

SETS

Set 3:

1. The union of two sets A and B is denoted by:

- a) $A \cap B$
- b) $A \cup B$
- c) $A - B$
- d) $A \times B$

2. The union of sets A and B contains:

- a) Only elements common to both A and B
- b) All elements that are in A but not in B
- c) All elements that are in A or in B (or in both)
- d) All elements that are not in A

3. If $A = \{1, 2, 3\}$ and $B = \{3, 4, 5\}$, then $A \cup B$ is:

- a) $\{3\}$
- b) $\{1, 2, 3, 4, 5\}$
- c) $\{1, 2, 4, 5\}$
- d) $\{1, 2\}$

4. The intersection of two sets A and B is denoted by:

- a) $A \cap B$
- b) $A \cup B$
- c) $A - B$
- d) A'

5. The intersection of sets A and B contains:

- a) Only elements common to both A and B
- b) All elements that are in A or in B
- c) All elements that are in A but not in B
- d) All elements that are not in B

6. If $A = \{1, 2, 3\}$ and $B = \{3, 4, 5\}$, then $A \cap B$ is:

- a) $\{3\}$
- b) $\{1, 2, 3, 4, 5\}$
- c) $\{1, 2, 4, 5\}$
- d) $\{1, 2\}$

7. If $A \subset B$, then $A \cup B$ is equal to:

- a) A

- b) B
- c) \varnothing
- d) $A \cap B$

8. If $A \subset B$, then $A \cap B$ is equal to:

- a) A
- b) B
- c) \varnothing
- d) $A \cup B$

9. The difference of two sets A and B ($A - B$) contains:

- a) Elements in both A and B
- b) Elements in A or in B
- c) Elements in A but not in B
- d) Elements not in A

10. If $A = \{1, 2, 3, 4\}$ and $B = \{3, 4, 5, 6\}$, then $A - B$ is:

- a) $\{1, 2\}$
- b) $\{5, 6\}$
- c) $\{3, 4\}$
- d) $\{1, 2, 5, 6\}$

11. For the sets in Q10, $B - A$ is:

- a) $\{1, 2\}$
- b) $\{5, 6\}$
- c) $\{3, 4\}$
- d) $\{1, 2, 5, 6\}$

12. Two sets A and B are said to be disjoint if:

- a) $A \subset B$
- b) $B \subset A$
- c) $A \cap B = \varnothing$
- d) $A \cup B = U$

13. Which of the following pairs of sets are disjoint?

- a) $A = \{1, 2, 3\}$, $B = \{4, 5, 6\}$
- b) $A = \{1, 2, 3\}$, $B = \{3, 4, 5\}$
- c) $A = \{a, b, c\}$, $B = \{b, c, d\}$
- d) $A = \{x : x \text{ is even}\}$, $B = \{x : x \text{ is a multiple of 2}\}$

14. The shaded region in the Venn diagram below represents:

(Imagine a Venn diagram with two overlapping circles A and B. The only region shaded is the part of A that does not overlap with B)

- a) $A \cup B$
- b) $A \cap B$
- c) $A - B$
- d) $B - A$

15. Which law is represented by $A \cup B = B \cup A$?

- a) Associative Law
- b) Distributive Law
- c) Commutative Law
- d) De Morgan's Law

16. $(A \cup B) \cup C = A \cup (B \cup C)$ represents the:

- a) Associative Law
- b) Distributive Law
- c) Commutative Law
- d) Identity Law

17. $A \cup \phi$ is equal to:

- a) A
- b) ϕ
- c) U
- d) A'

18. $A \cap \phi$ is equal to:

- a) A
- b) ϕ
- c) U
- d) A'

19. The distributive law states that:

- a) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
- b) $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
- c) Both a and b
- d) Neither a nor b

20. If A and B are disjoint sets, then $n(A \cup B)$ is equal to:

- a) $n(A) + n(B) - n(A \cap B)$
- b) $n(A) + n(B)$
- c) $n(A) - n(B)$
- d) $n(A) * n(B)$

21. For any set A, $A \cup A$ is equal to:

- a) A
- b) A'
- c) U
- d) \emptyset

22. For any set A, $A \cap A$ is equal to:

- a) A
- b) A'
- c) U

d) \emptyset

23. If A and B are two sets, then $A \cap (A \cup B)$ is equal to:

- a) A
- b) B
- c) $A \cup B$
- d) $A \cap B$

24. The sets A and B are disjoint if:

- a) $A \cup B = \emptyset$
- b) $A \cap B = \emptyset$
- c) $A - B = \emptyset$
- d) $B - A = \emptyset$

25. If $n(A) = 10$, $n(B) = 15$, and $n(A \cap B) = 5$, then $n(A \cup B)$ is:

- a) 20
- b) 25
- c) 30
- d) 15

26. If $A \subset B$, then $A \cap B$ is:

- a) A
- b) B
- c) \emptyset
- d) $A \cup B$

27. The symmetric difference of A and B is given by:

- a) $(A - B) \cap (B - A)$
- b) $(A - B) \cup (B - A)$
- c) $(A \cup B) - (A \cap B)$
- d) Both b and c

28. If $A = \{1, 2, 3\}$ and $B = \{3, 4\}$, then $A \times B$ contains:

- a) 5 elements
- b) 6 elements
- c) 3 elements
- d) 4 elements

29. The distributive law of intersection over union is:

- a) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
- b) $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
- c) Both a and b
- d) Neither a nor b

30. If $U = \{1, 2, 3, 4, 5\}$, $A = \{1, 2, 3\}$, $B = \{3, 4\}$, then $(A - B)'$ is:

- a) $\{3, 4, 5\}$
- b) $\{1, 2, 5\}$

- c) {4,5}
- d) {3}

31. The set $(A \cup B) \cap (A \cup B')$ is equal to:

- a) A
- b) B
- c) $A \cap B$
- d) $A \cup B$

32. If A and B are disjoint, then $n(A \cup B)$ is equal to:

- a) $n(A) + n(B)$
- b) $n(A) + n(B) - n(A \cap B)$
- c) $n(A) * n(B)$
- d) $n(A) - n(B)$

33. The shaded region in the Venn diagram represents:

(Imagine two overlapping circles A and B. The overlapping region is shaded)

- a) $A \cup B$
- b) $A \cap B$
- c) $A - B$
- d) $B - A$

34. For any two sets A and B, $A - B$ is a subset of:

- a) B
- b) A
- c) A'
- d) B'

35. If $A = \{a, b, c\}$ and $B = \{c, d, e\}$, then $(A \cup B) - (A \cap B)$ is:

- a) $\{a, b, d, e\}$
- b) $\{c\}$
- c) $\{a, b, c, d, e\}$
- d) \emptyset

36. The law $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ is the:

- a) Commutative law
- b) Associative law
- c) Distributive law
- d) De Morgan's law

37. If $A \cap B = \emptyset$, then A and B are called:

- a) Overlapping sets
- b) Disjoint sets
- c) Equal sets
- d) Equivalent sets

38. The set $A - (A \cap B)$ is equal to:

- a) $A \cap B$
- b) $A \cup B$
- c) $A - B$
- d) $B - A$

39. If $A = \{x : x \text{ is a multiple of } 3\}$ and $B = \{x : x \text{ is a multiple of } 5\}$, then $A \cap B$ is the set of multiples of:

- a) 3
- b) 5
- c) 8
- d) 15

40. The number of elements in the Cartesian product of two sets with m and n elements respectively is:

- a) $m + n$
- b) $m * n$
- c) m^n
- d) n^m

41. The identity law for union states that $A \cup \emptyset$ is equal to:

- a) \emptyset
- b) A
- c) U
- d) A'

42. The identity law for intersection states that $A \cap U$ is equal to:

- a) \emptyset
- b) A
- c) U
- d) A'

43. If A and B are two sets such that $n(A) = 8$, $n(B) = 10$, and $n(A \cup B) = 15$, then $n(A \cap B)$ is:

- a) 3
- b) 4
- c) 5
- d) 2

44. The set $(A \cup B) - (A \cap B)$ is called the:

- a) Union of A and B
- b) Intersection of A and B
- c) Symmetric difference of A and B
- d) Difference of A and B

45. If $A = \{1, 2, 3\}$ and $B = \{2, 3, 4\}$, then $A \Delta B$ (symmetric difference) is:

- a) $\{1, 4\}$
- b) $\{2, 3\}$
- c) $\{1, 2, 3, 4\}$
- d) \emptyset

46. The complement of the union of two sets is equal to the intersection of their complements. This is:

- a) Associative law
- b) Commutative law
- c) De Morgan's law
- d) Distributive law

47. If $A \subseteq B$, then which of the following is true?

- a) $A \cup B = A$
- b) $A \cap B = B$
- c) $A - B = \emptyset$
- d) $B - A = \emptyset$

48. The set $A \cap (B \cup C)$ is equal to:

- a) $(A \cap B) \cup C$
- b) $(A \cup B) \cap C$
- c) $(A \cap B) \cup (A \cap C)$
- d) $(A \cup B) \cap (A \cup C)$

49. If A and B are two sets, then $A \times B = B \times A$ if:

- a) $A \subseteq B$
- b) $B \subseteq A$
- c) $A = B$
- d) $A = \emptyset$ or $B = \emptyset$ or $A = B$

50. The number of elements in $A \times B$ if A has 3 elements and B has 4 elements is:

- a) 7
- b) 12
- c) 4
- d) 3

Set 3:

1. b) $A \cup B$
2. c) All elements that are in A or in B (or in both)
3. b) $\{1, 2, 3, 4, 5\}$
4. a) $A \cap B$
5. a) Only elements common to both A and B
6. a) $\{3\}$
7. b) B
8. a) A
9. c) Elements in A but not in B
10. a) $\{1, 2\}$

- 11. b) $\{5, 6\}$
- 12. c) $A \cap B = \varnothing$
- 13. a) $A = \{1, 2, 3\}$, $B = \{4, 5, 6\}$
- 14. c) $A - B$
- 15. c) Commutative Law
- 16. a) Associative Law
- 17. a) A
- 18. b) \varnothing
- 19. c) Both a and b
- 20. b) $n(A) + n(B)$
- 21. a) A
- 22. a) A
- 23. a) A
- 24. b) $A \cap B = \varnothing$
- 25. a) 20
- 26. a) A
- 27. d) Both b and c
- 28. b) 6 elements
- 29. a) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
- 30. a) $\{3, 4, 5\}$
- 31. a) A
- 32. a) $n(A) + n(B)$
- 33. b) $A \cap B$
- 34. b) A
- 35. a) $\{a, b, d, e\}$
- 36. c) Distributive law
- 37. b) Disjoint sets
- 38. c) $A - B$
- 39. d) 15
- 40. b) $m * n$
- 41. b) A
- 42. b) A
- 43. a) 3
- 44. c) Symmetric difference of A and B
- 45. a) $\{1, 4\}$
- 46. c) De Morgan's law
- 47. c) $A - B = \varnothing$
- 48. c) $(A \cap B) \cup (A \cap C)$
- 49. c) $A = B$
- 50. b) 12