MATHS

BOOKS - PEARSON IIT JEE FOUNDATION

SETS

Example

1. If $P = \left\{ y : y = \frac{3x^2 + 5x + 6}{x} \text{ is an integer and x is a prime number } \right\}$, then find $n(P)$.

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2. If $n(A) = 3, n(B) = 5$ and $n(A \cup B) = 7$, then find $n(A \cap B)$.

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3. If $n(A) = 5, n(B) = 3$and the set of A and B are disjoint, then find $n(A \cup B)$.

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4. If $n(A) = 25 + x, n(B) = 27 - x$ and $n(B) = 27 - x$ and $n(A \cup B) = 46$, then $n(A \Delta B) =$

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5. In a cricket team of 11, 7 were at least 20 years old and 8 were almost 30 year old. The ages of how many were from 20 years to 30 years (both inclusive) ?

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6. If $n(A \cap B) = 40, n(A) = 50$ and $n(B) = 60$, then find $n(A \Delta B)$

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Exercise

1. If $A \subset B$ and $A \supset C$ then $A \cap B \cap C =$ _____.

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2. If $A = \{a, b\{c, d\}, e, \{f\}\}$, then $\{a, b, e\} \in A$. (True or False).

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3. If $A - B = B - A$, then A and B are _____ sets.

(equal/equivalent)

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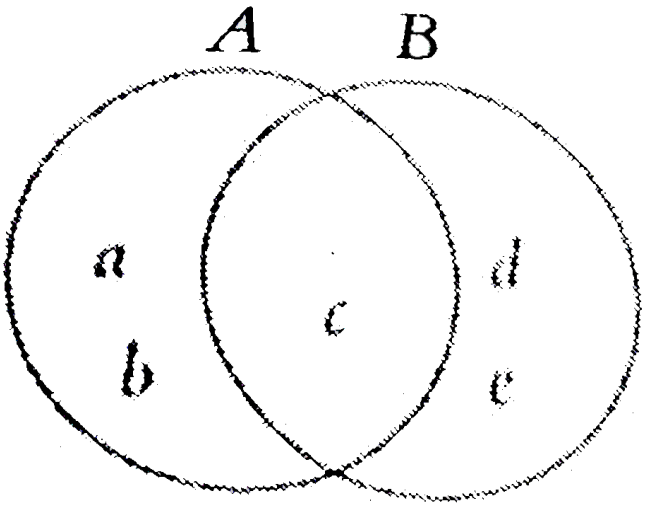

4.

In the above Venn diagram, $n(A \Delta B) =$ ____.

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5. If A is the set of whole numbers and B is the set of natural numbers, then $(B - A)$ us _____ set.

(singleton/null).

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6. If $A = \{1, 2, 3, 4, 5, \ldots\ldots, 10\}$, then the number of subsets of A which consists of $2, 4, 6, 8$ and 10 but not $1, 3, 5, 7$ and 9 is _____.

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7. $(A \cup \phi^c)^c =$ _____.

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8. If $A \cap \mu = \mu$ and $B \cup \phi = \phi$, then $A \cup B =$ _____.

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9. If A = {whole numbers} and B = {natural numbers}, then $A \Delta B =$ _____.

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10. If A and B are non-empty sets, $A \cap B = B$ and $A \cup B = B$, then A and B are _____ sets. (equal/equivalent).

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11. If $n(A \times B) = 15$, then the maximum possiblity of $n(B)$ is 3. (True/False).

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12. If A is any non-empty set, then the property $A \cup A = A$ is called an idempotent law. (True/False).

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13. If $P = \{A, B, C, D\}$ and $Q = \{a, b, c, d\}$ then P and Q are _____ set (equal/equivalent)

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14. If $P \subseteq Q$ and $Q \subseteq P$, then ____

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15. If A and B are two non-empty sets, then $n(A \times B)$ can be 17. (True/False)

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16. If A and B are disjoint sets, then $n(\ \wedge \Delta B) =$ ____.

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17. If A and B are two non-empty sets and $A - B$ is a null set, then ____.

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18. If $n(A\Delta B) = 12$ and $n(A \cap B) = 3$, then find the greatest possible value of $n(A \times B)$.

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19. If $A = \{1, 2\}$, $B = \{1, 2, 3\}$ and $c = \{1, 2, 3, 4, 5\}$ then the relation between A, B and C?

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20. If B is contained in A and C is contained in B, then relation between A and C is

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21. If $A = \{1, 2, 3, 4, 5\}$ and $B = \{6, 5, 4, 1\}$ then find $(A \cup B) - (A \cap B)$.

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22. If $(2x + 3, 4y - 3) = (9, 13)$ then find $x + y$.

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23. If $n(A) = 12$ and $n(B) = 20$, then find $n(A \Delta B)$ when (i) A and B are disjoint and (ii) $A \subset B$.

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24. Draw overlapping sets and shade the following.

(i) $A \cap (B \cup C)$.

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25. Draw venn diagram of $(A \cap C)$.

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26. The dual statement of $A - (B \cup C) = (A - B) \cap (A - C)$ is ____.

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27. If A = {Student in VIII class of age 13 years} and B = {Students in IX class of age 13years}, then $A \cap B =$ ____. (ϕ students of age 13 years)

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28. If A= {composite numbers}, B = {prime numbers} and C = {even numbers}, then $A \cap B \cap C =$ _____.

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29. If $B = \{\star, \Delta, ?, !\}$, then $n[P(B)] =$ ____.

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30. $[A-(B-A)] \cup [B-(A-B)]$

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Short Answer Type

1. If μ = {set of natural numbers less than 20}, A = {factors of 18} and B= {odd numbers less than 15}, then find

(i) $(A \cap B)'$, (ii) $A' \cup B'$

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2. If $n(A) = 15$ and $n(B) = 17$, then find $n(A \cup B \cup C)$ from the following Venn diagram. (The number in each region represents the number of elements of that region)

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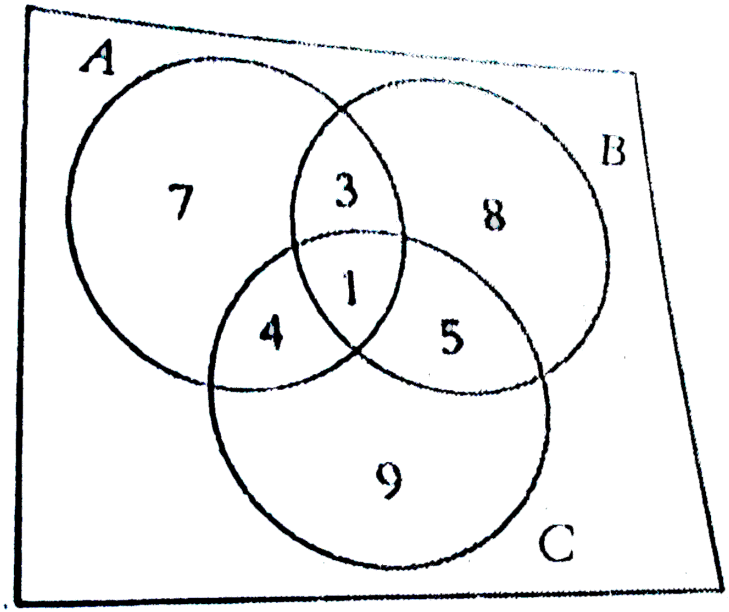
3. If $A\{2, \{3, 4\}, 5\{6, 7, 8\}\}$. Then write all the non-empty proper subsets of A.



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4. If $A = \{2, 4, 6, 8\}$ and $B = \{1, 3, 5, 7\}$ then represent $A \times B$ graphically.

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5. If $A = \{a, b, c\}$ and $B = \{1, 2, 3\}$ then write the $A \times B$ and $B \times A$ what do you notice ? Represent them in three diagram.

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6. In a group of 25 students, 13 can speak English, 12 can speak Hindi and 6 speak neither. How many can speak (i) Both English and Hindi ? (ii) Only Hindi ? (iii) Exactly one of the two languages ?

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7. In a class of 80 students, 55 students passed in mathematics and 60 passed in chemistry. 10 stu-dents failed in both mathematics and chemistry.

(i) How many students passed in both the subjects ?

(ii) How many students passed in exactly one of the two subjects ?

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8. If a set has 512 non-empty proper subsets, then find the cardinal number of the set.

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9. If $n(A \cap B') = 2x + 40, n(A \cap B) = x + 10$ and $n(B \cap A') = 60 - 3x$, then find $n(A \cup B)$.

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10. If $n(A) = n(B) = n(C) = 13, n(A \cap B \cap C') = 2, n(B \cap C \cap A') = 4, n($

and $n(A \cap B \cap C) = 1$ then find the number of elements which belongs to at most one of the sets.

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11. If $A = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ and set T is defined as $T = \{x, y\}$, where $y \in A$ and $x + y = 10$ or $xy = 10$, then, how many sets of the form T can be possible ? Write them ?

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12. 45 % of the students of a class participated in Physics Olympaid and 65 % of the students of the class participated in Maths Olympiad. 4 students participated in neither of these two and 8 students participated in both.

(i) Find how many students are there in the class ?

(ii) Participated only in maths Olympiad ?

(iii) Participated in at least one Olympiad ?

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13. If A is the set of all the letters of the word HYDERABAD, then find the cardinal number of the power set of set $P(A)$.

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14. A and B are any two sets. P_1 is the power set of A and P_2 is the power set of B. If $n(P_1) - n(P_2) = 31$, then find the number of elements in a and B.

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15. If $n(A) = a, n(B) = b$ and the number of subsets of A exceeds number of subsets of B by 1024, then find the values of a and b

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Essay Type Qns

1. If $P = \left\{ \frac{2n^2 + n + 6}{n} \text{ is an integer} \right\}$, then write the roster forms of the set P. (where n is an integer).

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2. $A = \{1, 2, 3, \ldots\ldots\ldots, 184\}$ and two of its subsets are X and Y. X is set of all multiples of 2 and Y is the set of all the multiples of 3. Find $n(X \cap Y)$.

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3. If $A = \{1, 2, 3, 5, 6, 10, 13, 15\}, B = \{4, 7, 8, 11\}$ and μ is the set of natural numbers then $A' \cup (A \cap B \cup B') =$

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4. If A, B and C are three non-empty sets such that $n(A \cap B \cap C) = 10$ and $n(A\Delta B) = n(B\Delta C) = n(C\Delta A) = 60$, then find the number of elements in $A \cup B \cup C$.

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5. If $n(A) = 5$ and $n(B) = 8$, then the sum of the mini-mum value of $n(A \cap B)$ and the maximum value of $n(A \cup B)$ is ____.

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Level 1

1. If P is a proper subset of Q, then $P \cap Q =$

A. Q

B. P

C. $P \cup Q$

D. None of these

Answer: B

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2. If P is a subset of Q, then $P \cup Q$=

A. P

B. $P \cup Q$

C. Q

D. None of these

Answer: C

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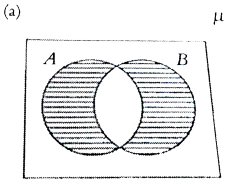
3. If A and B are disjoint then the illusations of $A - B$ in a Venn diagram is

A.



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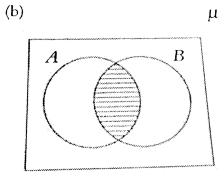
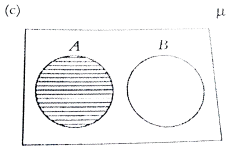
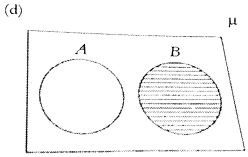


C.



D.



Answer: C

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4. Which of the following sets are disjoint.

A = {Multiples of 3}

B = {Multiple of 5}

C = {Multiple of 7}

A. A and B

B. B and C

C. A and C

D. None of these

Answer: D

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5. If $\mu = \{1, 2, 3, 4, 5, 6, 7\}, A = \{1, 2, 3\}$, and $B = \{2, 6, 7\}$ then $(A \cap B)' = ?$

A. $\{1, 3, 6, 7\}$

B. $\{1, 3, 7\}$

C. $\{1, 3, 6\}$

D. $\{1, 3, 5, 6, 7\}$

Answer: D

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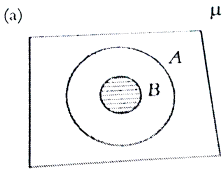
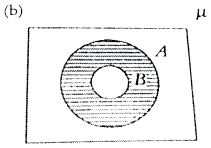
6. If $A \subset B$, then the illustration of $A - B$ in a Venn diagram is

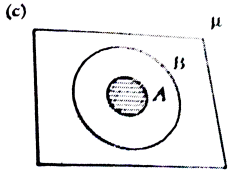
A.



B.



C.



D. None of these

Answer: B

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7. If $A = B'$, then $(A \cap B)'$ is _____.

A. ϕ

B. μ

C. A

D. B

Answer: B

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8. If $A = B'$, then $(A \cup B)'$ is ____.

A. A

B. B

C. ϕ

D. μ

Answer: C

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9. If $A = \{1, 2, 4, 5\}$ and $B = \{1, 4, 6\}$, then $A \Delta B = ?$

A. $\{2, 6\}$

B. $\{2, 4, 5\}$

C. $\{2, 4, 6\}$

D. $\{2, 5, 6\}$

Answer: D

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10. A and B are non-empty sets A - B = A and B - A = B. Then which of the following is true ?

A. $A \subset B$

B. $B \subset A$

C. A and B are disjoint

D. A = B

Answer: C

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11. If P and Q are subsets of μ, then $P - Q$ =

A. $P \cup Q$

B. ϕ

C. μ

D. $P \cap Q'$

Answer: D

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12. If $n(A) = 44, n(B) = 28$ and $n(A \cup B) = 56$, then find $n(B - A) =$

A. 12

B. 16

C. 28

D. None of these

Answer: A

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13. If $n(P) = 20, n(Q) = 18$ and $n(P \cup Q) = 27$, then $n(P - Q) =$

A. 17

B. 8

C. 9

D. 21

Answer: C

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14. In an examiniation $55\,\%$ of the students failed in chemistry, $47\,\%$ failed in physics and $23\,\%$ failed in both, find the pass percentage of the class.

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15. If $n(P \cap Q) = 23, n(P \cup Q) = 57$ and $n(Q - P) = 26$, then $n(P - Q) =$ _____.

A. 24

B. 54

C. 8

D. 14

Answer: C

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16. If $n(A-B)=17, n(B-A)=13$ and $n(A\cap B)=19,$ then $n(A\cup B)=$ ___.

A. 11

B. 30

C. 36

D. 49

Answer: D

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17. If P and Q are sets having 5 elements in com-mon, then how many elements do $P\times Q$ and $Q\times P$ have in common ?

A. 5

B. 10

C. 25

D. Cannot say

Answer: C

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18. If $(A \cup B) \cap (A \cap B) = A$, then which of the following is true ?

A. $A \subset B$

B. $B \subset A$

C. $A = \phi$

D. Both (a) and (c)

Answer: A

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19. If $X\Delta Y = \phi$, then which of the following is true ?

A. $X \subset Y$

B. X and Y are disjoint

C. X= Y

D. $Y \subset X$

Answer: C

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20. If $A\Delta B = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13\}$ and $B = \{4, 5, 6, 8, 11, 13\}$ then find A.

A. $\{1, 2, 3, 7, 9\}$

B. $\{1, 2, 3, 4, 5, 6, 7, 9\}$

C. $\{1, 2, 3, 4, 6, 7, 9\}$

D. $\{1, 2, 3, 4, 8, 11\}$

Answer: C

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21. If $n(P) = 13$, then for which of the following values of $n(Q)$ may result in $n(P \cap Q)$ being maximum ?

A. 9

B. 11

C. 12

D. 17

Answer: D

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22. If A and B and C are three non-empty sets, then which of the following is/are not true ?

(A) $n(A \times B) = n(B \times C) \Leftrightarrow n(A) = n(C)$

(B) $A - (B \cap C) = (A - B) \cap (A - C)$

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

(D) $(A \cap B) - C = (A - C) \cap (B - C)$

A. (B) and (D)

B. (A), (B) and (D)

C. (C) and (D)

D. only (B)

Answer: D

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23. Number of elements in cartesian product of sets Theorem (If A and B are two finite sets then ;$(n(A \times B)) = n(A) \times n(B)$

A. 1

B. 2

C. 6

D. None of these

Answer: A

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24. If $n(A \cup B) = 32, n(B) = 12$and $n(A \cap B) = 5$, then $n(A) =$

A. 27

B. 29

C. 25

D. 20

Answer: C

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25. In a class of 75 students, 40 take milk, 50 take tea and 30 take both. How many students take neither milk nor tea?

A. 60

B. 45

C. 15

D. 35

Answer: C

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26. Which of the following is not true ?

A. $A-(B\cup C)=(A-B)\cap(A-C)$

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

C. $A-(B-C)=(A-B)-C$

D. $(A\Delta B)\Delta C = A\Delta(B\Delta C)$

Answer: C

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27. If $n(A \times B) = 24, n(B \times C) = 36$, and $n(B) = 3,$ then $n(A \times C) =$

A. 48

B. 64

C. 72

D. 96

Answer: D

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28. Given that $A = \{2, 4, 6, 7, 8\}$ and $B = \{1, 2, 3, 4\}$ Find $A \Delta B$.

The following are the steps involved in sovling the above problem. Arrange them in sequential order.

(A) $A \Delta B = (A - B) \cup (B - A)$

(B) $A - B = \{2, 4, 6.8\} - \{1, 2, 3, 4\}$ and $B - A = \{1, 2, 3, 4\} - \{2, 4, 6, 7, 8\}$

(C) $A \Delta B = \{6, 7, 8\} \cup \{1, 3\} = \{1, 3, 6, 7, 8\}$

(D) $A - B = \{6, 7, 8\}$ and $B - A = \{1, 3\}$

A. BCAD

B. BACD

C. BDAC

D. BADC

Answer: C

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29. $A = \{x : 2 < x < 8 \text{ and } x \in N\}$ and $B = \{x : 3 < x < 9 \text{ and } x \in W\}$. Find $(A - B) \cap (B - A)$.

the following are the steps involved n solving the above problem. Arrange them in sequential order.

(A) $A = \{3, 4, 5, 6, 7\}$ and $B = \{4, 5, 6, 7, 8\}$

(B) $A - B = \{3\}, B - A = \{8\}$

(C)

$A - B = \{3, 4, 5, 6, 7\} - \{4, 5, 6, 7, 8\}, B - A = \{4, 5, 6, 7, 8\} - \{3, 4, 5, 6$

(D) $(A - B) \cap (B - A) = \phi$

A. ABCD

B. ACBD

C. ABDC

D. CABD

Answer: B

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30. If $n(A) = 6$ and $n(B) = 8$ and $n(A \cap B) = 4$, then find $n(A \Delta B)$.

The following are the step involved in solving the above problem . Arrange them in sequnential order.

(a) $n(A \cup B) = n(A) + n(B) - n(A \cap B)$

(b) $n(A \cup B) = 10$

(c)$n(A \cup B) = 6 + 8 - 4$

(d) $n(A \Delta B) = 10 - 4 = 6$

(e) $n(A \Delta B) = n(A \cup B) - n(A \cap B)$.

A. ABCDE

B. ACBED

C. ACEBD

D. AEBCD

Answer: B

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31. If A and B are two non-empty sets and $A - B$ is a null set, then ____.

A. A = B

B. $A \subset B$

C. $B \subset A$

D. None of these

Answer: B

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Level 2

1. If $A = \{x : x \in R, x \geq 3\}$ and $B = \{x : x \in R, x < 6\}$, then $A \cap B$=

A. $\{x : x \in R, 3 < x < 6\}$

B. $\{x : x \in R, 3 \leq x \leq 6\}$

C. ϕ

D. $\{x : x \in R, 3 \leq x \leq 6\}$

Answer: D

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2. If E is the set of equilateral triangle and I is the net of isoscales triangle then find $I - E$

A. ϕ

B. I

C. E

D. None of these

Answer: D

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3. In a hostel, there are 30 students, 9 of them take tea but not coffee. If 3 of them who take coeffee also start taking tea, 12 students would be taking both tea and coffee. How many students do not take tea ?

A. 10

B. 12

C. 14

D. 16

Answer: B

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4. $\mu = \{2, 3, 4, 5, 6, 7, 8\}, A = \{2, 3\}, b = \{4, 5\}$ and $C = \{6, 7, 8\}$, then $A^c \cap (B \cap c)^c$ is

A. $A \cap C$

B. $A \cup B$

C. $B \cup C$

D. $A \cup C$

Answer: C

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5. A and B are two non-empty sets so $n(A) + 1 = n(B)$. The difference of the cardinal number of their power sets is 448. Find the number of elements of B.

A. 9

B. 8

C. 7

D. 6

Answer: D

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6. A and B are non-emptry sets, $n(A)$ and $n(B)$ are two consective odd numbers whose average is 8 and$n(A \cap B)$ is a prime number.

The least possible value of $n(A \cup B)$ is _____.

A. 13

B. 9

C. 11

D. 15

Answer: B

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7. A and B are non-emptry sets, $n(A)$ and $n(B)$ are two consective odd numbers whose average is 8 and$n(A \cap B)$ is a prime number.

The greatest possible value of $n(A \cup B)$ is _____.

A. 14

B. 13

C. 15

D. 16

Answer: A

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8. There are three clubs A, B and C. Every member of C is also a member of both A and B. C has 10 members. There are 4 members who are in both A and B and are not members of C. Total num-ber of members in the clubs A and B is 36. How many are members of exactly one of these clubs ?

A. 12

B. 14

C. 18

D. 22

Answer: D

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9. A and B are two that $n(A) > n(B)$. P(A) and P(B) are power sets of A and B respectively and the difference between cardinal numbers of $P(A)$ and $P(B)$ is a three digit prime number.

The number of elements in set A is _____.

A. 6

B. 7

C. Cannot be determined

D. None of these

Answer: B

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10. A and B are two that $n(A) > n(B)$. P(A) and P(B) are power sets of A and B respectlively and the difference between cardinal numbers of $P(A)$ and $P(B)$ is a three digit prime number.

The number of elements in set B is _____.

A. 3

B. 2

C. Cannot be determined

D. None of these

Answer: D

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11. Given A and $B(n(A) > n(B))$ are two non-empty sets. Find the number of elements in A such that $2^{n(A)-n(B)} = 96$.

A. 5

B. 7

C. 6

D. 4

Answer: B

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12. In a certain class, one-third of the students were absent. Half of the total strength the Maths test and one-fourth of the total strength attended the Physics test. If 6 students attended both the tests and every students who was present attended at least one of the two test, how many students were absent on that day ?

A. 16

B. 18

C. 24

D. 32

Answer: C

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13. $A = \{a, \{b\}, c, \{d, e\}\}$

Find the number of subset of A which contains {b} but not c.

A. 4

B. 6

C. 8

D. 12

Answer: A

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14. $A = \{a, \{b\}, c, \{d, e\}\}$

Find the number of subset of A which contains exactly two elements.

A. 4

B. 6

C. 8

D. 12

Answer: B

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15. If A and B are any two sets, then $A - (A - B) =$ _____.

A. A

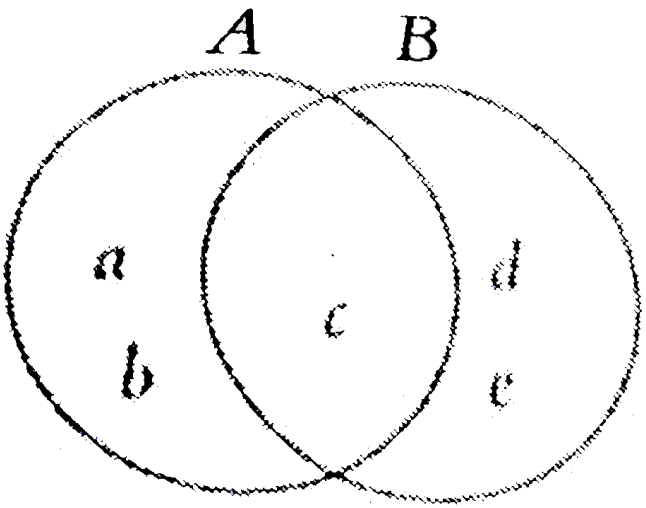
B. B

C. $A \cup B$

D. $A \cap B$

Answer: D

Watch Video Solution



16.

In the above Venn diagram, $n(A \Delta B) =$ ____.

A. 2

B. 3

C. 4

D. 5

Answer: C

Watch Video Solution

17. If $A = \{x : x \in W, x \leq 8\}$ and $B = \{x : x \in W, x < 19\}$, the $n(A - B) =$ ____.

A. 0

B. 1

C. 10

D. 11

Answer: B

Watch Video Solution

18. If $P = \{1, 2, 3, \ldots\ldots, 256\}$, two of its subsets are A and B. A is the set of all multiples of 3 and B is the set of all multiples of 4. Find $n(A \cap B)$.

A. 21

B. 20

C. 22

D. 19

Answer: A

Watch Video Solution

19. Which of the following represent the number of subset of non-empty set ?

A. 400

B. 440

C. 512

D. 584

Answer: C

Watch Video Solution

20. In a class , 40 student like Maths, 50 students like Physics and 60 students like Chemistry. 30 students like both Maths and Physics, 20 students like both Physics and Chemistry and none of them like both Maths of Chemistry . Find the total number of students who like only Maths, only Physics and only Chemistry.

A. 10

B. 40

C. 50

D. None

Answer: C

Watch Video Solution

21. If R is the set of all rhombuses and S is the set of all squares, then $S - R$ is _____.

A. Set of squares which are not rhombus.

B. Set of rhobuses which are not squares

C. ϕ

D. None of these

Answer: C

Watch Video Solution

Level 3

1. In a colony of 200 members, 85 people read English newspaper, 53 people read Hindi newspaper and 120 read Telugu newspaper, 12 read newspapers of all the three languages, 21 read English and Hindi newspapers, 17 read Hindi and Telugu newspapers.

Find the number of people who read only of the newspapers.

A. 80

B. 94

C. 103

D. 114

Answer: D

Watch Video Solution

2. In a colony of 200 members, 85 people read English newspaper, 53 people read Hindi newspaper and 120 read Telugu newspaper, 12 read newspapers of all the three languages, 21 read English and Hindi newspapers, 17 read Hindi and Telugu newspapers.

Find the number of people who read almost 2 newspapers.

A. 168

B. 134

C. 188

D. 176

Answer: C

Watch Video Solution

3. In a colony of 200 members, 85 people read English newspaper, 53 people read Hindi newspaper and 120 read Telugu newspaper, 12 read newspapers of all the three languages, 21 read English and Hindi newspapers, 17 read Hindi and Telugu newsapapers.

Find the numbers of people who read exactly 2 newspaper.

A. 54

B. 66

C. 114

D. 86

Answer: A

Watch Video Solution

4. A and B are two sets such that $n(A) = 12, n(B) = 10, A \cap B \neq \phi$ and $B \not\subset A$.

The least possible value of $n(A \Delta B)$ is _____.

A. 13

B. 4

C. 2

D. 22

Answer: B

Watch Video Solution

5. Which of the following is/are not true ?

(A) $P = \{x : x = 2y + 1 \text{and} y \in N\}$ is a finite set.

(B) $Q = \{x : x \in R \text{and} x^2 + 1 = 0\}$ is a null set.

(C) $R = \{x : x^3 + 1 = 0 \text{and} x^2 + 1 = 0\}$ is a single-ton set.

(D) $S = \{x : 8 < x < 13, x \in R)$ is an infinite set.

A. (B), (C) and (D)

B. (A), (C) and (D)

C. (A and (B)

D. (A) and (C)

Answer: D

Watch Video Solution

6. If $\mu = \{-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

$A = \left\{\frac{x}{x^2} = 25, x \in Z\right\}$

$B = \left\{\frac{x}{x^2} + 5 = 9, x \in Z\right\}$ and

$C = \left\{\frac{x}{-2} \leq x \leq 2, x \in Z\right\}$ then $(A \cap B \cap C)^C \cap (A \Delta B)^C =$

A. $\{-3, -1, 0, 1, 2\}$

B. $\{-4, -3, 0\}$

C. $(-4, -3, -2, -1, 0, 1, 3, 4\}$

D. $\{-2, 2, 5, -5\}$

Answer: C

Watch Video Solution

7. A and B are two set such that $n(A) = 20$ and $n(B) = 5$.

The minimum people value of $n(A \Delta B)$ is _____.

A. 10

B. 15

C. 8

D. 12

Answer: B

Watch Video Solution

8. A and B are two set such that $n(A) = 20$ and $n(B) = 5$.

The maximum possible value of $n(A \Delta B)$ is _____.

A. 25

B. 18

C. 15

D. 20

Answer: A

Watch Video Solution

Examples

1. If $P = \left\{ y : y = \frac{3x^2 + 5x + 6}{x} \text{ is an integer and } x is a 'number} \right\}$, then find $n(P)$.

Watch Video Solution

2. If n(A) = 20, n(B) = 28, and $n(A \cup B) = 36$, then find $n(A \cap B)$.

Watch Video Solution

3. If n(X)= 4, n(Y)= 9, and the sets X and Y are disjoint, then find $n(X \cup Y)$.

Watch Video Solution

4. If n(A)=25+x, n(B) = 27 - x, and $n(A \cup B) = 46$, then n $(A \cap B) =$

Watch Video Solution

5. In a cricket team of 11, 7 were at least 20 years old and 8 were almost 30 year old. The ages of how many were from 20 years to 30 years (both inclusive) ?

Watch Video Solution

6. If $n(A \cap B) = 40, n(A) = 50$, and $n(B) = 60$, then find $n(A \cup B)$.

Watch Video Solution

Test Your Concepts Very Short Answer Type Questions

1. If $A \subset B$ and $A \supset C$, then $A \cap B \cap C$ = _____

Watch Video Solution

2. If $A = \{1, 2, 3, 4, 5, 6\}$, then $\{1, 2\} \in A$.

(True or False)

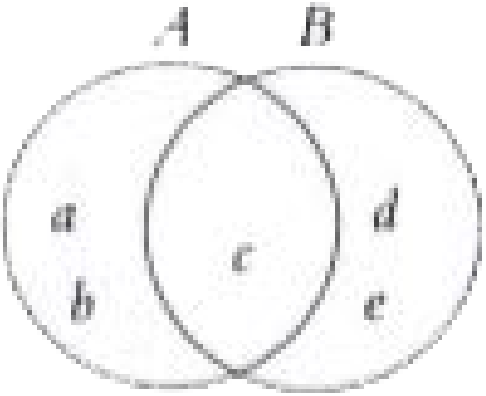
Watch Video Solution

3. If $X - Y = Y - X$, the X and Y are _____ sets.

(equal/equivalent)

Watch Video Solution

Watch Video Solution



4.

In the above Venn diagram n, $(A\Delta B)$= _____.

Watch Video Solution

5. If A is the set of whole numbers and B is the set of natural numbers, then $(A - B)$ is _____ set.

(singleton/null)

Watch Video Solution

6. If $A = \{1, 2, 3, 4\}$, then the number of subsets of A are _____.

Watch Video Solution

7. $(A \cup \varphi^c)^c =$ _____

Watch Video Solution

8. If $A \cap \mu = \mu$ and $B \cup \phi = \phi$, then $A \cup B =$ _____.

Watch Video Solution

9. If A = {1,8,6,3,7,0} and B = {3,8,1,6,7}, then $A - B$ = _____

Watch Video Solution

10. If A and B are non-empty sets, $A \cap B = B$ and $A \cup B = B$, then A and B are _____ sets. (equal/equivalent).

Watch Video Solution

11. If $n(A \times B) = 15$, then the maximum possiblity of $n(B)$ is 3. (True/False).

Watch Video Solution

12. If A is any non-empty set, with 3 elements then number of subsets of A are

Watch Video Solution

13. If X={S,T,U,V} and Y = {s,t,u,v}, then P and Q are _____ sets. (equal/equivalent)

Watch Video Solution

14. If $P \subseteq Q$ and $Q \subseteq P$, then _____.

Watch Video Solution

15. If A and B are two non-empty sets, then $n(A \times B)$ can be 17. (True/False)

Watch Video Solution

16. If A and B are disjoint sets, then draw their venn diagram

Watch Video Solution

17. If A and B are two non-empty sets and $A - B$ is a null set, then ____.

Watch Video Solution

18. If $n(A \Delta B) = 12$ and $n(A \cap B) = 3$, then find the greatest possible value of $n(A \times B)$.

Watch Video Solution

19. If $A = \{1, 2\}, B = \{1, 2, 3\}$ and $c = \{1, 2, 3, 4, 5\}$ then the relation between A, B and C?

Watch Video Solution

20. If B is contained in A and C is contained in B, then relation between A and C is

Watch Video Solution

21. If A={1,2,3,4,5, 6} and B = {4,1}, then find $(A \cup B) - (A \cap B)$.

Watch Video Solution

22. If $(2x + 3, 4y - 3) = (9, 13)$ then find $x + y$.

Watch Video Solution

Watch Video Solution

23. If $n(A) = 12$ and $n(B) = 20$, then find $n(A \Delta B)$ when (i) A and B are disjoint and (ii) $A \subset B$.

Watch Video Solution

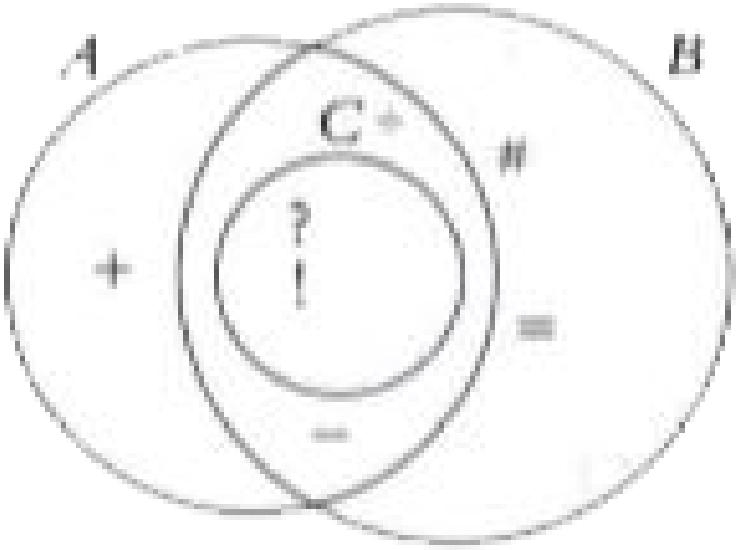
24. If $n(A) = 12$ and $n(B) = 20$, then find $n(A \Delta B)$ when (i) A and B are disjoint and (ii) $A \subset B$.

Watch Video Solution

25. Draw overlapping sets and shade the following.

(i) $A \cap (B \cup C)$.

Watch Video Solution



26.

In the above Venn diagram, $(A \cap C) \cup (B \cap C) =$ _____

Watch Video Solution

27. The dual statement of $A - (B \cup C) = (A - B) \cap (A - C)$ is ____.

Watch Video Solution

28. If A = {Student in VIII class of age 13 years} and B = {Students in IX class of age 13years}, then $A \cap B =$ ____. (ϕ students of age 13 years)

Watch Video Solution

29. If A= {composite numbers}, B = {prime numbers} and C = {even numbers}, then $A \cap B \cap C =$ _____.

Watch Video Solution

30. If $B = \{\star, \Delta, ?, !\}$, then $n[P(B)] =$ ____.

Watch Video Solution

31. $[A - (B - A)] \cup [B - (A - B)]$

Watch Video Solution

Test Your Concepts Short Answer Type Questions

1. If μ = {set of natural numbers less than 20}, A = {factors of 18} and B= {odd numbers less than 15}, then find

(i) $(A \cap B)'$, (ii) $A' \cup B'$

Watch Video Solution

2. If μ = {set of natural numbers less than 20}, A = {factors of 18} and B= {odd numbers less than 15}, then find

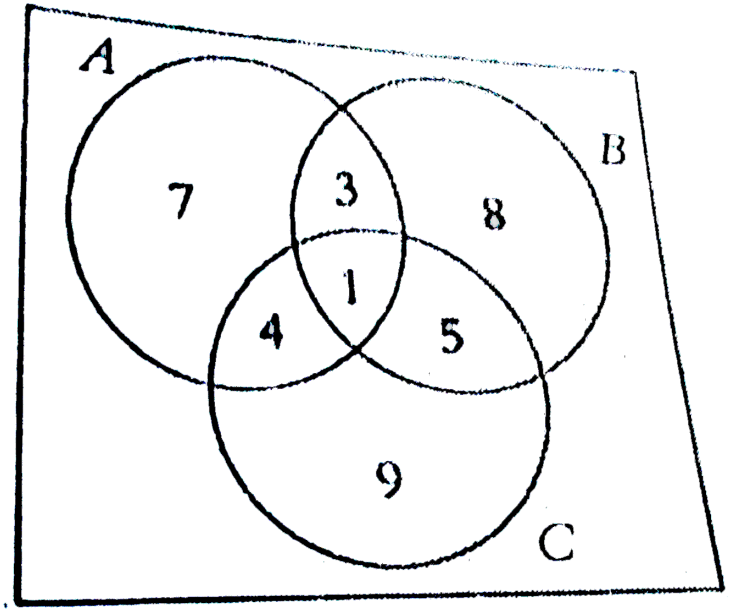
(i) $(A \cap B)'$, (ii) $A' \cup B'$

Watch Video Solution

3. If n(A) =15 and n(B) =17, then find $n(A \cup B \cup C)$ from the following Venn diagram. (The number in each region represents the umber of elements of that region.)

View Text Solution

4. If $A\{2, \{3, 4\}, 5\{6, 7, 8\}\}$. Then write all the non-empty proper subsets of A.



Watch Video Solution

5. If $A = \{2, 4, 6, 8\}$ and $B = \{1, 3, 5, 7\}$ then represent $A \times B$ graphically.

Watch Video Solution

6. If $A = \{a, b, c\}$ and $B = \{1, 2, 3\}$ then write the $A \times B$ and $B \times A$ what do you notice ? Represent them in three diagram.

Watch Video Solution

7. In a group of 25 students, 13 can speak English, 12 can speak Hindi and speak neither. How many can speak

(i) Both English and Hindi ?

(ii) Only Hindi ?

(iii) Exactly one of the two languages ?

Watch Video Solution

8. In a group of 25 students, 13 can speak English, 12 can speak Hindi and speak neither. How many can speak

(i) Both English and Hindi ?

(ii) Only Hindi ?

(iii) Exactly one of the two languages ?

Watch Video Solution

9. In a group of 25 students, 13 can speak English, 12 can speak Hindi and speak neither. How many can speak

(i) Both English and Hindi ?

(ii) Only Hindi ?

(iii) Exactly one of the two languages ?

Watch Video Solution

10. In a class of 80 students, 55 students passed in mathematics and 60 passed in chemistry. 10 stu-dents failed in both mathematics and chemistry.

(i) How many students passed in both the subjects ?

(ii) How many students passed in exactly one of the two subjects ?

Watch Video Solution

11. In a class of 80 students, 55 students passed in mathematics and 60 passed in chemistry. 10 stu-dents failed in both mathematics and chemistry.

(i) How many students passed in both the subjects ?

(ii) How many students passed in exactly one of the two subjects ?

Watch Video Solution

12. If a set has 512 non-empty proper subsets, then find the cardinal number of the set.

Watch Video Solution

13. If $n(A \cap B') = 2x + 40, n(A \cap B) = x + 10$ and $n(B \cap A') = 60 - 3x$, then find $n(A \cup B)$.

Watch Video Solution

14. If

$n(A \cup B \cup C) = 100, n(A) = 4x, n(B) = 6x, n(C) = 5x, n(A \cap B) = 20$

and $n(A \cap B \cap C) = 10$ then the value of x is .

Watch Video Solution

15. If $A = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ and set T is defined as $T = \{x, y\}$, where $y \in A$ and $x + y = 10$ or $xy = 10$, then, how many sets of the form T can be possible ? Write them ?

Watch Video Solution

16. $45\,\%$ of the students of a class participated in Physics Olympaid and $65\,\%$ of the students of the class participated in Maths Olympiad. 4 students participated in neither of these two and 8 students participated in both. Find how many students

are there in the class?

Watch Video Solution

17. 45% of the students of a class participated in Physics Olympaid and 65% of the students of the class participated in Maths Olympiad. 4 students participated in neither of these two and 8 students participated in both. Find how many students

participated only in maths Olympiad ?

Watch Video Solution

18. 45% of the students of a class participated in Physics Olympaid and 65% of the students of the class participated in Maths Olympiad. 4 students participated in neither of these two and 8 students participated in both. Find how many students

participated in at least one Olympiad?

Watch Video Solution

19. If A is the set of all the letters of the word HYDERABAD, then find the cardinal number of the power set of set $P(A)$.

Watch Video Solution

20. A and B are any two sets. P_1 is the power set of A and P_2 is the power set of B. If $n(P_1) - n(P_2) = 31$, then find the number of elements in a and B.

Watch Video Solution

21. If n(A) = a, n(B) = b, and the number of subsets of A exceeds subsets of B by 3072, then find the values of a and b.

Watch Video Solution

Test Your Concepts Essay Type Questions

1. If $P = \left\{ \frac{2n^2 + n + 6}{n} \text{ is an integer} \right\}$, then write the roster forms of the set P. (where n is an integer).

Watch Video Solution

2. $A = \{1, 2, 3, \ldots\ldots\ldots, 184\}$ and two of its subsets are X and Y. X is set of all multiples of 2 and Y is the set of all the multiples of 3. Find $n(X \cap Y)$.

Watch Video Solution

3. If $A = \{1, 2, 3, 5, 6, 10, 13, 15\}$, $B = \{4, 7, 8, 11\}$ and μ is the set of natural numbers then $A' \cup (A \cap B \cup B') =$

Watch Video Solution

4. If A, B and C are three non-empty sets such that $n(A \cap B \cap C) = 10$ and $n(A \Delta B) = n(B \Delta C) = n(C \Delta A) = 60$, then find the number of

elements in $A \cup B \cup C$.

Watch Video Solution

5. If $n(A) = 5$ and $n(B) = 8$, then the sum of the mini-mum value of $n(A \cap B)$ and the maximum value of $n(A \cup B)$ is ____.

Watch Video Solution

Concept Application Level 1

1. If P is a proper subset of Q, then $P \cap Q =$

A. Q

B. P

C. $P \cup Q$

D. $P \cap Q$

Answer: B

Watch Video Solution

2. If P is a subset of Q, then $P \cup Q$=

A. P

B. $P \cap Q$

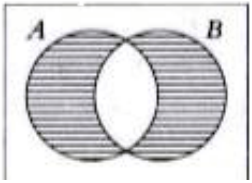
C. Q

D. $P \cup Q$

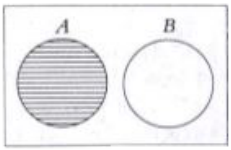
Answer: C

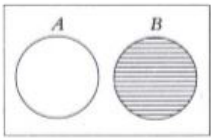
Watch Video Solution

3. If A and B are disjoint then the illusations of $A - B$ in a Venn diagram is

A. 

B.

C. 

D. 

Answer: C

Watch Video Solution

4. Which of the following sets are disjoint.

A = {Multiples of 3}

B = {Multiple of 5}

C = {Multiple of 7}

A. A and B

B. B and C

C. A and C

D. None of these

Answer: D

Watch Video Solution

5. If $\mu = \{1, 2, 3, 5, 6, 7\}, A = \{1, 2, 3\}$, and $B = \{2, 6, 7\}$, then $(A \cap B)^c = ?$

A. $\{1, 3, 6, 7\}$

B. $\{1, 3, 7\}$

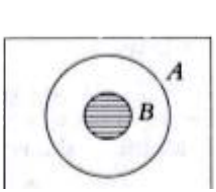
C. $\{1, 3, 6\}$

D. $\{1, 3, 5, 6, 7\}$

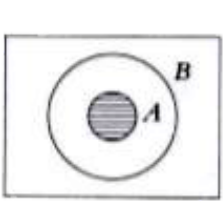
Answer: D

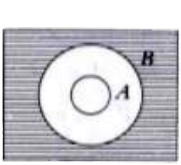
Watch Video Solution

6. If $A \subset B$, then the illustration of $A - B$ in a Venn diagram is

A. 

B. 

C. 

D. 

Answer: B

Watch Video Solution

7. If $A = B'$, then $(A \cap B)'$ is _____.

A. φ

B. μ

C. A

D. B

Answer: B

Watch Video Solution

8. If $A' = (B')'$, then $(A \cup B)'$ is _____.

A. A

B. B

C. φ

D. μ

Answer: C

Watch Video Solution

9. If $A = \{1, 2, 4, 5\}$ and $B = \{1, 4, 6\}$, then $A \Delta B = ?$

A. {2,6}

B. {2,4,5}

C. {2,4,6}

D. {2,5,6}

Answer: D

Watch Video Solution

10. A and B are non-empty sets A - B = A and B - A = B. Then which of the following is true ?

A. $A \subset B$

B. $B \subset A$

C. A and B are disjoint.

D. A=B

Answer: C

Watch Video Solution

11. If P and Q are subsets of μ, then $P - Q$ =

A. $P \cup Q$

B. φ

C. μ

D. $P \cap Q'$

Answer: D

Watch Video Solution

12. If $n(A) = 44, n(B) = 28$ and $n(A \cup B) = 56$, then find $n(P - Q) =$

A. 12

B. 16

C. 28

D. 24

Answer: A

Watch Video Solution

13. If $n(P) = 20, n(Q) = 18$ and $n(P \cup Q) = 27$, then $n(P - Q) =$

A. 17

B. 8

C. 9

D. 21

Answer: C

Watch Video Solution

14. In an examiniation 55% of the students failed in chemistry, 47% failed in physics and 23% failed in both, find the pass percentage of the class.

A. 79%

B. 44%

C. 27%

D. 21%

Answer: D

Watch Video Solution

15. If $n(P \cap Q) = 23, n(P \cup Q) = 57$ and $n(Q - P) = 26$, then $n(P - Q) =$ _____.

A. 24

B. 54

C. 8

D. 14

Answer: C

Watch Video Solution

16. If $n(A - B) = 17, n(B - A) = 13$ and $n(A \cap B) = 19$, then $n(A \cup B) =$ ___.

A. 11

B. 30

C. 36

D. 49

Answer: D

Watch Video Solution

17. If P and Q are sets having 5 elements in com-mon, then how many elements do $P \times Q$ and $Q \times P$ have in common ?

A. 5

B. 10

C. 25

D. 20

Answer: C

Watch Video Solution

18. If $(A \cup B) \cap (A \cap B) = A$, then which of the following is true ?

A. $A \subset B$

B. $B \subset A$

C. $A = \varphi$

D. Both (a) and (c)

Answer: A

Watch Video Solution

19. If $X \Delta Y = \varphi$, then which of the following is true

A. $X \subset Y$

B. X and Y are disjoint

C. X=Y

D. $Y \subset X$

Answer: C

Watch Video Solution

20. If $A \Delta B = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13\}$ and $B = \{4, 5, 6, 8, 11, 13\}$ then find A.

A. $\{1, 2, 3, 7, 9\}$

B. $\{1, 2, 3, 4, 5, 6, 7, 9\}$

C. $\{1, 2, 3, 4, 6, 7, 9\}$

D. $\{1, 2, 3, 4, 8, 11\}$

Answer: C

Watch Video Solution

21. If $n(P) = 13$, then for which of the following values of $n(Q)$ may result in $n(P \cap Q)$ being maximum ?

A. 9

B. 11

C. 12

D. 17

Answer: D

Watch Video Solution

22. If A and B and C are three non-empty sets, then which of the following is/are not true ?

(A) $n(A \times B) = n(B \times C) \Leftrightarrow n(A) = n(C)$

(B) $A - (B \cap C) = (A - B) \cap (A - C)$

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

(D) $(A \cap B) - C = (A - C) \cap (B - C)$

A. (B) and (D)

B. (A),(B), and (D)

C. (C) and (D)

D. only (B)

Answer: D

Watch Video Solution

23. If A and B are two non - empty equivalent sets, then a possible value of $n(A \times B)$ is _____.

A. 1

B. 2

C. 6

D. 3

Answer: A

Watch Video Solution

24. If $n(A \cup B) = 32, n(B) = 12$and $n(A \cap B) = 5$, then $n(A) =$

A. 27

B. 29

C. 25

D. 20

Answer: C

Watch Video Solution

25. In a class of 75 students, 40 take milk, 50 take tea and 30 take both. How many students take neither milk nor tea?

A. 60

B. 45

C. 15

D. 35

Answer: C

Watch Video Solution

26. Which of the following is not true ?

A. $A-(B\cup C)=(A-B)\cap(A-C)$

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

C. $A-(B-C)=(A-B)-C$

D. $(A\Delta B)\Delta C=A\Delta(B\Delta C)$

Answer: C

Watch Video Solution

27. If $n(A \times B) = 24, n(B \times C) = 36$, and $n(B) = 3,$ then $n(A \times C) =$

A. 48

B. 64

C. 72

D. 96

Answer: D

Watch Video Solution

28. Given that $A = \{2, 4, 6, 7, 8\}$ and $B = \{1, 2, 3, 4\}$ Find $A \Delta B.$

The following are the steps involved in sovling the above problem. Arrange them in sequential order.

(A) $A \Delta B = (A - B) \cup (B - A)$

(B) $A - B = \{2, 4, 6.8\} - \{1, 2, 3, 4\}$ and $B - A = \{1, 2, 3, 4\} - \{2, 4, 6, 7, 8\}$

(C) $A\Delta B = \{6, 7, 8\} \cup \{1, 3\} = \{1, 3, 6, 7, 8\}$

(D) $A - B = \{6, 7, 8\}$ and $B - A = \{1, 3\}$

A. BCAD

B. BACD

C. BDAC

D. BADC

Answer: C

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29. $A = \{x : 2 < x < 8 \text{ and } x \in N\}$ and $B = \{x : 3 < x < 9 \text{ and } x \in W\}$. Find $(A - B) \cap (B - A)$.

the following are the steps involved n solving the above problem. Arrange them in sequential order.

(A) $A = \{3, 4, 5, 6, 7\}$ and $B = \{4, 5, 6, 7, 8\}$

(B) $A - B = \{3\}, B - A = \{8\}$

(C)

$A - B = \{3, 4, 5, 6, 7\} - \{4, 5, 6, 7, 8\}, B - A = \{4, 5, 6, 7, 8\} - \{3, 4, 5, 6$

(D) $(A - B) \cap (B - A) = \phi$

A. ABCD

B. ACBD

C. ABDC

D. CABD

Answer: B

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30. If $n(A) = 6$ and $n(B) = 8$ and $n(A \cap B) = 4$, then find $n(A \Delta B)$.

The following are the step involved in solving the above problem . Arrange them in sequnential order.

(a) $n(A \cup B) = n(A) + n(B) - n(A \cap B)$

(b) $n(A \cup B) = 10$

(c)$n(A \cup B) = 6 + 8 - 4$

(d) $n(A\Delta B) = 10 - 4 = 6$

(e) $n(A\Delta B) = n(A \cup B) - n(A \cap B)$.

A. ABCDE

B. ACBED

C. ACEBD

D. AEBCD

Answer: B

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31. If A and B are two non-empty sets and $A - B$ is a null set, then _____.

A. $A = B$

B. $A \subset B$

C. $B \subset A$

D. $A \supset B$

Answer: B

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Concept Application Level 2

1. If $A = \{x : x \in R, 2x + 1 \geq 5\}$ and $B = \{x : x \in R, 3x + 2 \leq 32\}$, then $A \cap B =$ _____.

A. $\{x : x \in R, 3 < x < 6\}$

B. $\{x : x \in R, 3 \leq x \leq 6\}$

C. φ

D. $\{x : x \in R, 2 \leq x \leq 10\}$

Answer: D

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2. If E is the set of equilateral triangle and I is the net of isoscales triangle then find $I - E$

A. $\varnothing$

B. I

C. E

D. $I + E$

Answer: D

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3. In a hostel, there are 30 students, 9 of them take tea but not coffee. If 3 of them who take coeffee also start taking tea, 12 students would be taking both tea and coffee. How many students do not take tea ?

A. 10

B. 12

C. 14

D. 16

Answer: B

Watch Video Solution

4. $\mu = \{2, 3, 4, 5, 6, 7, 8\}, A = \{2, 3\}, b = \{4, 5\}$ and $C = \{6, 7, 8\}$, then $A^c \cap (B \cap c)^c$ is

A. $A \cap C$

B. $A \cup B$

C. $B \cup C$

D. $A \cup C$

Answer: C

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5. A and B are two non-empty sets and $n(A) > n(B)$. The difference in the number of elements in their power sets is 448. Find the number of elements of B.

A. 9

B. 8

C. 7

D. 6

Answer: D

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6. A and B are non-emptry sets, $n(A)$ and $n(B)$ are two consective odd numbers whose average is 8 and$n(A \cap B)$ is a prime number.

The least possible value of $n(A \cup B)$ is _____.

A. 13

B. 9

C. 11

D. 15

Answer: B

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7. A and B are non-emptry sets, $n(A)$ and $n(B)$ are two consective odd numbers whose average is 8 and$n(A \cap B)$ is a prime number.

The greatest possible value of $n(A \cup B)$ is _____.

A. 14

B. 13

C. 15

D. 16

Answer: A

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8. There are three clubs A, B and C. Every member of C is also a member of both A and B. C has 10 members. There are 4 members who are in both A and B and are not members of C. Total num-ber of members in the clubs A and B is 36. How many are members of exactly one of these clubs ?

A. 12

B. 14

C. 18

D. 22

Answer: D

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9. A and B are two that $n(A) > n(B)$. P(A) and P(B) are power sets of A and B respectively and the difference between cardinal numbers of $P(A)$

and $P(B)$ is a three digit prime number.

The number of elements in set A is _____.

A. 6

B. 7

C. 5

D. None of these

Answer: B

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10. A and B are two that $n(A) > n(B)$. P(A) and P(B) are power sets of A and B respectlively and the difference between cardinal numbers of $P(A)$ and $P(B)$ is a three digit prime number.

The number of elements in set B is _____.

A. 3

B. 2

C. 1

D. None of these

Answer: D

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11. Given A and $B(n(A) > n(B))$ are two non-empty sets. Find the number of elements in A such that $n(P(A)) - n(P(B)) = 96$.

A. 5

B. 7

C. 6

D. 4

Answer: B

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12. In a certain class, one-third of the students were absent. Half of the total strength the Maths test and one-fourth of the total strength attended the Physics test. If 6 students attended both the tests and every students who was present attended at least one of the two test, how many students were absent on that day ?

A. 16

B. 18

C. 24

D. 32

Answer: C

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13. $A = \{a, \{b\}, c, \{d, e\}\}$

Find the number of subset of A which contains {b} but not c.

A. 4

B. 6

C. 8

D. 12

Answer: A

Watch Video Solution

14. $A = \{a, \{b\}, c, \{d, e\}\}$

Find the number of subset of A which contains exactly two elements.

A. 4

B. 6

C. 8

D. 12

Answer: B

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15. If A and B are any two sets, then $A - (A - B) =$ _____.

A. A

B. B

C. $A \cup B$

D. $A \cap B$

Answer: D

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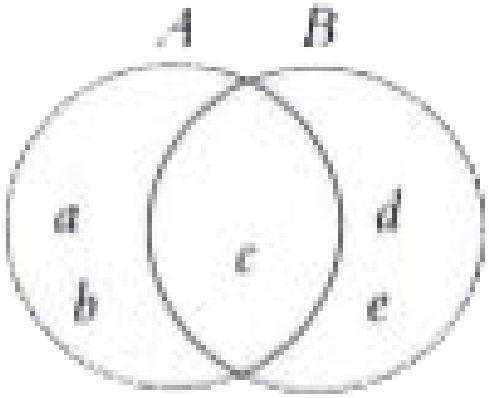
16.



In the above Venn diagram n, $(A \Delta B)$= _____.

A. 2

B. 3

C. 4

D. 5

Answer: C

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17. If $A = \{x : x \in W, x \leq 8\}$ and $B = \{x : x \in W, x < 19\}$, the $n(A - B) =$ ____.

A. 0

B. 1

C. 10

D. 11

Answer: B

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18. If $P = \{1, 2, 3, \ldots\ldots, 256\}$, two of its subsets are A and B. A is the set of all multiples of 3 and B is the set of all multiples of 4. Find $n(A \cap B)$.

A. 21

B. 20

C. 22

D. 19

Answer: A

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19. Which of the following represent the number of subset of non-empty set ?

A. 400

B. 440

C. 512

D. 584

Answer: C

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20. In a class , 40 student like Maths, 50 students like Physics and 60 students like Chemistry. 30 students like both Maths and Physics, 20 students like both Physics and Chemistry and none of them like both Maths of Chemistry . Find the total number of students who like only Maths, only Physics and only Chemistry.

A. 10

B. 40

C. 50

D. 30

Answer: C

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21. If R is the set of all rhombuses and S is the set of all squares, then $S - R$ is _____.

A. set of squares which are not rhombuses

B. set of rhombuses which are not squares

C. φ

D. None of these

Answer: C

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Concept Application Level 3

1. In a colony of 200 members, 85 people read English newspaper, 53 people read Hindi newspaper and 120 read Telugu newspaper, 12 read newspapers of all the three languages, 21 read English and Hindi newspapers, 17 read Hindi and Telugu newspapers. and 52 read telugu and english news paperr

Find the number of people who read only one of the newspapers.

A. 80

B. 94

C. 103

D. 114

Answer: D

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2. In a colony of 200 members, 85 people read English newspaper, 53 people read Hindi newspaper and 120 read Telugu newspaper, 12 read

newspapers of all the three languages, 21 read English and Hindi newspapers, 17 read Hindi and Telugu newspapers.and 52 read telugu and english news paperr

Find the number of people who read almost 2 newspapers.

A. 168

B. 134

C. 188

D. 176

Answer: C

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3. In a colony of 200 members, 85 people read English newspaper, 53 people read Hindi newspaper and 120 read Telugu newspaper, 12 read newspapers of all the three languages, 21 read English and Hindi newspapers, 17 read Hindi and Telugu newsapapers.

Find the numbers of people who read exactly 2 newspaper.

A. 54

B. 66

C. 114

D. 86

Answer: A

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4. A and B are two sets such that $n(A) = 12, n(B) = 10, A \cap B \neq \phi$ and $B \not\subset A$.

The least possible value of $n(A \Delta B)$ is _____.

A. 13

B. 4

C. 2

D. 22

Answer: B

Watch Video Solution

5. Which of the following is/are not true ?

(A) $P = \{x : x = 2y + 1 \text{and} y \in N\}$ is a finite set.

(B) $Q = \{x : x \in R \text{and} x^2 + 1 = 0\}$ is a null set.

(C) $R = \{x : x^3 + 1 = 0 \text{and} x^2 + 1 = 0\}$ is a single-ton set.

(D) $S = \{x : 8 < x < 13, x \in R)$ is an infinite set.

A. (B), (C), and (D)

B. (A), (C), and (D)

C. (A) and (B)

D. (A) and (C)

Answer: D

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6. If $\mu = \{-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

$A = \left\{\frac{x}{x^2} = 25, x \in Z\right\}$

$B = \left\{\frac{x}{x^2} + 5 = 9, x \in Z\right\}$ and

$C = \left\{\frac{x}{-2} \leq x \leq 2, x \in Z\right\}$ then $(A \cap B \cap C)^C \cap (A \Delta B)^C =$

A. $\{-3, -1, 0, 1, 2\}$

B. $\{-4, -3, 0\}$

C. $\{-4, -3, -1, 0, 1, 3, 4\}$

D. $\{-2, 2, 5, -5\}$

Answer: C

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7. A and B are two set such that $n(A) = 20$ and $n(B) = 5$.

The minimum people value of $n(A \Delta B)$ is _____.

A. 10

B. 15

C. 8

D. 12

Answer: B

Watch Video Solution

8. A and B are two set such that $n(A) = 20$ and $n(B) = 5$.

The maximum possible value of $n(A \Delta B)$ is _____.

A. 25

B. 18

C. 15

D. 20

Answer: A

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