and VII b) I, II, IV, V, and VI c) They are not equal.

172) a) Which regions are represented by $B \cup (A \cap C)$?

172) _____

b) Which regions are represented by $(A \cup B) \cap (B \cup C)$?

c) Based on parts a) and b), what can you conclude about the relationship between $B \cup (A \cap C)$ and $(A \cup B) \cap (B \cup C)$?

Answer: a) II - VI b) II - VI c) They are equal.

173) Show that $B \cup (A \cap C) = (A \cup B) \cap (B \cup C)$.

173) _____

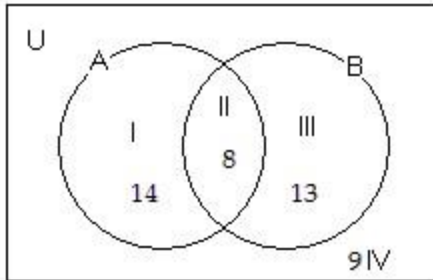
Answer: $(A \cap C) = \text{IV, V}$

$$\begin{aligned}
 B &= \text{II, III, V, VI} & (A \cup B) &= \text{I, II, III, IV, V, VI} \\
 B \cup (A \cap C) &= \text{II, III, IV, V, VI, VII} \\
 \text{III, IV, V, VI} & & (A \cup B) \cap (B \cup C) &= \text{II, III, IV, V, VI}
 \end{aligned}$$

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.
 Use the accompanying Venn diagram that shows the number of elements in regions I through IV to answer the question.

174)

174) _____



How many elements belong to set A?

A) 13

B) 8

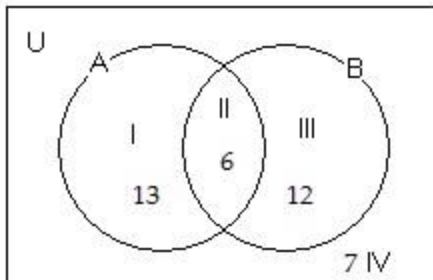
C) 22

D) 14

Answer: C

175)

175) _____



How many elements belong to set B?

A) 12

B) 25

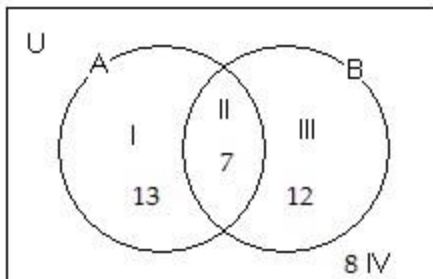
C) 19

D) 18

Answer: D

176)

176) _____



How many elements belong to set A but not set B?

A) 13

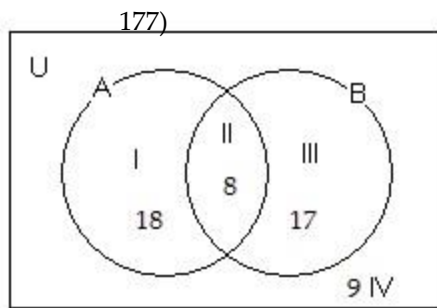
B) 8

C) 12

D) 7

Answer: A

177)

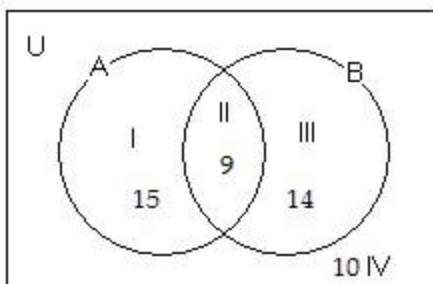


How many elements belong to set B but not set A?

- A) 18 B) 17 C) 8 D) 9
- Answer: B

178)

178) _____

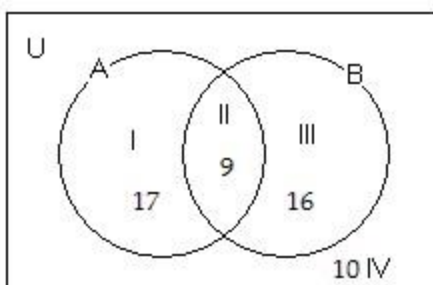


How many elements belong to set A or set B?

- A) 29 B) 9 C) 48 D) 38
- Answer: D

179)

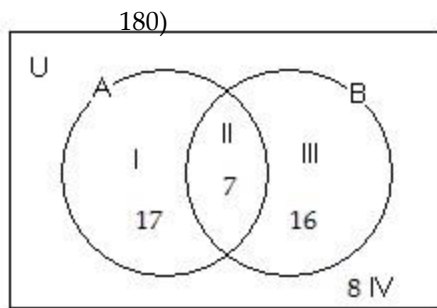
179) _____



How many elements belong to set A and set B?

- A) 42 B) 9 C) 33 D) 10
- Answer: B

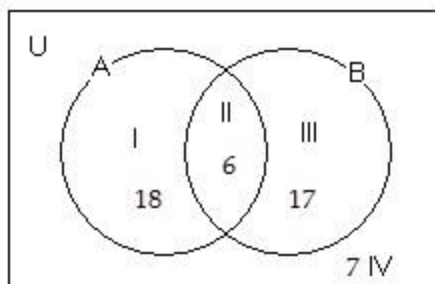
180)



How many elements belong to neither set A nor set B?

- A) 17 B) 7 C) 8 D) 16
- Answer: C

181)



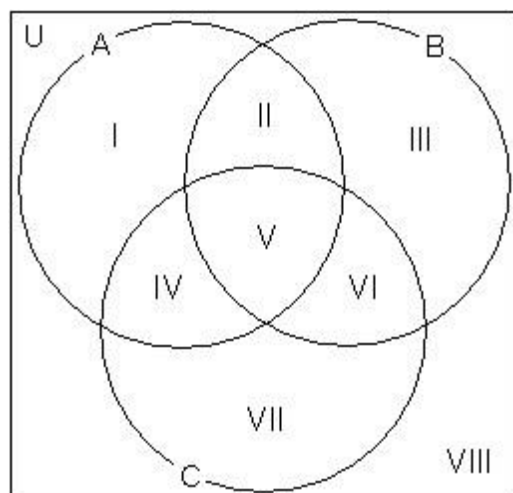
How many elements are there in the universal set?

- A) 35 B) 41 C) $\emptyset$ D) 48
- Answer: D

Use the given cardinalities to determine the number of elements in the specific region.

182) $n(U) = 147$, $n(A) = 48$, $n(B) = 68$, $n(C) = 46$, $n(A \cap B) = 19$, $n(A \cap C) = 22$, $n(B \cap C) = 18$, $n(A \cap B \cap C) = 10$

Find III.



181) _____

182) _____

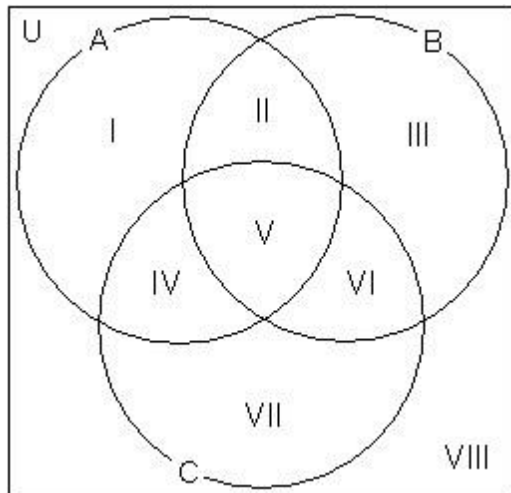
A) 41
Answer: A

B) 30

C) 26

D) 14

183) $n(U) = 147$, $n(A) = 48$, $n(B) = 68$, $n(C) = 46$, $n(A \cap B) = 19$, $n(A \cap C) = 22$, $n(B \cap C) = 18$,
 $n(A \cap B \cap C) = 10$
 Find VIII. 183) _____



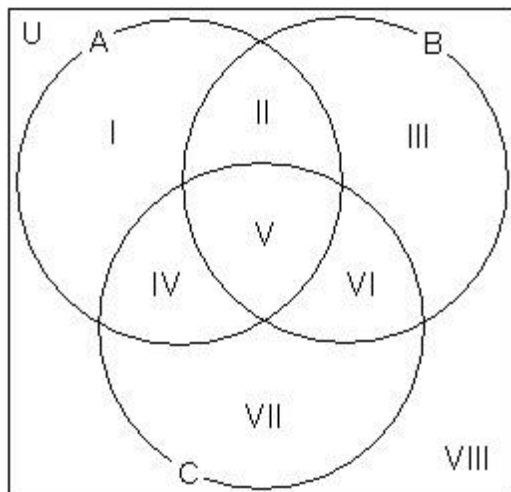
A) 34
Answer: A

B) 54

C) 0

D) 48

184) $n(U) = 189$, $n(A) = 126$, $n(B) = 94$, $n(C) = 92$, $n(A \cap B) = 52$, $n(A \cap C) = 49$, $n(B \cap C) = 47$, $n(A \cap B \cap C) = 25$
 Find VI. 184) _____



A) 24
Answer: B

B) 22

C) 23

D) 21

Use a Venn diagram to answer the question.

185) At East Zone University (EZU) there are 730 students taking College Algebra or Calculus. 427 are taking College Algebra, 366 are taking Calculus, and 63 are taking both College Algebra and Calculus. How many are taking Algebra but not Calculus? 185) _____

A) 364
Answer: A

B) 303

C) 301

D) 667

186) At East Zone University (EZU) there are 565 students taking College Algebra or Calculus. 327 are taking

College 186)

Algebra,

266 are

taking

Calculus,

and 28

are

taking

both

College

Algebra

and

Calculus.

How

many are

taking

Calculus

but not

Algebra?

A) 537

B) 238

C) 299

D) 271

Answer: B

187) A local television station sends out questionnaires to determine if viewers would rather see a documentary, an interview show, or reruns of a game show. There were 400 responses with the following results:

187) _____

120 were interested in an interview show and a documentary, but not reruns;

16 were interested in an interview show and reruns, but not a documentary;

56 were interested in reruns but not documentaries or interviews;

96 were interested in an interview show but not a documentary;

40 were interested in a documentary and reruns;

24 were interested in an interview show and reruns;

32 were interested in none of the three.

How many are interested in exactly one kind of show?

A) 192

B) 182

C) 202

D) 172

Answer: A

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

A pollster conducting a telephone poll asked three questions:

1. Are you religious?

2. Have you spent time with a person convicted of a crime?

3. Are you in favor of the death penalty?

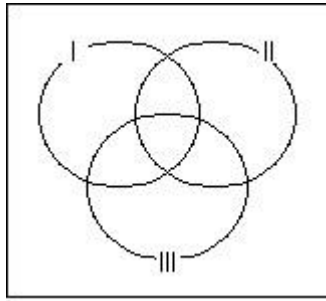
Solve the problem.

188) Construct a Venn Diagram with three circles that can assist the pollster in tabulating the responses to the three questions.



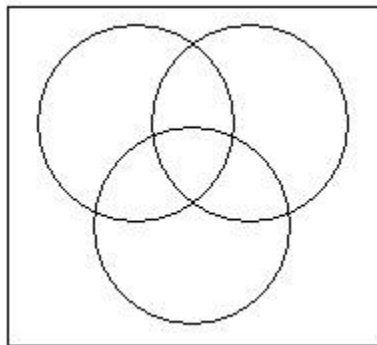
188)

Answer:

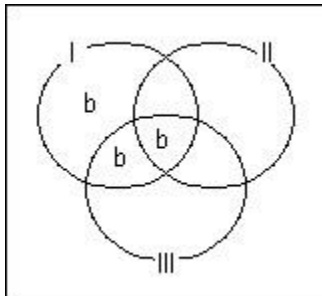


MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

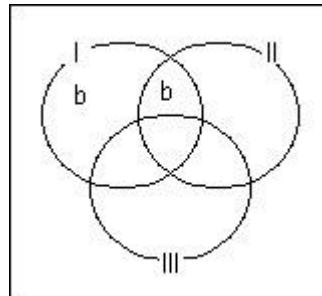
189) Write the letter b in every region of the diagram that represents all religious persons polled who are not in favored of death penalty. 189) _____



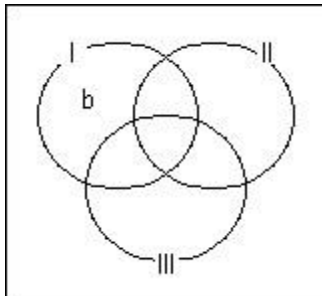
A)



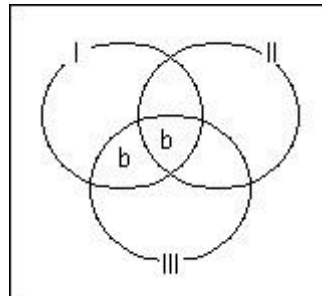
B)



C)

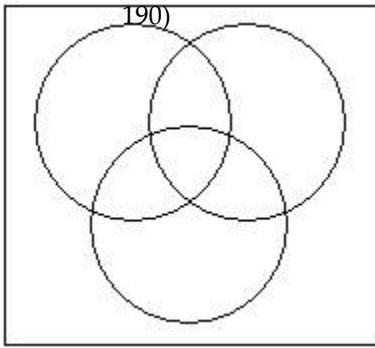


D)

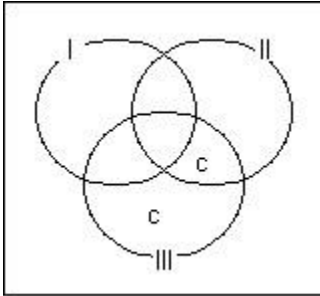


Answer: B

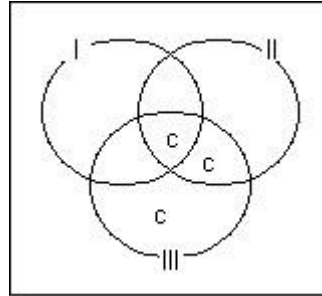
190) Write the letter c in every region of the diagram that represents the people polled who do not consider themselves religious, who have not spent time with a person convicted with a crime, and who are in favor of the death penalty.



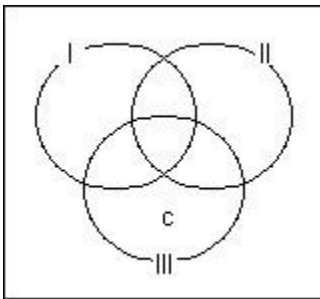
A)



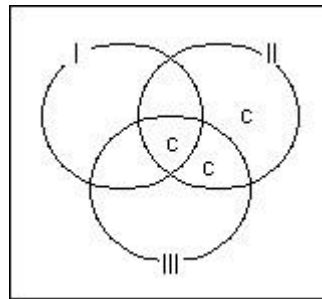
B)



C)



D)



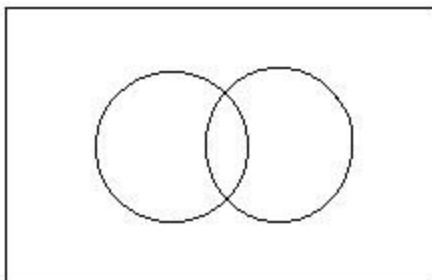
Answer: C

Solve the problem.

191) A pollster conducting a telephone poll asked two questions:

1. Would you like to live to be 100 years old, if it was possible?
2. Do you have confidence that medical science will find cures for major diseases during your lifetime?

Construct a Venn diagram that allows the respondents to the poll to be identified by whether or not they want to live to be 100 and whether or not they believe cures for major diseases will be found.

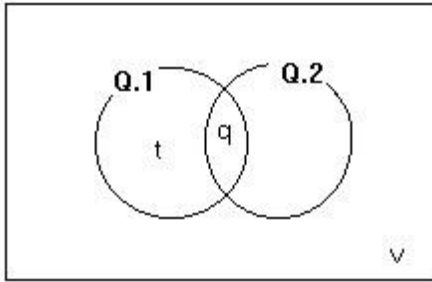


Write the letter q in the region of the diagram that identifies those who would like to live to be 100 who believe cures will be found.

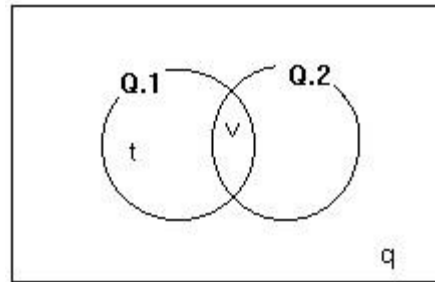
Write the letter t in the region of the diagram that identifies those who would not like to live to be 100 who believe cures will be found.

Write the letter q in the region of the diagram that identifies those who would like to live to be 100 who believe cures will be found. Write the letter t in the region of the diagram that identifies those who would not like to live to be 100 who believe cures will be found.

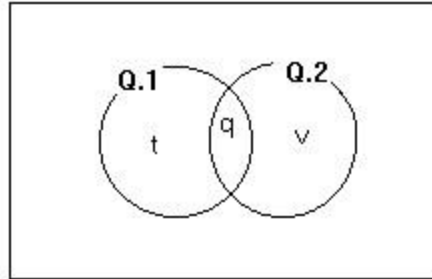
A)



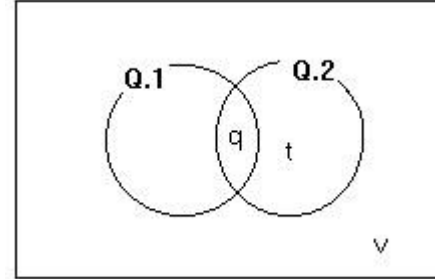
B)



C)



D)



Answer: D

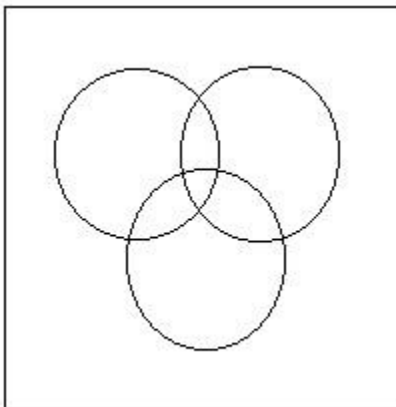
SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

192) A pollster conducting a telephone poll asked three questions:

192) _____

1. Are you a registered voter?
2. Do you currently have any children in grades kindergarten through 12th grade?
3. Would you support a tax increase to build a new school?

Construct a Venn diagram with three circles that can assist the pollster in tabulating the responses to the three questions.

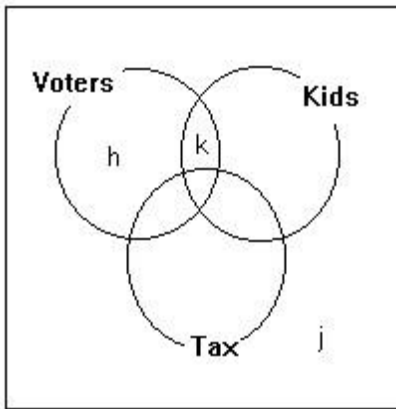


Write the letter h in the region of the diagram that identifies all registered voters polled who do not have children in school and who do not support a tax increase.

Write the letter j in the region of the diagram that identifies people who are not registered to vote, who do not have children in school, and who do not support a tax increase.

Write the letter k in the region of the diagram that identifies all registered voters polled who have children in school, and who do not support a tax increase.

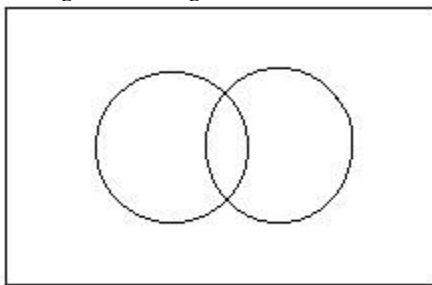
Answer:



- 193) There are 777,859 physicians in the United States.
 177,030 are women.
 33,947 physicians have cardiology as their specialty.
 6,817 women physicians specialize in cardiology.

193) _____

Identify the Venn diagram in which U is the set of all physicians, W is the set of all women physicians, and C is the set of all U.S. physicians specializing in cardiology. Fill in each of the four regions of the Venn diagram with the number of physicians who belong to that region.

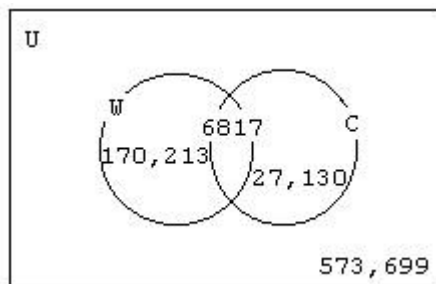


Use your Venn diagram to answer the questions.

How many physicians in the United States are there who are men specializing in cardiology?

How many male physicians in the United States do not specialize in cardiology?

Answer:



27,130 male physicians in the United States specialize in cardiology.
 573,699 male physicians in the United States do not specialize in cardiology.

- 1) B
- 2) D
- 3) D
- 4) Answers may vary. Possible answers are:
 {Chicago}, {Los Angeles}, {New York City}, and {Springfield}
- 5) C
- 6) D
- 7) B
- 8) B
- 9) B
- 10) B
- 11) A
- 12) A
- 13) B
- 14) B
- 15) A
- 16) A
- 17) B
- 18) A
- 19) B
- 20) B
- 21) B
- 22) A
- 23) D
- 24) C
- 25) B
- 26) D
- 27) C
- 28) B
- 29) D
- 30) D
- 31) A
- 32) C
- 33) B
- 34) A
- 35) A
- 36) B
- 37) A
- 38) B
- 39) A
- 40) A
- 41) A
- 42) A
- 43) B
- 44) A
- 45) B
- 46) B
- 47) B
- 48) A
- 49) A
- 50) B

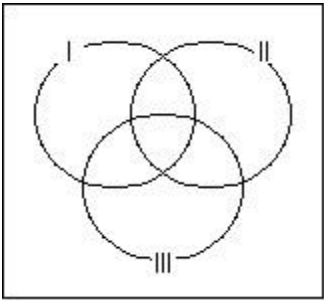
- 51) B
- 52) B
- 53) A
- 54) B
- 55) B
- 56) A
- 57) A
- 58) B
- 59) B
- 60) A
- 61) D
- 62) D
- 63) A
- 64) B
- 65) C
- 66) C
- 67) D
- 68) A
- 69) B
- 70) A
- 71) B
- 72) A
- 73) A
- 74) B
- 75) A
- 76) A
- 77) A
- 78) A
- 79) A
- 80) Answers may vary. One possible answer is: U = the set of all famous composers.
- 81) Answers may vary. One possible answer is: U = the set of all non-carbonated beverages.
- 82) A
- 83) B
- 84) C
- 85) C
- 86) C
- 87) C
- 88) C
- 89) B
- 90) C
- 91) D
- 92) C
- 93) D
- 94) A
- 95) C
- 96) D
- 97) D
- 98) A
- 99) A
- 100) D
- 101) C
- 102) C

103) B
104) C
105) D
106) A
107) C
108) D
109) C
110) B
111) A
112) D
113) B
114) B
115) C
116) C
117) A
118) C
119) D
120) A
121) B
122) A
123) D
124) B
125) A
126) D
127) C
128) B
129) B
130) B
131) D
132) D
133) C
134) C
135) A
136) B
137) B
138) D
139) A
140) C
141) A
142) A
143) B
144) B
145) D
146) C
147) D
148) B
149) D
150) A
151) D
152) B
153) B
154) C

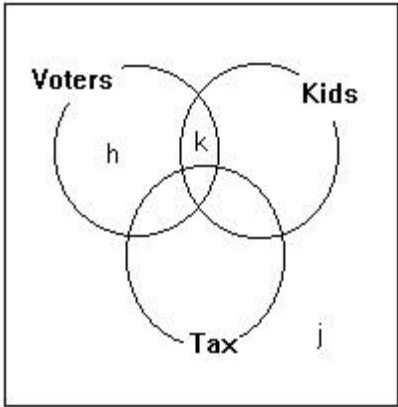
- 155) A
 156) D
 157) C
 158) D
 159) B
 160) A
 161) D
 162) C
 163) C
 164) A
 165) C
 166) a) I b) I c) They are equal.
 167) a) I, II, and IV b) I c) They are not equal.
 168) a) III b) III c) They are equal.
 169) a) I b) III c) They are not equal.
 170) $A' = \text{III, IV}$
 $B = \text{II, III}$
 $(A' \cap B) = \text{III}$
 $(A' \cap B)' = \text{I, II, IV}$

 $A = \text{I, II}$
 $B' = \text{I, IV}$
 $A \cup B' = \text{I, II, IV}$
 171) a) II, IV, V, VI, and VII b) I, II, IV, V, and VI c) They are not equal.
 172) a) II - VI b) II - VI c) They are equal.
 173) $(A \cap C) = \text{IV, V}$
 $B = \text{II, III, V, VI}$
 $B \cup (A \cap C) = \text{II, III, IV, V, VI}$

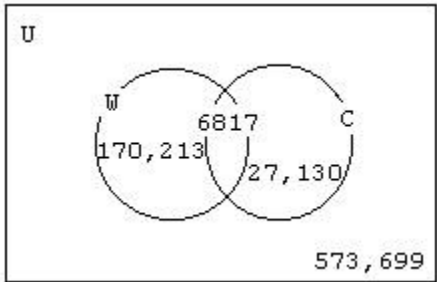
 $(A \cup B) = \text{I, II, III, IV, V, VI}$
 $(B \cup C) = \text{II, III, IV, V, VI, VII}$
 $(A \cup B) \cap (B \cup C) = \text{II, III, IV, V, VI}$
 174) C
 175) D
 176) A
 177) B
 178) D
 179) B
 180) C
 181) D
 182) A
 183) A
 184) B
 185) A
 186) B
 187) A
 188)



- 189) B
- 190) C
- 191) D
- 192)



- 193)



27,130 male physicians in the United States specialize in cardiology.
 573,699 male physicians in the United States do not specialize in cardiology.