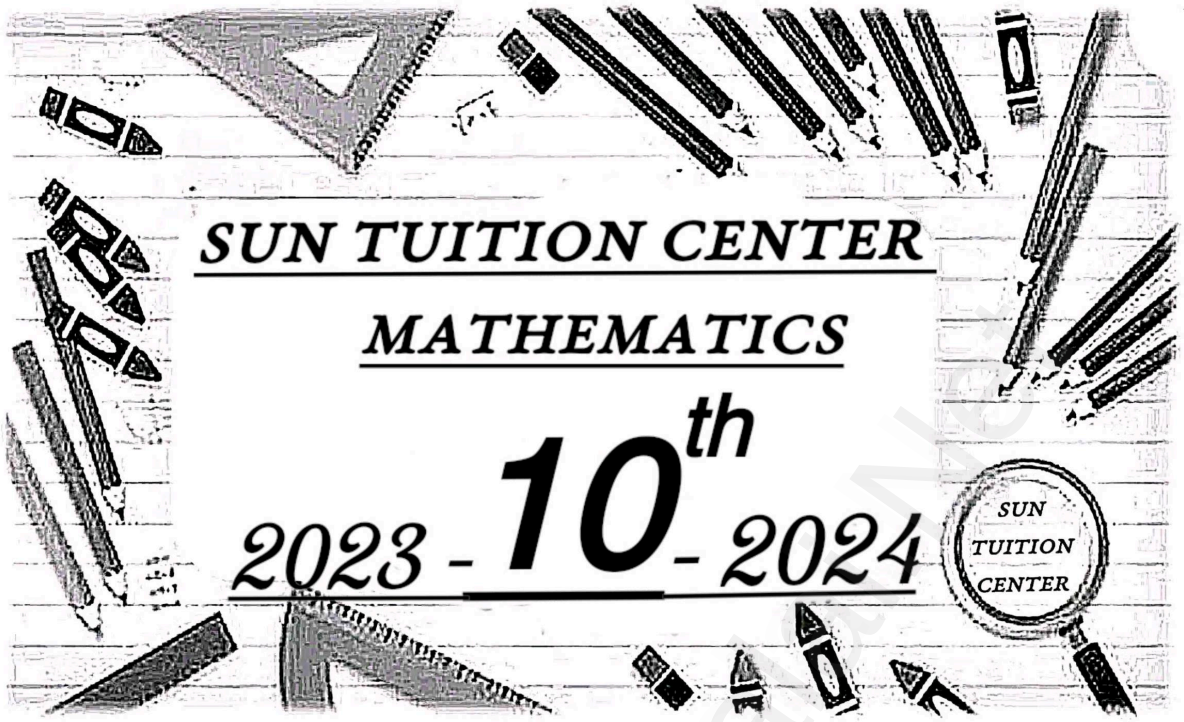


Poon Thotta Pathai Hindu Mission Hospital Opposite
Villupuram

'Life is a Good Circle, You Choose the Best Radius.'

MATHEMATICS

QUESTION

BANK

Price

Rs. 230

Contact

9629216361

CONTENT

SUN TUITION CENTER

X - Mathematics
Question Bank
Objectives

1. If $n(A\times B)=6$ and $A=\{2, 3\}$ then $n(B)$ is

   (1) 1 (2) 2 (3) 3 (4) 6

2. $A=\{a, b, p\}$, $B=\{2, 3\}$, $C=\{p, q, r, s\}$ then $n[(A\cup C)\times B]$ is

   (i) 8 (2) 20 (3) 12 (4) 16

3. $A=\{1, 2\}$, $B=\{1, 2, 3, 4\}$, $C=\{5, 6\}$ and $D=\{5, 6, 7, 8\}$ then state which of the following statement is true.

   (1) $(A\times C)\subset(B\times D)$ (2) $(B\times D)\subset(A\times C)$ (3) $(A\times B)\subset(A\times D)$ (4) $(D\times A)\subset(B\times A)$

4. If there are 1024 relations from a set $A=\{1, 2, 3, 4, 5\}$ to a set B, then the number of elements in B is

   (1) 3 (2) 2 (3) 4 (4) 8

5. The range of the relation $R=\{(x, x^2) \mid x \text{ is a prime number less than } 13\}$ is

   (1) $\{2, 3, 5, 7\}$ (2) $\{2, 3, 5, 7, 11\}$ (3) $\{4, 9, 25, 49, 121\}$ (4) $\{1, 4, 9, 25, 49, 121\}$

6. If the ordered pairs $(a+2, 4)$ and $(5, 2a+b)$ are equal then (a, b) is

   (1) $(2, -2)$ (2) $(5, 1)$ (3) $(2, 3)$ (4) $(3, -2)$

7. Let $n(A)=m$ and $n(B)=n$ then the total number of non-empty relations that can be defined from A to B is

   (1) m^n (2) n^m (3) $2^{mn}-1$ (4) 2^{mn}

8. If $\{(a, 8), (6, b)\}$ represents an identity function, then the value of a and b are respectively

   (1) $(8, 6)$ (2) $(8, 8)$ (3) $(6, 8)$ (4) $(6, 6)$

9. Let $A=\{1, 2, 3, 4\}$ and $B=\{4, 8, 9, 10\}$. A function $f: A\to B$ given by $f=\{(1, 4), (2, 8), (3, 9), (4, 10)\}$ is a

   (1) Many-one function (2) Identity function
   (3) One-to-one function (4) Into function

117. If the standard deviation of x, y, z is p then the standard deviation of $3x+5, 3y+5, 3z+5$ is

(1) $3p+5$ (2) $3p$ (3) $p+5$ (4) $9p+15$

118. If the mean and coefficient of variation of a data are 4 and 87.5% then the standard deviation is

(1) 3.5 (2) 3 (3) 4.5 (4) 2.5

119. Which of the following is incorrect?

(1) $P(A)>1$ (2) $0 \le P(A) \le 1$ (3) $P(\phi)=0$ (4) $P(A)+P(\overline{A})=1$

120. The probability a red marble selected at random from a jar containing p red, q blue and r green marbles is

(1) $\frac{q}{p+q+r}$ (2) $\frac{q}{p+q+r}$ (3) $\frac{p+q}{p+q+r}$ (4) $\frac{p+r}{p+q+r}$

121. A page is selected at random from a book. The probability that the digit at units place of the page number chosen is less than 7 is

(1) $\frac{3}{10}$ (2) $\frac{7}{10}$ (3) $\frac{3}{9}$ (4) $\frac{7}{9}$

122. The probability of getting a job for a person is $\frac{x}{3}$. If the probability of not getting the job is $\frac{2}{3}$ then the value of x is

(1) 2 (2) 1 (3) 3 (4) 1.5

123. Kamalam went to play a lucky draw contest. 135 tickets of the lucky draw were sold. If the probability of Kamalam winning is $\frac{1}{9}$, then the number of tickets bought by Kamalam is

(1) 5 (2) 10 (3) 15 (4) 20

124. If a letter is chosen at random from the English alphabets $\{a, b, c, d, \ldots, z\}$, then the probability that the letter chosen precedes x

(1) $\frac{12}{13}$ (2) $\frac{1}{13}$ (3) $\frac{23}{26}$ (4) $\frac{3}{26}$

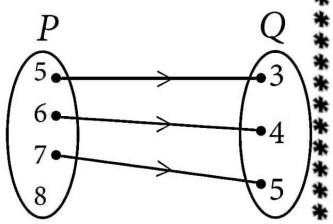
125. A purse contains 10 notes of Rs.2000, 15 notes of Rs. 500, and 25 notes of Rs. 200. One note is drawn at random. What is the probability that the note is either a Rs.500 note or Rs.200 note ?

(1) $\frac{1}{5}$ (2) $\frac{3}{10}$ (3) $\frac{2}{3}$ (4) $\frac{4}{5}$

SUN TUITION CENTER

X - Mathematics
Question Bank
2 Marks Questions

1. If $A=\{1, 3, 5\}$ and $B=\{2, 3\}$ then (i) find $A\times B$ and $B\times A$. (ii) Is $A\times B=B\times A$? If not why ? (iii) Show that $n(A\times B)=n(B\times A)=n(A)\times n(B)$.
2. If $A\times B=\{(3, 2), (3, 4), (5, 2), (5, 4)\}$ then find A and B.
3. Find $A\times B$, $A\times A$ and $B\times A$ if $A=\{2, -2, 3\}$ and $B=\{1, -4\}$
4. Find $A\times B$, $A\times A$ and $B\times A$ if $A=B=\{p, q\}$
5. Find $A\times B$, $A\times A$ and $B\times A$ if $A=\{m, n\}$; $B=\phi$
6. Let $A=\{1, 2, 3\}$ and $B=\{x \mid x$ is a prime number less than $10\}$. Find $A\times B$ and $B\times A$.
7. If $B\times A=\{(-2, 3), (-2, 4), (0, 3), (0, 4), (3, 3), (3, 4)\}$ find A and B.
8. If $A=\{5, 6\}$, $B=\{4, 5, 6\}$, $C=\{5, 6, 7\}$, show that $A\times A=(B\times B)\cap(C\times C)$.
9. Given $A=\{1, 2, 3\}$, $B=\{2, 3, 5\}$, $C=\{3, 4\}$ and $D=\{1, 3, 5\}$, check if $(A\cap C)\times(B\cap D)=(A\times B)\cap(C\times D)$ is true ?
10. Let $A=\{3, 4, 7, 8\}$ and $B=\{1, 7, 10\}$. Let R be a relation defined as $R=\{(3, 7), (4, 7), (7, 10), (8, 1)\}$. Is R a relation from A to B ?
11. Let $A=\{3, 4, 7, 8\}$ and $B=\{1, 7, 10\}$. Let R be a relation defined as $R=\{(3, 1), (4, 12)\}$. Is R a relation from A to B ?
12. Let $A=\{3, 4, 7, 8\}$ and $B=\{1, 7, 10\}$. Let R be a relation defined as $R=\{(3, 7), (4, 10), (7, 7), (7, 8), (8, 11), (8, 7), (8, 10)\}$. Is R a relation from A to B ?
13. The arrow diagram shows a relationship between the sets P and Q. Write the relation in (i) set builder form (ii) Roster form (iii) What is the domain and range of R.



14. Let $A=\{1, 2, 3, 7\}$ and $B=\{3, 0, -1, 7\}$, and R be a relation defined as $R=\{(2, 1), (7, 1)\}$. Is R a relation from A to B ?
15. Let $A=\{1, 2, 3, 7\}$ and $B=\{3, 0, -1, 7\}$, and R be a relation defined as $R=\{(-1, 1)\}$. Is R a relation from A to B ?
16. Let $A=\{1, 2, 3, 7\}$ and $B=\{3, 0, -1, 7\}$, and R be a relation defined as $R=\{(2, -1), (7, 7), (1, 3)\}$ Is R a relation from A to B ?

653. The probability that a person will get an electrification contract is $\frac{3}{5}$ and the probability that he will not get plumbing contract is $\frac{5}{8}$. The probability of getting atleast one contract is $\frac{5}{7}$. What is the probability that he will get both ?

654. The standard deviation of some temperature data in degree celsius (°C) is 5. If the data were converted into degree Farenheit (°F) then what is the variance ?

655. If the range and coefficient of range of the data are 20 and 0.2 respectively, then find the largest and smallest values of the data

656. In a two children family, find the probability that there is at least one girl in a family.

657. A bag contains 5 white and some black balls. If the probability of drawing a black ball from the bag is twice the probability of drawing a white ball then find the number of black balls.

658. The probability that a student will pass the final examination in both English and Tamil is 0.5 and the probability of passing neither is 0.1. If the probability of passing the English examination is 0.75, what is the probability of passing the Tamil examination ?

SUN TUITION CENTER

X - Mathematics
Question Bank
5 Marks Questions

659. Let $A=\{x\in N\mid 1<x<4\}$, $B=\{x\in W\mid 0\le x<2\}$ and $C=\{x\in N\mid x<3\}$. Then verify that
(i) $A\times(B\cup C)=(A\times B)\cup(A\times C)$ (ii) $A\times(B\cap C)=(A\times B)\cap(A\times C)$

660. Let $A=\{x\in W\mid x<2\}$, $B=\{x\in N\mid 1<x\le 4\}$ and $C=\{3,5\}$. Verify that
(i) $A\times(B\cup C)=(A\times B)\cup(A\times C)$ (ii) $A\times(B\cap C)=(A\times B)\cap(A\times C)$
(iii) $(A\cup B)\times C=(A\times C)\cup(B\times C)$

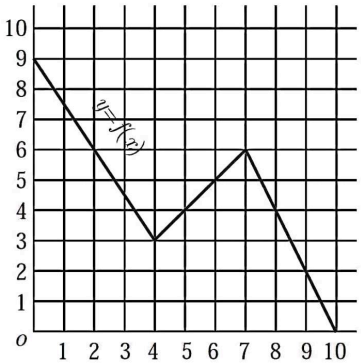
661. Let A= The set of all natural numbers less than 8, B = The set of all prime numbers less than 8, C = The set of even prime number. Verify that
(i) $(A\cap B)\times C=(A\times C)\cap(B\times C)$ (ii) $A\times(B-C)=(A\times B)-(A\times C)$

662. Represent the relation $\{(x,\ y)\mid x=2y,\ x\in\{2,\ 3,\ 4,\ 5\},\ y\in\{1,\ 2,\ 3,\ 4\}\}$ by (a) an arrow diagram (b) a graph and (c) a set in roster form, wherever possible.

663. Represent the relation $\{(x,\ y)\mid y=x+3,\ x,\ y$ are natural numbers $<10\}$ by (a) an arrow diagram (b) a graph and (c) a set in roster form, wherever possible.

664. Given the function $f:x\to x^2-5x+6$, evaluate (i) $f(-1)$ (ii) $f(2a)$ (iii) $f(2)$ (iv) $f(x-1)$

665. A graph representing the function $f(x)$ is given in the figure and it is clear that $f(9)=2$.
(i) Find the following values of the function :
(a) $f(0)$ (b) $f(7)$ (c) $f(2)$ (d) $f(10)$
(ii) For what value of x is $f(x)=1$?
(iii) Describe the following (i) Domain (ii) Range
(iv) What is the image of 6 under f ?



666. A function f is defined by $f(x)=2x-3$
(i) find $\dfrac{f(0)+f(1)}{2}$
(ii) find x such that $f(x)=0$.
(iii) find x such that $f(x)=x$
(iv) find x such that $f(x)=f(1-x)$

1048. The diameter of circles (in mm) drawn in a design are given below.

Diameters	33-36	37-40	41-44	45-48	49-52
Number of circles	15	17	21	22	25

1049. The frequency distribution is given below :

x	k	$2k$	$3k$	$4k$	$5k$	$6k$
f	2	1	1	1	1	1

In the table, k is a positive integer, has a varience of 160. Determine the value of k.

1050. If for a distribution, $\sum(x-5)=3$; $\sum(x-5)^2=43$, and total number of observations is 18, find the mean and standard deviation.

1051. Prices of peanut packets in various places of two cities are given below. In which city, prices were more stable?

Prices in city A	20	22	19	23	16
Prices in city B	10	20	18	12	15

1052. If two dice are rolled, then find the probability of getting the product of face value 6 or the difference of face values 5.

1053. The King, Queen and Jack of the suit spade are removed from a deck of 52 cards. One card is selected from the remaining cards. Find the probability of getting (i) a diamond (ii) a queen (iii) a spade (iv) a heart card bearing the number 5.

SUN TUITION CENTER

X - Mathematics
Question Bank
8 Marks Questions

1054. Discuss the nature of solutions of the following quadratic equations graphically
(i) $x^2+x-12=0$ (ii) $x^2-8x+16=0$ (iii) $x^2+2x+5=0$

1055. Draw the graph of $y=2x^2$ and hence solve $2x^2-x-6=0$.

1056. Draw the graph of $y=x^2+4x+3$ and hence find the roots of $x^2+x+1=0$.

1057. Draw the graph of $y=x^2+x-2$ and hence solve $x^2+x-2=0$.

1058. Draw the graph of $y=x^2-4x+3$ and use it to solve $x^2-6x+9=0$.

1059. Graph the quadratic equation $x^2-9x+20=0$ and state its nature of solutions

1060. Graph the quadratic equation $x^2-4x+4=0$ and state its nature of solutions

1061. Graph the quadratic equation $x^2+x+7=0$ and state its nature of solutions

1062. Graph the quadratic equation $x^2-9=0$ and state its nature of solutions

1063. Graph the quadratic equation $x^2-6x+9=0$ and state its nature of solutions

1064. Graph the quadratic equation $(2x-3)(x+2)$ and state its nature of solutions

1065. Draw the graph of $y=x^2-4$ and hence solve $x^2-x-12=0$.

1066. Draw the graph of $y=x^2+x$ and hence solve $x^2+1=0$.

1067. Draw the graph of $y=x^2+3x+2$ and use it to solve $x^2+2x+1=0$.

1068. Draw the graph of $y=x^2+3x-4$ and hence use it to solve $x^2+3x-4=0$.

1069. Draw the graph of $y=x^2-5x-6$ and hence solve $x^2-5x-14=0$.

1070. Draw the graph of $y=2x^2-3x-5$ and hence solve $2x^2-4x-6=0$.

1071. Draw the graph of $y=(x-1)(x+3)$ and hence solve $x^2-x-6=0$.

1072. Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{3}{5}$ of the corresponding sides of the triangle PQR. (scale factor $\frac{3}{5}<1$).

1086. Draw ΔPQR such that $PQ = 6.8\,cm$, vertical angle is 50° and the bisector of the vertical angle meets the base at D where $PD = 5.2\,cm$.

1087. Draw a circle of radius 3 cm. Take a point P on this circle and draw a tangent at P.

1088. Draw a circle of radius 4 cm. At a point L on it draw a tangent to the circle using the alternate segment.

1089. Draw a circle of diameter 6 cm from a point P, which is 8 cm away from its centre. Draw the two tangents PA and PB to the circle and measure their lengths.

1090. Draw a tangent at any point R on the circle of radius 3.4 cm and centre at P ?

1091. Draw a circle of radius 4.5 cm. Take a point on the circle. Draw the tangent at that point using the alternate segment theorem.

1092. Draw the two tangents from a point which is 10 cm away from the centre of a circle of radius 5 cm. Also, measure the lengths of the tangents.

1093. Take a point which is 11 cm away from the centre of a circle of radius 4 cm and draw the two tangents to the circle from that point.

1094. Draw the two tangents from a point which is 5 cm away from the centre of a circle of diameter 6 cm. Also, measure the lengths of the tangents.

1095. Draw a tangent to the circle from the point P having radius 3.6 cm, and centre at O. Point P is at a distance 7.2 cm form the centre.

CREATIVE ONE MARK QUESTION

1.RELATIONS AND FUNCTIONS

1. If $f : R \to R$defined by , $f(x) = x^2 + 2$ then the pre-images of 27 are

(1) 5, –5 (2) $\sqrt{5}, -\sqrt{5}$ (3) 5,0 (4) 0 ,5

2. If $f\left(x - \frac{1}{x}\right) = x^2 + \frac{1}{x^2}$ then f(x) = _____.

(1) $x^2 + 2$ (2) $x^2 - 2$ (3) $x^2 + \frac{1}{x^2}$ (4) $x^2 - \frac{1}{x^2}$

3. If A= { a,b.c} , B= {2,3} and C = { a , b, c, d} then n[(A∩C)xB] is

(1) 4 (2) 8 (3) 6 (4) 12

4. If the ordered pairs $(a , -1)$and $(5 , b)$ belong to ,$\{(x, y)/ y = 2x + 3\}$ then the values of *a* and *b* are

(1) –13,2 (2) 2,13 (3) 2, –13 (4) –2,13

5. The function $f : N \to N$ is defined by f(x) = 2x . Then the function *f* is

(1) Not one-one but onto (2) one-one but not onto
(3) One-one and onto (4) not one-one and not onto

6. If f(x)= x + 1 , then $f\left(f\left(f(y + 2)\right)\right)$ is

(1) y + 3 (2) y + 5 (3) y + 7 (4) y + 9

7. If f(x)= mx + n , where *m* and *n* are integers, $f(-2) = 7$ and $f(3) = 2$, then *m* and *n* are equal to

(1) –1,5 (2) –1, –5 (3) 1,–9 (4) 1,9

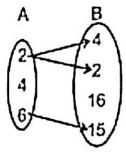
8. The function *t* which maps temperature in degree Celsius into temperature in degree Fahrenheit is defined by $t(C) = \frac{9C}{5} + 32$. The Fahrenheit degree is 95 then the value of *C* will be

(1) 37 (2) 36 (3) 35 (4) 29

9. If $f(x) = ax - 2 , g(x) = 2x - 1$ *and* $f \circ g = g \circ f$ then the value of *a* is

(1) –3 (2) 3 (3) $\frac{1}{3}$ (4) 13

19 The given diagram represents



(1) An onto function (2) a constant function
(2) (3) an 1-1 function (4) not a function

20. If $f: A \to B$ is a bijective function and if $n(A) = 5$, then $n(B)$ is equal to

(1) 10 (2) 4 (3) 5 (4) 25

21. If $f = \{(6, 3), (8, 9), (5, 3), (-1, 6)\}$, then the pre-images of 3 are

(1) 5 and –1 (2) 6 and 8 (3) 8 and –1 (4) 6 and 5.

22. If {(a,8),(6,b)}represents an identity function, then the value of a and b are respectively
(1) (8,6) (2) (8,8) (3) (6,8) (4) (6,6)

23. A={a,b,C},B={2,3},C={a,b,C,d}then n[(A∩C)XB] is
(1) 6 (2) 8 (3) 4 (4) 12

24. If {(a,8),(6,b)}represents an identity function, then the value of a and b are respectively
(1) (8,6) (2) (8,8) (3) (6,8) (4) (6,6)

25. If the ordered pairs (a+2,4) and (5,2a+b) are equal then (a,b) is
(1) (2,-2) (2) (5,1) (3) (2,) (4) (3,-2)

2. Numbers and Sequences

1. What is the HCF of the least prime number and the least composite number?

(1) 1 (2) 2 (3) 3 (4) 4

2. If ' *a*' and ' *b* 'are two positive integers where a >b and ' *b* ' is a factor of '*a*' then HCF of (a,b) is

(1) b (2) a (3) ab (4) $\frac{a}{b}$

3. If *m* and *n* are co-prime numbers, then $m^2$and n^2 are
(1) co-prime (2) not co-prime (3) even (4) odd

4. If 3 is the least prime factor of number a and 7 is the least prime factor of b then the least prime factor of a + b is
(1) a + b (2) 2 (3) 5 (4) 10

5. The remainder when the difference between 60002 and 601 is divided by 6 i s
(1) 2 (2) 1 (3) 0 (4) 3

6. $44 \equiv 8\ (mod\ 12),\quad 113 \equiv (mod\ 12), thus\ 44 \times 113 \equiv -------(mod\ 12)$
(1) 4 (2) 3 (3) 2 (4) 1

22. Probability of getting 3 heads or 3 tails in tossing a coin 3 times is

(1) $\frac{1}{8}$ (2) $\frac{1}{4}$ (3) $\frac{3}{8}$ (4) $\frac{1}{2}$

23. A fair die is thrown once. The probability of getting a prime (or) composite number is

(1) 1 (2) 0 (3) $\frac{5}{6}$ (4) $\frac{1}{6}$

24. A bag contains 5 black balls, 4 white balls and 3 red balls. If a ball is Selected at random, the probability that it is not red is

(1) $\frac{5}{10}$ (2) $\frac{4}{12}$ (3) $\frac{3}{12}$ (4) $\frac{3}{4}$

25. If p is the probability of an event A, then p satisfies

(1) $0 < p < 1$ (2) $0 \leq p \leq 1$ (3) $0 \leq p < 1$ (4) $0 < p \leq 1$

CHAP/ Q.NO.	1	2	3	4	5	6	7	8
21	4	4	1	-	-	4	-	2
22	1	1	4	-	-	2	-	2
23	1	3	4	-	-	4	-	3
24	1	1	1	-	-	2	-	4
25	4	4	3	-	-	3	-	2
26	-	-	1	-	-	-	-	-
27	-	-	3	-	-	-	-	-
28	-	-	1	-	-	-	-	-
29	-	-	1	-	-	-	-	-
30	-	-	4	-	-	-	-	-