

Xth MATHS



Practice Sheet 4

Syllabus : Unit 1-Number System Chapter 1

Unit -II -Algebra Chapter 2,3,4,5

Unit -III Coordinate Geometry Chapter 7

Unit -IV Geometry Similar Triangles Chapter 6

SUBJECT: MATHEMATICS Standard

Code : 041

MAX. MARKS : 60

DURATION : 2 hrs

1. This Question Paper has 5 Sections A-E.
2. **Section A** has 14 MCQs carrying 1 mark each.
3. **Section B** has 3 questions carrying 02 marks each.
4. **Section C** has 4 questions carrying 03 marks each.
5. **Section D** has 2 questions carrying 04 marks each.
6. **Section E** has 4 questions carrying 05 marks each.

Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated

SECTION – A

Questions 1 to 14 carry 1 mark each.

1. The LCM of two numbers is 182 and their HCF is 13. If one of the number is 26 , the other number is
(a) 31 (b) 71 (c) 61 (d) 91
2. If the sum of the zeroes of the quadratic polynomial $kx^2 + 2x + 3k$ is equal to their product , then k is equals
(a) $\frac{1}{3}$ (b) $-\frac{1}{3}$ (c) $\frac{2}{3}$ (d) $-\frac{2}{3}$
3. For what value of k , do the equations $3x - y + 8 = 0$ and $6x + ky = -16$ represent coincident lines
(a) $\frac{1}{2}$ (b) $-\frac{1}{2}$ (c) -2 (d) 2
4. If $2p + 1$, 10 and $5p + 5$ are three consecutive terms of an AP , then the value of p is
(a) 2 (b) -2 (c) 1 (d) -1
5. If the distance between the points A (4 , p) and B (1 , 0) is 5 units then the value (s) of 'p' is (are)
(a) 4 only (b) -4 only (c) ± 4 (d) 0
6. Which of the following equations has 2 roots ?
(a) $x^2 - 4x + 5 = 0$ (b) $x^2 + 3x - 12 = 0$
(c) $2x^2 - 7x + 6 = 0$ (d) $3x^2 - 6x - 2 = 0$
7. The graph of a polynomial $p(x)$ cuts the x – axis at 3 points and touches it at 2 other points , find the number of zeroes of $p(x)$
(a) 1 (b) 2 (c) 3 (d) 5

8. If $P(a/3, 4)$ is the mid-point of the line segment joining the points $Q(-6, 5)$ and $R(-2, 3)$, then the value of a is
 (a) -4 (b) -12 (c) 12 (d) -6
9. The 4th term from the end of the AP ; -11 , -8 , -549 is
 (a) 37 (b) 40 (c) 43 (d) 58
10. If the common difference of an AP is 5 , then $a_{18} - a_{13} = ?$
 (a) 5 (b) 20 (c) 25 (d) 30
11. In ΔPQR , $ST \parallel QR$, points S divides PQ in the ratio 4 : 5 , If $ST = 1.6$ cm , what is the length of QR ?
 (a) 0.71 cm (b) 2cm (c) 3.6 cm (d) 3 cm
12. The value of 'k' for which the pair of linear equations $(k + 1)x + 2(1 - k)y = 15$; $4y = 3x - 8$ has no solution, is :
 (a) 3 (b) $1/5$ (c) 5 (d) $37/8$
13. The zeros of the polynomial $p(x) = x^2 - 3x - m(m + 3)$ are
 (a) $m, (m - 3)$ (b) $-m, (m + 3)$ (c) $-m, (m - 3)$ (d) $m, (m + 1)$
14. Assertion(A): If the co-ordinates of the mid-points of the sides AB and AC of ΔABC are $D(3, 5)$ and $E(-3, 3)$ respectively, then $BC = 40$ cm
 Reason(R) : The line joining the mid points of two sides of a triangle is parallel to the third side and equal to half of it.
 (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
 (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
 (c) Assertion (A) is true but reason (R) is false.
 (d) Assertion (A) is false but reason (R) is true.

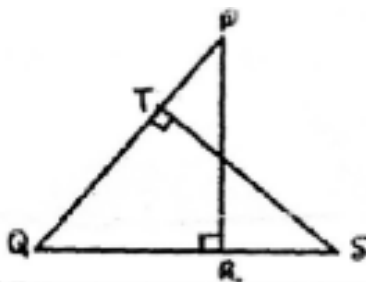
SECTION – B
Questions 15 to 17 carry 2 mark each.

- 15.(a) If 'a' and 'b' are the zeroes of the polynomial $3x^2 - x - 2$, find the value of $\left(\frac{a}{b} + \frac{b}{a}\right)$.

Or

(b) If a, b are the zeroes of the quadratic polynomial $p(x) = x^2 - 4x + k$, such that $a - b = 8$. Find k .

16. In the figure below , ΔPQR and ΔQST are the two right triangles, right angled at R and T respectively .
 Prove that $QR \times QS = QP \times QT$



17.(a) A 2-digit number is obtained by either multiplying the sum of the digits by 7 and then adding 3 or by multiplying the difference of the digits by 19 and then subtracting 1. It is given that the digit at ten's place is greater than that of unit's place. Find the 2-digit number.

Or

(b) Check graphically whether the pair of linear equation $2x + 3y = 12$; $5x - 3y = 9$ is consistent. If so, solve it graphically.

SECTION – C
Questions 18 to 21 carry 3 mark each.

18. The mid-points of the sides of a triangle are (3,4), (4,6) and (5,7). Find the coordinates of vertices of the triangle.

19. Find the value of p for which the quadratic equation $p(x - 4)(x - 2) + (x - 1)^2 = 0$ has real and equal roots.

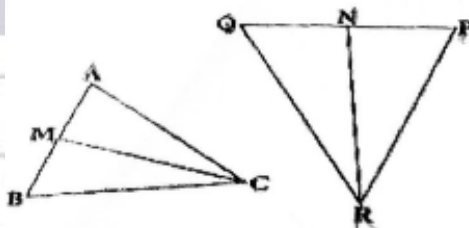
20. If the last term of an AP of 30 terms is 119 and the 8th term from the end is 91, then find the common difference of the Ap. Hence, find the sum of all the terms of the AP.

21. (a) In figure, CM and RN are respectively the medians of $\triangle ABC$ and $\triangle PQR$. If $\triangle ABC \sim \triangle PQR$. Prove that

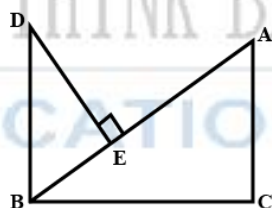
(i) $\triangle AMC \sim \triangle PNR$

(ii) $\frac{CM}{RN} = \frac{AB}{PQ}$

OR



(b) In the given figure below, $DB \perp BC$, $DE \perp AB$ and $AC \perp BC$. Prove that $\frac{BE}{DE} = \frac{AC}{BC}$



SECTION – D
Questions 22 to 23 carry 4 mark each.

22. The figure given alongside shows the path of a diver, when she takes a jump from the diving board. Clearly it is a parabola. Annie was standing on a diving board, 48 feet above the water level. She took a dive into the pool. Her height (in feet) above the water level at any time 't' in seconds is given by the polynomial $h(t)$ such that $h(t) = -16t^2 + 8t + k$.

(i) what is the value of k at $t = 0$?

(ii) At what time will she touch the water in the pool

(iii) Simpi's height (in feet) above the water level is given



by another polynomial $p(t)$ with zeroes (-1) and (2) . Then find the polynomial $p(t)$

Or

If the zeroes of the polynomial $f(t) = -12t^2 + (k - 3)t + 48$ are negative of each other, then find 'k'.

- 23.** You have 54 hockey cards, 72 baseball cards, and 90 basketball cards and you want to put them in a binder. Each page of the binder should have cards from a single sport, and there should be the same number of cards on each page.

(i) What is the greatest number of cards you can put on a page?

(ii) How many pages will you need for each sport?

(iii) Find the LCM of 54, 72 and 90.

Or

Can we say that 6^n can end with digit 5 for any natural number 'n'? Explain your answer.



SECTION – E
Questions 24 to 27 carry 5 mark each.

- 24.** Sides AB and AC and median AD of a triangle ABC are respectively proportional to sides PQ and PR and median PM of another triangle PQR. Show that $\triangle ABC \sim \triangle PQR$.

- 25.** If the coordinates of the mid points of a triangle be $(-3, 2)$, $(1, -2)$ and $(5, 6)$, then find the coordinates of its vertices.

- 26.** How many terms of the AP 45, 39, 33, must be taken so that their sum is 180? Explain the double answer.

Or

An AP consists of 37 terms. The sum of the three middle most terms is 225 and the sum of the last three terms is 429. Find the AP.

- 27. (a)** If a line drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then prove that the other two sides are divided in the same ratio.

(b) using the above result solve the following question.

ABCD is a trapezium with $AB \parallel DC$. E and F are points on non-parallel sides AD and BC respectively such that EF is parallel to AB. Show that $\frac{AE}{ED} = \frac{BF}{FC}$.

End

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