

RAVI MATHS TUITION CENTER , WHATSAPP - 8056206308

10TH MATHS HALF YEARLY PRACTICE TEST

10th Standard

Maths

ANSWERS AVAILABLE IN MY YOUTUBE CHANNEL NAME - RAVI MATHS TUITION CENTER , WHATSAPP - 8056206308

Exam Time : 01:00:00 Hrs

Total Marks : 50

25 x 2 = 50

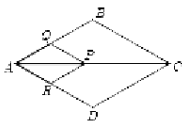
- 1) If $A \times B = \{(3,2), (3, 4), (5,2), (5, 4)\}$ then find A and B.
- 2) Let $f(x) = 2x + 5$. If $x \neq 0$ then find $\frac{f(x) - f(2)}{x}$.
- 3) If $f(x) = 3x - 2$, $g(x) = 2x + k$ and if $f \circ g = g \circ f$, then find the value of k..
- 4) If $13824 = 2^a \times 3^b$ then find a and b.
- 5) Find the first five terms of the following sequence,
 $a_1 = 1, a_2 = 1, a_n = \frac{a_{n-1}}{a_{n-2}+3}; n \geq 3, n \in N$
- 6) Find the number of terms in the A.P. 3, 6, 9, 12, ..., 111.
- 7) Find the 8th term of the G.P 9,3,1,....
- 8) If $1 + 2 + 3 + \dots + k = 325$, then find $1^3 + 2^3 + 3^3 + \dots + k^3$.
- 9) Solve $2m^2 + 19m + 30 = 0$
- 10) If α, β are the roots of the equation $3x^2 + 7x - 2 = 0$, find the values of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$

11) Simplify

$$\frac{x^3}{x-y} + \frac{y^3}{y-x}$$

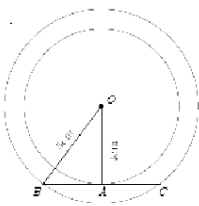
12) Find the values of x, y and z from the following equations.

$$\begin{bmatrix} x + y + z \\ x + z \\ y + z \end{bmatrix} = \begin{bmatrix} 9 \\ 5 \\ 7 \end{bmatrix}$$

13) In fig. if $PQ \parallel BC$ and $PR \parallel CD$ prove that

$$\frac{AB}{AD} = \frac{AQ}{AB}$$

14) If radii of two concentric circles are 4 cm and 5 cm then find the length of the chord of one circle which is a tangent to the other circle



- 15) If the straight lines $12y = -(p + 3)x + 12$, $12x - 7y = 16$ are perpendicular then find 'p'.
- 16) Find the area of the triangle formed by the points $(-10, -4)$, $(-8, -1)$ and $(-3, -5)$
- 17) Find the equation of a line through the given pair of points $(2, 3)$ and $(-7, -1)$

18) prove that $\sqrt{\frac{1+\cos\theta}{1-\cos\theta}} = \operatorname{cosec}\theta + \cot\theta$

19) A tower stands vertically on the ground. from a point on the ground, which is 48m away from the foot of the tower, the angel of elevation of the top of the tower is 30° . find the hieght of the tower.

20) The curved surface area of a right circular cylinder of height 14 cm is 88 cm^2 . Find the diameter of the cylinder.

21) The ratio of the radii of two right circular cones of same height is 1 : 3. Find the ratio of their curved surface area when the height of each cone is 3 times the radius of the smaller cone.

22) If the circumference of a conical wooden piece is 484 cm then find its volume when its height is 105 cm.

23) Two coins are tossed together. What is the probability of getting different faces on the coins?

24) If $P(A) = 0.37$, $P(B) = 0.42$, $P(A \cap B) = 0.09$ then find $P(A \cup B)$.

25) Find the range and coefficient of range of the following data.
43.5, 13.6, 18.9, 38.4, 61.4, 29.8

RAVI MATHS TUITION CENTER , WHATSAPP - 8056206308

10TH MATHS HALF YEARLY PRACTICE TEST 2

10th Standard

Maths

15 x 5 = 75

1) Let $A = \{x \in \mathbb{N} \mid 1 < x < 4\}$, $B = \{x \in \mathbb{W} \mid 0 \leq x < 2\}$ and $C = \{x \in \mathbb{N} \mid x < 3\}$ Then verify that

(i) $A \times (B \cup C) = (A \times B) \cup (A \times C)$

(ii) $A \times (B \cap C) = (A \times B) \cap (A \times C)$

2) Let $A = \{1, 2, 3, 4\}$ and $B = \{2, 5, 8, 11, 14\}$ be two sets. Let $f: A \rightarrow B$ be a function given by $f(x) = 3x - 1$. Represent this function

(i) by arrow diagram

(ii) in a table form

(iii) as a set of ordered pairs

(iv) in a graphical form

3) A function $f: [-5, 9] \rightarrow \mathbb{R}$ is defined as follows:

$$f(x) = \begin{cases} 6x + 1 & \text{if } -5 \leq x < 2 \\ 5x^2 - 1 & \text{if } 2 \leq x < 6 \\ 3x - 4 & \text{if } 6 \leq x \leq 9 \end{cases}$$

Find

i) $f(-3) + f(2)$

ii) $f(7) - f(1)$

iii) $2f(4) + f(8)$

iv) $\frac{2f(-2) - (6)}{f(4) + (-2)}$

4) In an A.P., sum of four consecutive terms is 28 and their sum of their squares is 276. Find the four numbers.

5) The sum of three consecutive terms that are in A.P. is 27 and their product is 288. Find the three terms.

6) Find the sum of all natural numbers between 300 and 600 which are divisible by 7.

7) Find the sum of all natural numbers between 602 and 902 which are not divisible by 4.

8) The product of three consecutive terms of a Geometric Progression is 343 and their sum is $\frac{91}{3}$. Find the three terms.

9) Find the sum to n terms of the series $5 + 55 + 555 + \dots$

10) Find the square root of $289x^4 - 612x^3 + 970x^2 - 684x + 361$

11) Solve $3x + y - 3z = 1$; $-2x - y + 2z = 1$; $-x - y + z = 2$.

12) Find the square root of the expression $\frac{4x^2}{y^2} + \frac{20x}{y} + 13 - \frac{30y}{x} + \frac{9y^2}{x^2}$

13) If $9x^4 + 12x^3 + 28x^2 + ax + b$ is a perfect square, find the values of a and b.

14) Let $A = \begin{bmatrix} 1 & 2 \\ 1 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 4 & 0 \\ 1 & 5 \end{bmatrix}$, $C = \begin{bmatrix} 2 & 0 \\ 1 & 2 \end{bmatrix}$ Show that

$$A(BC) = (AB)C$$

15) If $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$ show that $A^2 - 5A + 7I_2 = 0$

Ravi Maths Tuition Centre
10TH MATHS HALF YEARLY PRACTICE TEST 3
 10th Standard

Maths

Exam Time : 02:00:00 Hrs

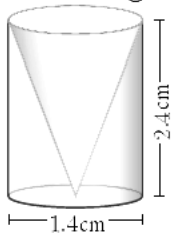
Total Marks : 75

15 x 5 = 75

- 1) A line makes positive intercepts on coordinate axes whose sum is 7 and it passes through (-3,8). Find its equation
- 2) Find the equation of a straight line through the intersection of lines $7x + 3y = 10$, $5x - 4y = 1$ and parallel to the line $13x + 5y + 12 = 0$
- 3) Find the equation of a straight line through the intersection of lines $5x - 6y = 2$, $3x + 2y = 10$ and perpendicular to the line $4x - 7y + 13 = 0$
- 4) Find the equations of the lines, whose sum and product of intercepts are 1 and -6 respectively.
- 5) An aeroplane at an altitude of 1800 m finds that two boats are sailing towards it in the same direction. The angles of depression of the boats as observed from the aeroplane are 60° and 30° respectively. Find the distance between the two boats. ($\sqrt{3} = 1.732$)
- 6) A man is standing on the deck of a ship, which is 40 m above water level. He observes the angle of elevation of the top of a hill as 60° and the angle of depression of the base of the hill as 30° . Calculate the distance of the hill from the ship and the height of the hill. ($\sqrt{3} = 1.732$)
- 7) prove the following identities.

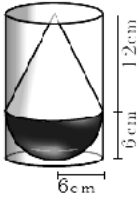
$$\frac{\sin^3 A \cos^3 A}{\sin A} + \frac{\sin^3 A \cos^3 A}{\sin A} = 2$$

- 8) From a solid cylinder whose height is 2.4 cm and diameter 1.4 cm, a conical cavity of the same height and base is hollowed out. Find the total surface area of the remaining solid.

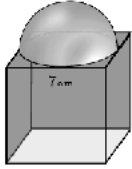


- 9) A solid consisting of a right circular cone of height 12 cm and radius 6 cm standing on a hemisphere of radius 6 cm is placed upright in a right circular cylinder full of water such that it touches the bottom. Find the volume of the water displaced out of the cylinder, if the

radius of the cylinder is 6 cm and height is 18 cm.



10) As shown in figure a cubical block of side 7 cm is surmounted by a hemisphere. Find the surface area of the solid.



11) The volume of a cone is $1005\frac{5}{7}$ cu. cm. The area of its base is $201\frac{1}{7}$ sq. cm. Find the slant height of the cone.

12) The measurements of the diameters (in cms) of the plates prepared in a factory are given below. Find its standard deviation.

Diameter(cm)	21-24	25-28	29-32	33-36	37-40	41-44
Number of plates	15	18	20	16	8	7

13) Two unbiased dice are rolled once. Find the probability of getting

- (i) a doublet (equal numbers on both dice)
- (ii) the product as a prime number
- (iii) the sum as a prime number
- (iv) the sum as 1

14) The king and queen of diamonds, queen and jack of hearts, jack and king of spades are removed from a deck of 52 playing cards and then well shuffled. Now one card is drawn at random from the remaining cards. Determine the probability that the card is

- (i) a clavor
- (ii) a queen of red card
- (iii) a king of black card.

15) If A, B, C are any three events such that probability of B is twice as that of probability of A and probability of C is thrice as that of probability of A and if $P(A \cap B) = \frac{1}{6}$, $P(B \cap C) = \frac{1}{4}$, $P(A \cap C) = \frac{1}{8}$, $P(A \cap B \cap C) = \frac{1}{15}$, then find $P(A)$, $P(B)$ and $P(C)$?

Ravi Maths Tuition Centre
10TH MATHS HALF YEARLY PRACTICE TEST 4

10th Standard

Maths

Exam Time : 01:00:00 Hrs

Total Marks : 48

6 x 8 = 48

- 1) Discuss the nature of solutions of the following quadratic equations.
 $x^2 + x - 12 = 0$
- 2) Draw the graph of $y = x^2 + 4x + 3$ and hence find the roots of $x^2 + x + 1 = 0$
- 3) Draw the graph $xy = 24$, $x, y > 0$, Using the graph find,
(i) y when $x = 3$ and
(ii) x when $y = 6$.
- 4) 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 $\frac{3}{5} < 1$)
- 5) Construct a ΔPQR which the base $PQ = 4.5$ cm, $\angle R = 35^\circ$ and the median RG from R to PG is 6 cm
- 6) 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.

RAVI MATHS TUITION CENTER , WHATSAPP - 8056206308**10TH MATHS HALF YEARLY PRACTICE TEST 5**

10th Standard

Maths

Exam Time : 01:00:00 Hrs**Total Marks : 48**

6 x 8 = 48

- 1) Draw the graph of $y = x^2 - 4$ and hence solve $x^2 - x - 12 = 0$
- 2) Draw the graph of $y = x^2 + 3x + 2$ and use it to solve $x^2 + 2x + 1 = 0$
- 3) A school announces that for a certain competitions, the cash price will be distributed for all the participants equally as shown below:
- | | | | | | |
|--------------------------------------|-----|----|----|----|----|
| No. of participants (x) | 2 | 4 | 6 | 8 | 10 |
| Amount for each participant in ₹ (y) | 180 | 90 | 60 | 45 | 36 |
- i. Find the constant of variation.
- ii. Graph the above data and hence find, how much will each participant get if the number of participants are 12.
- 4) Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{7}{4}$ of the corresponding sides of the triangle PQR (scale factor $\frac{7}{4} > 1$)
- 5) Construct a $\triangle PQR$ such that $QR = 6.5$ cm, $\angle P = 60^\circ$ and the altitude from P to QR is of length 4.5 cm.
- 6) 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.

RAVI MATHS TUITION CENTER , WHATSAPP - 8056206308

10TH MATHS HALF YEARLY PRACTICE TEST 6

10th Standard

Maths

Exam Time : 01:00:00 Hrs

Total Marks : 48

6 x 8 = 48

- 1) Draw the graph of $y = 2x^2 - 3x - 5$ and hence solve $2x^2 - 4x - 6 = 0$
- 2) Draw the graph of $y = (x - 1)(x + 3)$ and hence solve $x^2 - x - 6 = 0$
- 3) Discuss the nature of solutions of the following quadratic equations.
 $x^2 + 2x + 5 = 0$
- 4) Draw a triangle ABC of base BC = 8 cm, $\angle A = 60^\circ$ and the bisector of $\angle A$ meets BC at D such that BD = 6 cm.
- 5) Construct a $\triangle PQR$ such that QR = 6.5 cm, $\angle P = 60^\circ$ and the altitude from P to QR is of length 4.5 cm.
- 6) Draw a circle of radius 4 cm. At a point L on it draw a tangent to the circle using the alternate segment.

RAVI MATHS TUITION CENTER , WHATSAPP - 8056206308

10TH MATHS HALF YEARLY PRACTICE TEST 7

10th Standard

Maths

Exam Time : 02:30:00 Hrs

Total Marks : 120

- 1) If $A \times B = \{(3,2), (3, 4), (5,2), (5, 4)\}$ then find A and B.
- 2) Let $A = \{1,2,3\}$ and $B = \{x \mid x \text{ is a prime number less than } 10\}$. Find $A \times B$ and $B \times A$.
- 3) Let $A = \{1, 2, 3, 4, \dots, 45\}$ and R be the relation defined as "is square of" on A. Write R as a subset of $A \times A$. Also, find the domain and range of R.
- 4) A Relation R is given by the set $\{(x,y) \mid y = x + 3, x \in \{0, 1, 2, 3, 4, 5\}\}$. Determine its domain and range.
- 5) Let $X = \{1, 2, 3, 4\}$ and $Y = \{2, 4, 6, 8, 10\}$ and $R = \{(1, 2), (2, 4), (3, 6), (4, 8)\}$ Show that R is a function and find its domain, co-domain and range?
- 6) Let $f(x) = 2x + 5$. If $x \neq 0$ then find $\frac{f(-2) - (2)}{x}$.
- 7) Let f be a function $f : \mathbb{N} \rightarrow \mathbb{N}$ be defined by $f(x) = 3x + 2, x \in \mathbb{N}$
 - (i) Find the images of 1, 2, 3
 - (ii) Find the pre-images of 29, 53
 - (iii) Identify the type of function
- 8) Find $f \circ g$ and $g \circ f$ when $f(x) = 2x + 1$ and $g(x) = x^2 - 2$
- 9) If $f(x) = 2x - 1, g(x) = \frac{x+1}{2}$, show that $f \circ g = g \circ f = x$.
- 10) The Cartesian product $A \times A$ has 9 elements among which $(-1, 0)$ and $(0, 1)$ are found. Find the set A and the remaining elements of $A \times A$.
- 11) Let $A = \{1, 2, 3, 4\}$ and $B = \{a, b, c\}$.
Which of the following are relations from A to B?
 - (i) $\{(1, b), (1, c), (3, a), (4, b)\}$

(ii) $\{ (1, a), (b, 4), (c, 3) \}$

(iii) $\{ (1, a), (a, 1), (2, b), (b, 2) \}$

12) A man has 532 flower pots. He wants to arrange them in rows such that each row contains 21 flower pots. Find the number of completed rows and how many flower pots are left over.

13) 'a' and 'b' are two positive integers such that $a^b \times b^a = 800$. Find 'a' and 'b'

14) Find the least positive value of x such that

$$67 + x \equiv 1 \pmod{4}$$

15) Find the first five terms of the following sequence,

$$a_1 = 1, a_2 = 1, a_n = \frac{a_n}{a_n + 3}; n \geq 3, n \in N$$

16) Find a_8 and a_{15} whose n^{th} term is

$$a_n = \begin{cases} \frac{n^2-1}{n+3}; n \text{ is even } n \in N \\ \frac{n^2}{2n+1}, n \text{ is odd, } n \in N \end{cases}$$

17) Find the number of terms in the A.P. 3, 6, 9, 12, ..., 111.

18) Find the 19th term of an A.P. -11, -15, -19,

19) Find the middle term(s) of an A.P 9, 15, 21, 27, ..., 183.

20) If $3 + k$, $18 - k$, $5k + 1$ are in A.P. then find k.

21) Find the 8th term of the G.P 9, 3, 1,

22) Find the number of terms in the following G.P.

$$4, 8, 16, \dots, 8192$$

23) Find the sum to infinity of

$$9 + 3 + 1 + \dots$$

24) Find the value of

$$1 + 2 + 3 + \dots + 50$$

25) Find the sum of

$$1 + 3 + 5 + \dots \text{ to 40 terms}$$

26) Find the sum of

$$1^2 + 2^2 + \dots + 19^2$$

27) Find the sum of

$$1^3 + 2^3 + 3^3 + \dots + 16^3$$

28) If $1 + 2 + 3 + \dots + n = 666$ then find n.

29) If $1 + 2 + 3 + \dots + k = 325$, then find $1^3 + 2^3 + 3^3 + \dots + k^3$.

30) If $1^3 + 2^3 + 3^3 + \dots + k^3 = 44100$ then find $1 + 2 + 3 + \dots + k$

31) Find the least positive value of x such that

$$89 \equiv (x + 3) \pmod{4}$$

32) Simplify $\frac{1}{x^2 - 5x + 6} + \frac{1}{x^2 - 3x + 2} - \frac{1}{x^2 - 8x + 15}$

33) Find the square root of the following expressions

$$256(x - a)^8 (x - b)^4 (x - c)^{16} (x - d)^{20}$$

34) Find the square root of the following

$$4x^2 + 20x + 25$$

35) Write down the quadratic equation in general form for which sum and product of the roots are given below.

9, 14

36) Determine the quadratic equations, whose sum and product of roots are -9, 20

37) Solve $2m^2 + 19m + 30 = 0$

38) Determine the nature of roots for the following quadratic equations

$$x^2 - x - 20 = 0$$

39) Find the values of 'k', for which the quadratic equation $kx^2 - (8k + 4)x + 81 = 0$ has real and equal roots?

40) If the difference between the roots of the equation $x^2 - 13x + k = 0$ is 17. find k

41) If α and β are the roots of $x^2 + 7x + 10 = 0$ find the values of $(\alpha - \beta)$

42) If α, β are the roots of the equation $3x^2 + 7x - 2 = 0$, find the values of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$

43) If α, β are the roots of $7x^2 + ax + 2 = 0$ and if $\beta - \alpha = \frac{-13}{7}$. Find the values of a.

44) If one root of the equation $2y^2 - ay + 64 = 0$ is twice the other then find the values of a.

45) If one root of the equation $3x^2 + kx + 81 = 0$ (having real roots) is the square of the other then find k.

46) Find the order of the product matrix AB if

	(i)	(ii)	(iii)	(iv)	(v)
Orders of A	3 x 3	4 x 3	4 x 2	4 x 5	1 x 1
Orders of B	3 x 3	3 x 2	2 x 2	5 x 1	1 x 3

47) If $A = \begin{bmatrix} 2 & 5 \\ 4 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 1 & -3 \\ 2 & 5 \end{bmatrix}$ find AB , BA and check if $AB = BA$?

48) Find the LCM of the given expressions.

$$p^2 - 3p + 2, p^2 - 4$$

49) Simplify

$$\frac{x^3}{x} + \frac{y^3}{y}$$

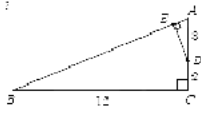
50) Solve the following quadratic equations by factorization method

$$3(p^2 - 6) = p(p + 5)$$

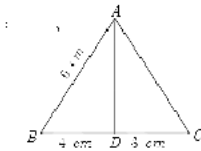
51) Find the values of x , y and z from the following equations.

$$\begin{cases} x + y + z \\ x + z \\ y + z \end{cases} = \begin{cases} 9 \\ 5 \\ 7 \end{cases}$$

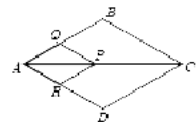
52) In the adjacent figure, $\triangle ABC$ is right angled at C and $DE \perp AB$. Prove that $\triangle ABC \sim \triangle ADE$ and hence find the lengths of AE and DE .



53) In the figure, AD is the bisector of $\angle A$. If $BD = 4$ cm, $DC = 3$ cm and $AB = 6$ cm, find AC .



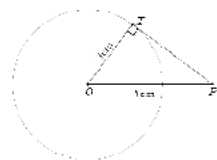
54) In fig. if $PQ \parallel BC$ and $PR \parallel CD$ prove that



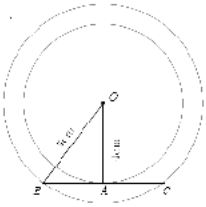
$$\frac{AB}{AD} = \frac{AQ}{AP}$$

55) A man goes 18 m due east and then 24 m due north. Find the distance of his current position from the starting point?

56) Find the length of the tangent drawn from a point whose distance from the centre of a circle is 5 cm and radius of the circle is 3 cm.



57) If radii of two concentric circles are 4 cm and 5 cm then find the length of the chord of one circle which is a tangent to the other circle



- 58) The length of the tangent to a circle from a point P, which is 25 cm away from the centre is 24 cm. What is the radius of the circle?
- 59) In two concentric circles, a chord of length 16 cm of larger circle becomes a tangent to the smaller circle whose radius is 6 cm. Find the radius of the larger circle.
- 60) Check whether AD is bisector $\angle A$ of $\triangle ABC$ in each of the following $AB = 4\text{cm}$, $AC = 6\text{cm}$, $BD = 1.6\text{cm}$ and $CD = 2.4\text{cm}$.

RAVI MATHS TUITION CENTER , WHATSAPP - 8056206308**10TH MATHS HALF YEARLY PRACTICE TEST 8**

10th Standard

Maths

Exam Time : 02:00:00 Hrs**Total Marks : 100**

51 x 2 = 102

- 1) Determine whether the sets of points are collinear? $(-\frac{1}{2}, 3)$, $(-5, 6)$ and $(-8, 8)$
- 2) In each of the following, Find the value of 'a' for which the given points are collinear. $(2, 3)$, $(4, a)$ and $(6, -3)$
- 3) The line r passes through the points $(-2, 2)$ and $(5, 8)$ and the line s passes through the points $(-8, 7)$ and $(-2, 0)$. Is the line r perpendicular to s ?
- 4) The line p passes through the points $(3, -2)$, $(12, 4)$ and the line q passes through the points $(6, -2)$ and $(12, 2)$. Is parallel to q ?
- 5) Show that the points $(-2, 5)$, $(6, -1)$ and $(2, 2)$ are collinear
- 6) If the three points $(3, -1)$, $(a, 3)$ and $(1, -3)$ are collinear, find the value of a.
- 7) The line through the points $(-2, a)$ and $(9, 3)$ has slope $-\frac{1}{2}$. Find the value of a.
- 8) Find the equation of a line passing through the point $(3, -4)$ and having slope $\frac{5}{7}$
- 9) Find the equation of a straight line passing through $(5, -3)$ and $(7, -4)$.
- 10) Find the equation of a line which passes through $(5, 7)$ and makes intercepts on the axes equal in magnitude but opposite in sign.
- 11) Find the intercepts made by the line $4x - 9y + 36 = 0$ on the coordinate axes.
- 12) Find the slope of the straight line $6x + 8y + 7 = 0$.
- 13) Find the equation of a line passing through $(6, -2)$ and perpendicular to the line joining the points $(6, 7)$ and $(2, -3)$.
- 14) Find the equation of a straight line whose Inclination is 45° and y intercept is 11
- 15) Check whether the given lines are parallel or perpendicular : $5x + 23y + 14 = 0$ and $23x - 5y + 9 = 0$
- 16) Prove that $\tan^2\theta - \sin^2\theta = \tan^2\theta \sin^2\theta$
- 17) prove that $\frac{\sin A}{1+\sin A} = \frac{1-\sin A}{\sin A}$
- 18) prove that $\sqrt{\frac{1+\cos\theta}{1-\cos\theta}} = \operatorname{cosec}\theta + \cot\theta$
- 19) prove the following identity.

$$\sqrt{\frac{1+\cos\theta}{1-\cos\theta}} = \sec\theta + \tan\theta$$
- 20) A tower stands vertically on the ground. from a point on the ground, which is 48m away from the foot of the tower, the angle of elevation of the top of the tower is 30° . find the height of the tower.
- 21) Find the angle of elevation of the top of a tower from a point on the ground, which is 30 m away from the foot of a tower of height $10\sqrt{3}m$
- 22) From the top of a rock $50\sqrt{3}m$ high, the angle of depression of a car on the ground is observed to be 30° . Find the distance of the car from the rock.
- 23) A player sitting on the top of a tower of height 20 m observes the angle of depression of a ball lying on the ground as 60° . Find the distance between the foot of the tower and the ball.

$$\sqrt{3} = 1.732$$

- 24) A cylindrical drum has a height of 20 cm and base radius of 14 cm. Find its curved surface area and the total surface area.
- 25) The curved surface area of a right circular cylinder of height 14 cm is 88 cm^2 . Find the diameter of the cylinder.
- 26) A garden roller whose length is 3 m long and whose diameter is 2.8 m is rolled to level a garden. How much area will it cover in 8 revolutions?
- 27) If the total surface area of a cone of radius 7cm is 704 cm^2 , then find its slant height.
- 28) Find the diameter of a sphere whose surface area is 154 m^2 .
- 29) The ratio of the radii of two right circular cones of same height is 1 : 3. Find the ratio of their curved surface area when the height of each cone is 3 times the radius of the smaller cone.
- 30) The radius of a sphere increases by 25%. Find the percentage increase in its surface area.
- 31) The volume of a solid right circular cone is 11088 cm^3 . If its height is 24 cm then find the radius of the cone.
- 32) The ratio of the volumes of two cones is 2 : 3. Find the ratio of their radii if the height of second cone is double the height of the first.
- 33) If the circumference of a conical wooden piece is 484 cm then find its volume when its height is 105 cm.
- 34) If the ratio of radii of two spheres is 4 : 7, find the ratio of their volumes.
- 35) Find the range and coefficient of range of the following data: 25, 67, 48, 53, 18, 39, 44.
- 36) The range of a set of data is 13.67 and the largest value is 70.08. Find the smallest value.
- 37) Find the standard deviation of first 21 natural numbers.
- 38) If the standard deviation of a data is 4.5 and if each value of the data is decreased by 5, then find the new standard deviation.
- 39) If the standard deviation of a data is 3.6 and each value of the data is divided by 3, then find the new variance and new standard deviation.
- 40) The mean of a data is 25.6 and its coefficient of variation is 18.75. Find the standard deviation.
- 41) If the mean and coefficient of variation of a data are 15 and 48 respectively, then find the value of standard deviation.
- 42) If $n = 5$, $\bar{x} = 6$, $\Sigma x^2 = 765$ then calculate the coefficient of variation.
- 43) What is the probability that a leap year selected at random will contain 53 saturdays.
(Hint: $366 = 52 \times 7 + 2$)
- 44) If A is an event of a random experiment such that $P(A) : P(\bar{A}) = 17.15$ and $n(S) = 640$ then find (i) $P(\bar{A})$ (ii) $n(A)$.
- 45) A coin is tossed thrice. What is the probability of getting two consecutive tails?
- 46) If $P(A) = 0.37$, $P(B) = 0.42$, $P(A \cap B) = 0.09$ then find $P(A \cup B)$.
- 47) A card is drawn from a pack of 52 cards. Find the probability of getting a king or a heart or a red card.
- 48) If $P(A) = \frac{2}{3}$, $P(B) = \frac{2}{5}$, $P(A \cup B) = \frac{1}{3}$ then find $P(A \cap B)$.
- 49) A and B are two events such that, $P(A) = 0.42$, $P(B) = 0.48$, $P(A \cap B) = 0.16$. Find (i) $P(\text{not } A)$ (ii) $P(\text{not } B)$ (iii) $P(A \text{ or } B)$
- 50) If A and B are two mutually exclusive events of a random experiment and $P(\text{not } A) = 0.45$, $P(A \cup B) = 0.65$, then find $P(B)$.