

**Delhi Public School, Jammu**  
**Revision Sheet for Cycle Test I**

**Session 2018-19**

**Class- X**

**Subject-Mathematics**

- Q1) If  $\cos(40^\circ + x) = \sin 30^\circ$ . Find the value of  $x$
- Q2) Find the zeroes of the quadratic polynomial  $t^2 - 15$ .
- Q3) At what point will the line  $x - y = 8$
- Q4) Find the value of  $x$ , if  $\cos(4x - 10) = 0$ .
- Q5) If 8 is a root of equation  $x^2 - 10x + k = 0$ , find  $k$ .
- Q6) Solve  $x$  and  $y$   $49x + 51y = 499$ ,  $51x + 49y = 501$ .
- Q7) If  $5 \tan \phi = 4$ . Evaluate  $5 \sin \phi - 3 \cos \phi$
- Q8) If  $\alpha$  and  $\beta$  are the zeroes of the quadratic polynomial  $p(x) = 2x^2 - 4x + 5$ . Then find the value of  $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$ .
- Q9) ABC is an isosceles triangle, right angled at C. Prove that  $AB^2 = 2BC^2$
- Q10) Find two nos. whose sum is 18 and difference is 6.
- Q11) Find the largest number which divides 70 and 125 leaving remainder 5 and 8 respectively
- Q12) 4 men and 6 boys can finish a piece of work in 5 days while 3 men and 4 boys can finish it in 7 days. Find the time taken by 1 man alone or that by 1 boy alone.
- Q13) A man travels 600 kms partly by train and partly by car. It takes 8 hours and 40 minutes if he travels 320 kms by train and the rest by car. It would take 30 minutes more if he travels 200 kms by train and the rest by car. Find the speed of the train and the car respectively
- Q14) Prove that  $\sin A (1 + \tan A) + \cos A (1 + \cot A) = \sec A + \operatorname{cosec} A$ .
- Q15) Prove that  $(\tan Q + 2)(2 \tan Q + 1) = 5 \tan Q + 2 \sec^2 Q$ .
- Q16) If  $\sin Q + \cos Q = m$  and  $\sec Q + \operatorname{cosec} Q = n$ , then prove that  $n(m^2 - 1) = 2m$ .
- Q17) If one zero of the polynomial  $ax^2 + bx + c$  is double of the other, then show that  $2b^2 = 9ac$ .
- Q18) Find a cubic polynomial whose zeros are 4, -3 and -1.
- Q19) Find the value of  $k$ , if -1 is a zero of the polynomial  $p(x) = kx^2 - 4x + k$ .
- Q20) The angle of elevation of the top of a tower from two distinct points S and T from its foot are complementary. Prove that the height of the tower  $\sqrt{ST}$ .
- Q21) Prove that  $\sqrt{5}$  is irrational and hence show that  $3 + \sqrt{5}$  are also irrational.
- Q22) In an equilateral triangle ABC, D is a point on side BC such that  $3BD = BC$ . Prove that  $9AD^2 = 7AB^2$ .
- Q23) A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground making an angle of  $45^\circ$  with it. The distance between the foot of the tree to the point where the top touches the ground is 10 m. Find the height of the tree.
- Q24) If the areas of two similar triangles are equal, prove that they are congruent.
- Q25) The angle of elevation of a jet plane from a point A on the ground is  $60^\circ$ . After a flight of 30 seconds, the angle of elevation changes to  $30^\circ$ . If the jet plane is flying at a constant height of  $3000\sqrt{3}$  m, find the speed of the jet plane.
- Q26) If  $\tan Q + \sin Q = m$  and  $\tan Q - \sin Q = n$ , show that  $m^2 - n^2 = 4 \sin Q \cos Q$ .