CBSE MIXED TEST PAPER-03

SELECTION TEST SETPEMEBER, 2008-09

CLASS - X MATHEMATICS

[Time: 3hrs.] **[M. M.:** 80]

General Instructions:

(1) All questions are compulsory.

(2) The question paper consists of 30 questions divided into 4 sections A, B, C and D. Section A comprises of 10 Questions 1 mark each, section B comprises of 5 Question of 2 marks each, section C comprises of 10 Questions of 3 marks each and section D comprises of five Questions of 6 marks each.

SECTION – A

Q1. Using Euclid's division algorithm, find the HCF of 125 and 425.

Q2. State whether 10.064 is rational or not. If rational, express it in p/q form.

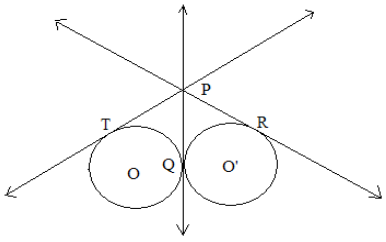
Q3. How many zeroes does a linear polynomial have?

Q4. Express y in terms of x in the equation – 2x – 3y = 7 check whether (2,-1) is point on the given equation of line.

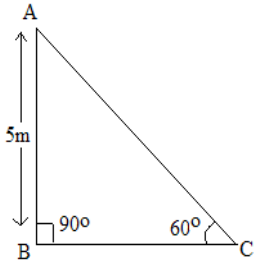
Q5. Without solving, examine the nature of roots the equation $x^2 - 6x + 9 = 0$

Q6. Using trigonometric identities write the expressions an integer $3\cot^2 A - 3\operatorname{cosec}^2 A$

Q7. PT and PQ are tangents to the circle with centre O. PQ and PR are tangents to the circle with centre O. show that PT = PR



Q8. In the given figure find the length of ladder AC



Q9. What is an arithmetic progression?

Q10. State the converse of Basic Proportionality theorem.

SECTION – B

Q11. A man goes 150m due east and then 200m due north. How far is the from the staring point.

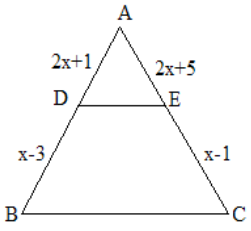
Q12. Find the values of P and Q for which the following system of linear equations infinite no. of solutions

$2x + 3y = 7$

$(p + q) x + (2p – q) y = 21$

Q13. The first term of an AP is 5, the common difference is 3 and the last term is 80. Find the number of term.

Q14. In the adjoining figure DE||BC. Find the value of x.



Q15. Find the zeroes of the polynomial $2x^2 – 5x – 3$ end verify the relationship.

SECTION – C

Q16. Prove the $3\sqrt{5}$ is irrational.

Q17. Solve for 'x'

$$\frac{1}{x+1}+\frac{2}{x+2}=\frac{4}{x+4}$$

Q18. Draw the graph of equation x – y + 1 = 0 and 3x + 2y – 12 = 0. Determine the coordinates of the vertices of the triangle formed by these lines and the x-axis, and shade the triangular region.

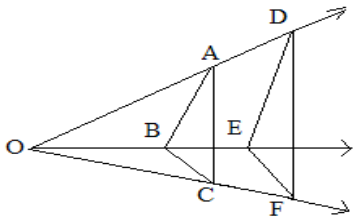
Q19. Evaluate

$$\frac{\sin^2 20 + \sin^2 70}{\sin\theta\cos(90-\theta) + \cos\theta.\sin(90-\theta)}$$

OR

Prove that $\sqrt{\frac{1+\sin A}{1-\sin A}} = \sec A + \tan A$

Q20. In fig AB||DE and BC||EF. Prove that AC||DF



Q21. A chord AB of two concentric circles is tangent to the smaller circle at the point C. prove that C is the midpoint of the chord AB.

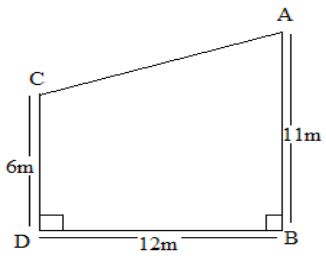
Q22. A tree is broken by the wind. The top struck the ground at an angle of 30° and at a distance of 30mt form the root. Find the whole height of the tree.

Q23. The third term of an A.P is 7 and the seventh term exceeds three time the third term by 2 find sum of first 20 terms.

Q24. Prove that length of two tangents from ant external point to a circle are equal.

Q25. If sin30 = cos (θ-6°) find value of θ.

Q26. In a right triangle, prove that the square of the hypotenuse is equal to the sum of the squares on the other two sides. Using above solve the following.
Find the length of CA if CD ⊥ DB a



Q27. Prove that the ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding sides. Using the above do the following.
The areas of two similar Δs ABC and PQR are in the ratio of 9:16. If BC = 4.5cm, find the length of QR.

OR

State and prove Basic proportionality thorium, and hence shoe hat diagonals of a trapezium divided each other proportionally.

Q28. A vertical flag staff stands on the top of a building. The height of the flagstaff above the building is 6m. The angles of elevation of the top and bottom of the flagstaff at a point on the levels ground are 45^o and 30^o respectively. Find the height of the building.

Q29. The students of a class are made to stand in rows. If 3 students are extra in a row, there would be 1 row less. If 3 students are les in a row, there would be 2 rows more. Find the number of students in the class

Q30. a. the sum of students in the class.

The sum of their reciprocals is $\frac{1}{3}$. Find the number.

b. determine the values of P for which the quadratic equation $2x^2 + px + 8 = 0$ has real roots.