

Practice Sheet 5

Syllabus :Unit 1-Number System Chapter 1

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

Unit -III Coordinate Geometry Chapter 7

Unit IV Geometry Chapter 6 ,10

Unit V Trigonometry Chapter 8, 9

SUBJECT: MATHEMATICS Standard

Code:041

MAX. MARKS : 60

DURATION : 120 min

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. $2 \sin^2 60^\circ - 1 =$

- (a) $\sin 60^\circ$ (b) $\sin 30^\circ$ (c) $\cos 60^\circ$ (d) $\sec 60^\circ$

2. If ΔABC is a right angled triangle at A, then the value of $\cos (B + C)$:

- (a) 1 (b) $\cos A$ (c) 0 (d) $\sin A$

3. In the given figure, $AD = 1.28 \text{ cm}$, $DB = 2.56 \text{ cm}$, $AE = 0.64 \text{ cm}$. DE is parallel to BC if $EC =$

- (a) 1.28 cm (b) 2.56 cm (c) 0.64 cm (d) 0.32 cm

4. If $\Delta ABC \sim \Delta PQR$ such that $\angle A = 32^\circ$ and $\angle R = 65^\circ$, then $\angle B =$

- (a) 32° (b) 65° (c) 97° (d) 83°

5. The 7th term of the sequence $\sqrt{2}, \sqrt{8}, \sqrt{18}, \dots$ is :

- (a) $\sqrt{50}$ (b) $\sqrt{72}$ (c) $\sqrt{128}$ (d) $\sqrt{98}$

6. The distance of the point P(4, -3) from the origin is :

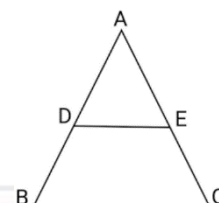
- (a) 1 unit (b) 3 units (c) 5 units (d) 7 units

7. P and Q be natural numbers and P is the multiple of q, then what is the HCF of p & q

- (a) pq (b) p (c) q (d) p + q

8. If the sum of first n odd natural numbers is equal to k times the sum of first n even natural numbers, then k is equal to

- (a) $\frac{n+1}{2n}$ (b) $\frac{2n}{n+1}$ (c) $\frac{n+1}{n}$ (d) $\frac{n}{n+1}$



9. If $4 \cot \theta - 5 = 0$, then the value of $\frac{5 \sin \theta - 4 \cos \theta}{5 \sin \theta + 4 \cos \theta}$ is

- (a) $\frac{5}{6}$ (b) $\frac{5}{3}$ (c) 0 (d) $\frac{1}{6}$

10. The area of the triangle formed by the line $x/a + y/b = 1$ with the coordinate axes is

- (a) ab (b) $\frac{1}{2} ab$ (c) $\frac{1}{4} ab$ (d) $\frac{1}{8} ab$

11. The point P which divides the line segment joining the points A (2, -5) and B (5, 2) in the ratio 2 : 3 lies in the quadrant

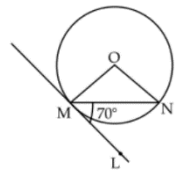
- (a) I (b) II (c) III (d) IV

12. If $a \cos \theta + b \sin \theta = m$, $a \sin \theta - b \cos \theta = n$, then $a^2 + b^2$

- (a) $m^2 + n^2$ (b) $m^2 - n^2$ (c) $2mn$ (d) $4mn$

13. In fig, O is the centre of the circle, MN is a chord and the tangent ML at the point M makes an angle 70° with MN then $\angle MON$ is equal to:

- (a) 120° (b) 90° (c) 140° (d) 70°



14. **Assertion(A):** Maximum value of $\frac{1}{\sec \theta} + \frac{1}{\operatorname{cosec} \theta}$ is 1

Reason(R): Maximum value of both $\sin \theta$ and $\cos \theta$ is 1

Choose the correct answer out of the following choices

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
 (b) Both A and (R) are true and (R) is not the correct explanation of (A).
 (c) (A) is true but (R) is false.
 (d) (A) is false but (R) is true.

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

15. Find the sum of integers between 10 and 500 which are divisible by 7 .

16. Find the value of k, for which the system of equations have infinitely many solutions.

$$2x + 3y = 7 \text{ and } (k + 2)x - 3(1 - k)y = 5k + 1.$$

Or

$$\text{Solve for } x : 37x + 43y = 123 \text{ and } 43x + 37y = 117$$

17. If $\sec A + \tan A = p$, then prove that $\frac{p^2-1}{p^2+1} = \sin A$.

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

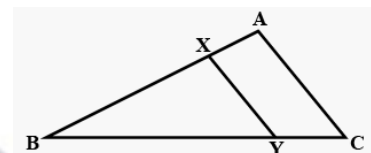
18. Prove that $\frac{\tan \theta}{1-\cot \theta} + \frac{\cot \theta}{1-\tan \theta} = 1 + \sec \theta \operatorname{cosec} \theta$

OR

If $x = r \sin A \cos C$, $y = r \sin A \sin C$, $z = r \cos A$, then prove that $x^2 + y^2 + z^2 = r^2$

19. Solve for x , $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$, $a \neq 0$, $b \neq 0$, $x \neq 0$.

20. In fig, the line segment XY is parallel to side AC of $\triangle ABC$ and it divides the triangle into two parts of equal areas. Find the ratio $\frac{AX}{AB}$.



21. A circle is touching the side BC of $\triangle ABC$ at P and touching AB and AC produced at Q and R . Prove that $AQ = \frac{1}{2}(\text{Perimetre of } \triangle ABC)$

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

22. A thief, after committing a theft, runs on a bike at a speed of 43 m/min and his speed by 2m/min, every succeeding minute. After 3 minutes, a policeman runs on his jeep to catch him. He goes 70 m in the first min and increases his speed by 5m/min every succeeding minute.

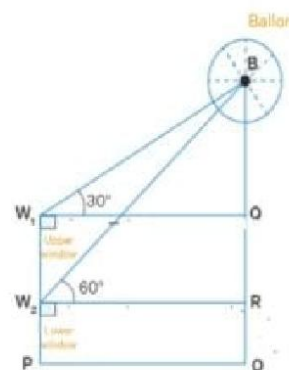
- (i) Find the n th term for thief.
- (ii) Find the sum of n th term for policeman.
- (iii) After how many minutes policeman will catch the thief?

Or

If policeman runs on his jeep with uniform speed. Then after how many minutes he will catch the thief?

23. The lower window of a house is at a height of 2 m above the ground and its upper window is 4 m vertically above the lower window. At certain instant the angles of elevation of a balloon from these windows are observed to be 60° and 30° respectively. Height of the balloon above the ground is h metre.

- (i) Find the distance of the balloon from the lower window?
- (ii) Find the distance of the balloon from the upper window?
- (iii) Find the height of the balloon above the ground?



Or

Find the height of the balloon above the lower ground.

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

- 24.** In a class test, the sum of Monu's marks in Mathematics and English is 40. Had he got 3 marks more in Mathematics and 4 marks less in English, the product of their marks would have been 360 . Find her marks in the two subjects respectively .

OR

The age of a father is twice the square of the age of his son. Eight years hence, the age of the father will be 4 years more than three times the age of the son. Find their present ages.

- 25.** If the angle of elevation of a cloud from a point 'h' meters above a lake is α and angle of depression of its reflection in the lake is β , prove that distance of the cloud from the point of observation is

$$\frac{2h \sec \alpha}{\tan \beta - \tan \alpha}$$

- 26.** Sides AB and BC and median AD of a triangle ABC are respectively proportional to sides PQ and QR and median PM of triangle PQR. Show that $\triangle ABC \sim \triangle PQR$.

- 27.** If m^{th} term of an AP is $\frac{1}{n}$ and n^{th} term is $\frac{1}{m}$. Show that sum of mn terms is $\frac{1}{2} (mn + 1)$

OR

If m times m^{th} term of an AP is same as n times n^{th} terms. Show that $(m + n)^{th}$ term is Zero.

End

To get more sample papers , practice papers ,study material for Maths (only for CBSE IX-X) join my whatsapp group at link shared below

<https://chat.whatsapp.com/lCdBeP9GN0d4hOdZxC6C5W>