

Sets

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.

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

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

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

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

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

1) _____

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

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

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

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

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

2) _____

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

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

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

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

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

3) _____

Use a Venn diagram to answer the question.

4) 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 950 responses with the following results:

4) _____

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

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

133 were interested in reruns but not documentaries or interviews;

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

95 were interested in a documentary and reruns;

57 were interested in an interview show and reruns;

76 were interested in none of the three.

How many are interested in exactly one kind of show?

A) 436

B) 456

C) 446

D) 466

Solve the problem.

5) A survey of 280 families showed that

5) _____

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) 23

C) 38

D) 28

- 6) 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

Write the set in set-builder notation.

- 7) {2, 4, 6, 8} 7) _____
 A) {2, 4, 6, 8}
 B) {x | x is any even integer less than 10}
 C) {x | x is any even natural number}
 D) {x | x is an even natural number less than 10}

List the elements in the set.

- 8) {x | x is an integer between -2 and 2} 8) _____
 A) {-1, 0, 1} B) {-2, -1, 0, 1} C) {-2, -1, 0, 1, 2} D) {-1, 0, 1, 2}

Identify the set as finite or infinite.

- 9) {7, 8, 9, ..., 28} 9) _____
 A) Finite B) Infinite

- 10) {x | x is an odd counting number} 10) _____
 A) Infinite B) Finite

Find $n(A)$ for the set.

- 11) $A = \{x \mid x \text{ is a second in a minute}\}$

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

- 12) $2 _ \{11, 10, 9, 8\}$ 12) _____
 A) \notin B) \in

Find the number of subsets of the set.

- 13) {15, 16, 17}

Use \subseteq or \subset in the blank to make a true statement.

- 14) {12, 39, 44} $_ \{9, 39, 44, 54\}$

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

- 15) $\emptyset _ \{7, 15, 24, 34\}$ 15) _____
 A) Both \subset and \subseteq B) Neither C) \subseteq D) \subset

Find the number of proper subsets of the set.

- 16) {poetry, drama, speech, art, film} 16) _____
 A) 31 B) 32 C) 24 D) 16

List the elements in the set .

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

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

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

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

17) $B \cap C$

A) $\{y\}$

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

B) $\{y, z\}$

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

17) _____

18) $(A \cap B)'$

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

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

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

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

18) _____

19) $C' \cup A'$

A) $\{w, y\}$

C) $\{s, t\}$

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

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

19) _____

20) $C - A$

A) $\{w, y\}$

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

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

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

20) _____

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

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

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

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

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

21) _____

Find the Cartesian product.

22) $A = \{0\}$

$B = \{20, 30, 40\}$

Find $B \times A$.

A) $\{0\}$

C) $\{0, 0, 0\}$

B) $\{(20, 0), (30, 0), (40, 0)\}$

D) $\{(0, 20), (0, 30), (0, 40)\}$

22) _____

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

23) Let $U = \{c, d, g, h, k, u, q\}$

$A = \{d, h, g, q\}$

$B = \{c, d, h, u\}$

24) Let $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$

$A = \{3, 6, 8\}$

$B = \{4, 6\}$

$C = \{1, 6, 7, 8\}$

Solve the problem.

25) 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 Moore or Allen?

A) 100

B) 500

C) 300

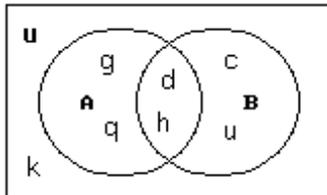
D) 400

25) _____

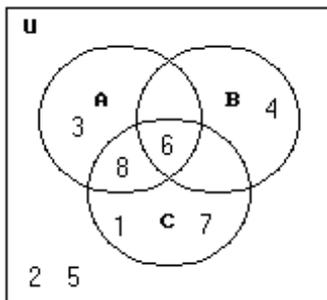
Answer Key

Testname: REVIEW01

- 1) D
- 2) B
- 3) A
- 4) B
- 5) B
- 6) A
- 7) D
- 8) A
- 9) A
- 10) A
- 11) $n(A) = 60$
- 12) A
- 13) 8
- 14) \neq
- 15) A
- 16) A
- 17) B
- 18) A
- 19) B
- 20) B
- 21) A
- 22) B
- 23)



24)



25) B