

## Assignment

Topics: Real number ,Polynomial , Linear Eq. in two Variable, Trigonometry , Statics

Class : X

Sub: Maths

Q1:  $\frac{139}{2^5 \cdot 5^7 \cdot 17^5}$  can be \_\_\_\_\_

Q2: The graph of  $y = kx$ ,  $k = \text{constant}$  will always \_\_\_\_\_

Q3: The value of  $\sin (50^\circ + \theta) - \cos (40^\circ - \theta)$  \_\_\_\_\_

Q4: Give that L.C.M  $(26,169) = 338$  , HCF  $= (26,169)$  is \_\_\_\_\_

Q5: If  $\frac{XP}{PY} = \frac{XQ}{QZ} = 3$  and area of  $\Delta XYZ = 32\text{cm}^2$  , then the area of quadrilateral  $PYZQ$  is \_\_\_\_\_

Q6: In a frequency distribution , the mid value of class is 10 and the width of the class is 6 Now the lower limit of the class is \_\_\_\_\_

Q7: The equation  $x + y = 3$  ,  $3x - 2y = 4$  intersect at \_\_\_\_\_

Q8: A ladder is placed in such a way that its foot is at a distance of 5m from a wall and its tip reaches a window 12m above the ground .The length of the ladder is \_\_\_\_\_

Q9: The value of  $x$  if  $\tan 3x = (\sin 45^\circ \cdot \cos 45^\circ) \div \sin 30^\circ$  is : \_\_\_\_\_

Q10: The mode of the following data : 120 , 110 , 120 , 130 , 120, 140, 130, 120 , 140 , 120 \_\_\_\_\_

Q11: If  $\cot \theta = \frac{7}{8}$  evaluate :  $\frac{(1+\sin \theta)(1-\sin \theta)}{(1+\cos \theta)(1-\cos \theta)}$

Q12: Give an example of a polynomial  $f(x)$ ,  $g(x)$  and  $r(x)$  satisfying  $f(x) = g(x) \cdot q(x) + r(x)$  where  $r(x) = 0$

Q13: A ladder 10m long reaches a window reaches a window 8m above the ground .Find the distance of the foot of the ladder from the base of the wall .

Q14: Sonam purchased two pencils and three eraser for Rs 9 . Gita also purchased one pencil and two eraser for Rs 5 from the same shop .Find the cost of one pencil and one eraser .

Q15: If  $\tan A = \sqrt{2} - 1$  , show that  $\sin A \cos A = \frac{\sqrt{2}}{4}$

Q16: In  $\Delta PQR$  , right angled at  $Q$  ,  $PR + QR = 25\text{cm}$  and  $PQ = 5\text{cm}$  , Find the values of  $\sin P$  ,  $\cos P$  and  $\tan P$  .

Q17: Draw an ogive (less than ) for the following data .

Intervals	20 - 30	30- 40	40- 50	50 – 60	60 – 70	70 – 80
Frequencies	4	8	9	10	6	4

Q18: Show that any positive integer is of the form  $3q$  or  $3q + 1$  or  $3q + 2$  for some integer  $q$

Q19: By applying the fundamental theorem of arithmetic, find the HCF of 8624 and 21658

Q20: Verify that the number given alongside of the cubic polynomial are its zeroes. Also verify the relationship between the zeroes and the coefficients  $2x^3 + x^2 - 5x + 2$ ;  $\frac{1}{2}, 1, -2$

Q21: The path of the train is given by the equation  $x + 2y - 4 = 0$  and the path of another train B is given by the equation  $2x + 4y - 12 = 0$ . Draw graphically.

Q22: Prove that the following identity:  $\frac{1}{\operatorname{cosec} A - \cot A} - \frac{1}{\sin A} = \frac{1}{\sin A} - \frac{1}{\operatorname{cosec} A + \cot A}$

Q23: Formulate the following problems as a pair of equations and hence find their solution:

Tanvika travels 300 km to her home partly by train and partly by car. She takes 4 hours if she travels 60 km by train and the remaining by car. If she travels 40 km by train and the remaining by car, she takes 10 minutes longer. Find the speed of the train and the car separately.

Q24: In a  $\Delta PQR$ ,  $PR^2 - PQ^2 = QR^2$  and M is a point on side PR such that  $QM \perp PR$ . Prove that  $QM^2 = PM \times MR$

Q25: If  $\sin \theta + \cos \theta = \sqrt{3}$ , then prove that  $\tan \theta + \cot \theta = 1$

Q26: In a quadrilateral ABCD,  $\angle A + \angle D = 90^\circ$ . Prove that  $AC^2 + BD^2 = AD^2 + BC^2$

Q27: Prove that the ratio of areas of two similar triangles is equal to the square of the ratio of their corresponding sides. Use the above theorem in the following: The area of two triangles are  $81 \text{ cm}^2$  and  $144 \text{ cm}^2$ . If the largest side of the smaller triangle is 27 cm, find the largest side of the larger triangle.

Q28: Calculate the mode of the following data concerning to the employees of a factory:

Income (in Rs)	0 - 50	50 - 100	100 - 150	150 - 200	200 - 250	250 - 300
Frequency (Employees)	90	150	100	80	70	10

Q29: Prove the following:  $\frac{\sin \theta}{1 + \cos \theta} + \frac{1 + \cos \theta}{\sin \theta} = 2 \operatorname{cosec} \theta$

Q30: If the polynomial  $x^4 - 6x^3 + 16x^2 - 25x + 10$  is divided by another polynomial  $x^2 - 2x + k$ , the remainder comes out to be  $x + a$ . Find the value of  $k$  and  $a$ .