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PERIODIC TEST 1 (2025-2026)

CLASS X

MATHEMATICS

MM- 40 MAX.

TIME- 90 MIN

Q1. The HCF of 60 and 75 is 15. What is their LCM?

- a) 300
- b) 225
- c) 180
- d) 150

Q2. If the sum and product of zeroes of a quadratic polynomial are 4 and -5 respectively, then the polynomial is:

- a) $x^2 - 4x - 5$
- b) $x^2 + 4x - 5$
- c) $x^2 - 4x + 5$
- d) $x^2 - 5x + 4$

Q3. The pair of equations

 $2x + 3y = 12$ and $4x + 6y = 24$ has:

- a) A unique solution
- b) No solution
- c) Infinitely many solutions
- d) Exactly two solutions

Q4. The roots of the equation $3x^2 + 4x - 7 = 0$ are:

- a) Rational and unequal
- b) Irrational and unequal
- c) Complex
- d) Real and equal

Q5. The 20th term of an A.P. is 52 and the 10th term is 32. What is the common difference?

- a) 1
- b) 2
- c) 2.5
- d) 3

Q6. The sum of first n terms of an A.P. is $n = 3n/2 (2n+1)$. What is the first term?

- a) 3
- b) 6
- c) 2
- d) 1

Q7. If 2 is the root of equation $x^2 + kx + 12 = 0$, then value of k is

- a) 4
- b) -8
- c) 0
- d) 7

Q8. If two triangles are similar, then the ratio of their areas is equal to:

- a) Ratio of their sides
- b) Square of ratio of their corresponding sides
- c) Cube of ratio of their sides
- d) Double the ratio of their sides

Q9. The coordinates of point P which divides the line joining A(2, -3) and B(4, 3) in the ratio 1:2 are:

- a) (3, 1)
- b) (3, 2)
- c) (2.5, 1)
- d) (4, -1)

Q10. Assertion (A): If the nth term of an A.P. is 0, then the sum of first n terms can be negative.

Reason (R): The nth term being 0 means the terms are decreasing and can include negative numbers.

Choose:

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

SECTION B (2 X 5 = 10)

Q11. For what value of k the system of equation

$$X + 2Y = 5$$

$$3X + KY + 15 = 0$$

- (a) Unique solution
- (b) no solution

Q12. Prove that $7 - 2\sqrt{3}$ is irrational.

Q13. Find the nature of roots of quadratic equation.
 $3x^2+2x+5=0$

Q14. Find the zeroes of quadratic polynomial $x^2+7x+10$ and verify the relationship between the zeroes and its coefficients.

Q15 If the point $(1, x)$, $(5, 2)$ and $(9, 5)$ are collinear, then find the value of x .

SECTION C (3 X 4 = 12)

Q16. Prove if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then the other two sides are divided in the same ratio.

Q. 17 if α and β are the zeros of quadratic polynomial by $6y^2+7y+2$. Find a quadratic polynomial whose zeros are $1/\alpha$ and $1/\beta$.

Q18. Draw the graph of equations:

$$x+3y = 15$$

$$2x-3y = -6$$

Q19. Diagonals AC and BD of a trapezium $ABCD$ with $AB \parallel DC$ intersect each other at O . Using a similarity criteria for 2 triangles, show that $\frac{OA}{OC} = \frac{OB}{OD}$.

SECTION -D CASE STUDY BASED QUESTION

Q20. Your elder brother wants to buy a car and plans to take loan from a bank for his car. He repays his total loan of Rs 1,18,000 by paying every month starting with the first instalment of Rs 1000. If he increases the instalment by Rs 100 every month, answer the following:

1. The amount paid by him in 30th instalment is

- a) 3900
- b) 3500
- c) 3700
- d) 3600

2. What amount does he still have to pay after 30th instalment?

- a) 45500
- b) 49000
- c) 44500
- d) 54000

3. If total instalments are 40 then amount paid in the last instalment?

- a) 4900
- b) 3900
- c) 5900
- d) 9400

4. The ratio of the 1st installment to the last installment is

- a) 1:49
- b) 10:49
- c) 10:39
- d) 39:10

Q21. A telecom company wants to install a mobile tower at a point equidistant from three buildings located at $P(2, 3)$, $Q(6, 7)$, and $R(2, 7)$. The engineer wants to verify if these three points form a triangle and where the tower can be optimally placed.

1. Are the points P , Q , and R forming a triangle?

- a) Yes, a right triangle
- b) No, they are collinear
- c) Yes, an equilateral triangle
- d) Yes, a scalene triangle

2. Find the length of side QR .

- a) 4
- b) 6
- c) $\sqrt{20}$
- d) $\sqrt{32}$

3. "Which point is equidistant from Q and R and could be a possible tower location?"

- a) Midpoint of QR
- b) Midpoint of PR
- c) Centroid of triangle
- d) Any point on PQ

4. What is the distance between points P and Q ?

- a) $\sqrt{32}$
- b) $\sqrt{8}$
- c) $\sqrt{20}$
- d) 4

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PRE BOARD-2 (2025-26)

CLASS: X

SUBJECT: MATHEMATICS STANDARD

Time:3:00 Hours

MM.80

General Instructions:

1. This Question Paper has 5 Sections A, B, C, D and E.
2. Section A has 18 MCQs and 2 Assertion and reasoning Questions carrying 1 mark each.
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with sub- parts of the values of 1, 1 and 2 marks each respectively.
7. All Questions are compulsory. However, an internal choice in 2 Questions of 5 marks, 2 Questions of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E
8. Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.

SECTION A**Section A consists of 20 questions of 1 mark each.**

- 1 If the zeroes of the quadratic polynomial $x^2 + (a + 1)x + b$ are 2 and -3, then
 - (a) $a = -7, b = -1$
 - (b) $a = 5, b = -1$
 - (c) $a = 2, b = -6$
 - (d) ~~$a = 0, b = -6$~~
- 2 If $(x-2)^2 + 1 = 2x - 3$ is a quadratic equation, then find the value of discriminant
 - (a) 4.
 - (b) -3
 - (c) -6
 - (d) -4
- 3 For what value k , do the equations $2x - y + 3 = 0$ and $6x - ky + 9 = 0$ represent coincident lines?
 - (a) 2
 - (b) -2
 - (c) 3
 - (d) -3

DIRECTION: In the question number (19) and (20), a statement of assertion (A) is followed by a statement of Reason (R).

Choose the correct option

Statement A (Assertion): The HCF of two numbers is 15 and

19 their product is 2250. Then their LCM is 150.

Statement R (Reason) : If a, b are two positive integers, then $HCF \times LCM = a \times b$.

- (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 and 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.

20 **Statement A (Assertion):** If the perimeter of a circle is equal to that of a square, then the ratio of their areas is 14:11 1

Statement R (Reason): If the perimeter of a circle is equal to that of a square, then their areas are equal

- (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 and 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

21 Given that $\sqrt{3}$ is irrational, prove that $2 + 5\sqrt{3}$ is irrational. 2

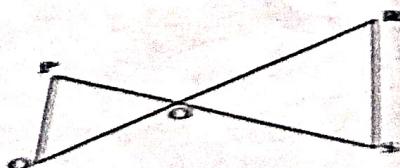
22 One card is drawn from a well-shuffled deck of 52 cards. Calculate the probability that the card will be (i) an ace, (ii) not be an ace 2

If $\sin(A+B) = 1$ and $\cos(A-B) = \frac{1}{2}$ find A and B. 2

OR

23 If $\tan A = \sqrt{3}$ and $\tan B = \frac{1}{\sqrt{3}}$, $0 < A, B < 90^\circ$, then find the value of $\cot(A+B)$.

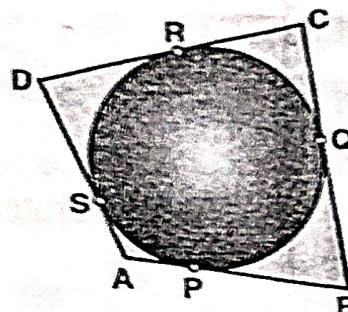
24 In the figure, if $PQ \parallel RS$, prove that $\triangle POQ \sim \triangle SOR$. 2



OR

Sides AB and BC and median AD of $\triangle ABC$ are respectively proportional to sides PQ and QR and median PM of $\triangle PQR$, show that $\triangle ABC \sim \triangle PQR$.

25 A quadrilateral ABCD is drawn to circumscribe a circle as shown in the figure. Prove that $AB + CD = AD + BC$



SECTION C

26 Prove that $\sqrt{5}$ is an irrational number. 3

27 If one of the zero of the polynomial $3x^2 + 8x + 2k + 1$ is seven times the other, find the value of 'k'. 3

Find the values of 'k' for each of the following quadratic equations, so that they have two equal roots. 3

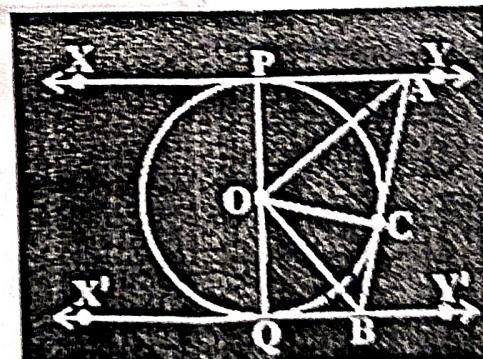
28 (i) $2x^2 + kx + 3 = 0$ (ii) $kx(x - 2) + 6 = 0$

OR

Find the roots of the equation $x^2 - 3x - m(m + 3) = 0$, where m is a constant.

29 Prove that $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \cdot \cosec \theta$ 3

30 XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB with the point of contact C intersecting XY at A and X'Y' at B. Prove that $\angle AOB = 90^\circ$. 3



31 The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand in 5 minutes.

(OR)

An umbrella has 8 ribs which are equally spaced (see Fig.). Assuming umbrella to be a flat circle of radius 45 cm, find the area between the two consecutive ribs of the umbrella.



$$\theta = \frac{360}{8} = 45$$

$$\theta \times \pi r^2 = \frac{360}{8} \times \frac{45 \times 45}{7} \times \pi$$

SECTION D

32 A fraction becomes $9/11$ if 2 is added to both the numerator and the denominator. If 3 is added to both the numerator and the denominator, it becomes $5/6$. Find the fraction

(OR)

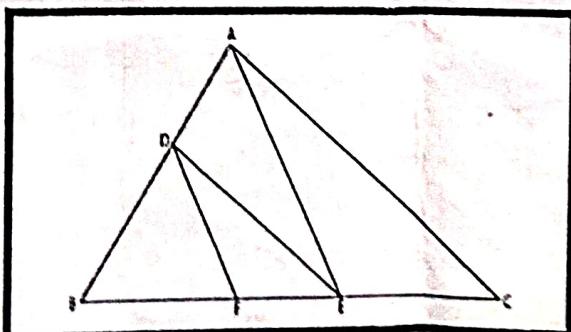
A train covered a certain distance at a uniform speed. If the train would have been 10 km/h faster, it would have taken 2 hours less than the scheduled time. And, if the train were slower by 10 km/h, it would have taken 3 hours more than the scheduled time. Find the distance covered by the train.

33 Two poles of equal heights are standing opposite each other on either side of the road, which is 80 m wide. From a point between them on the road, the angles of elevation of the top of the poles are 60° and 30° , respectively. Find the height of the poles and the distances of the point from the poles.

OR

The tops of two towers of height x and y standing on level ground, subtends angle of 30° and 60° respectively at the centre of the line joining their feet, then find $x:y$.

34 (i) State and prove BPT. 5
 (ii) In the figure, $DE \parallel AC$ and $DF \parallel AE$. Prove that $BF/FE = BE/EC$.



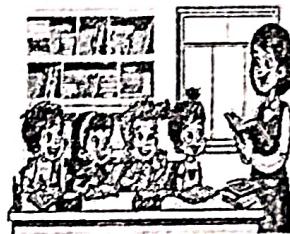
35 The mean of the following frequency table is 53. But the frequencies f_1 and f_2 in the classes 20-40 and 60-80 are missing. Find the missing frequencies

Age (in years)	0-20	20-40	40-60	60-80	80-100	Total
No. of people	15	f_1	21	f_2	17	100

SECTION – E : CASE STUDY BASED QUESTIONS.

36 In a class the teacher asks every student to write an example of AP. Two boys Aryan and Roshan writes their progressions as

-5, -2, 1, 4 and 187, 184, 181,..... respectively. Now the teacher asks the various students of the class the following questions on this progression. Help students to find the answers of the following.



(i) Find the sum of common difference of the two progressions. 1

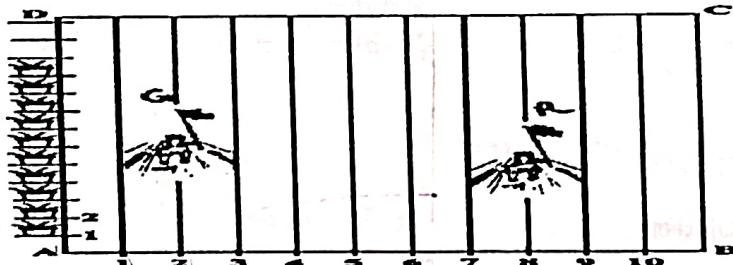
(ii) Find the 34th term of the progression written by Roshan. 1

(iii) Find the sum of first 10 terms of the progression written by Aryan. 2

(OR)

Which term of the two progressions will have the same value?

37.



In order to conduct Sports Day activities in your School, lines have been drawn with chalk powder at a distance of 1 m each, in a rectangular shaped ground ABCD, 100 flowerpots have been placed at a distance of 1 m from each other along AD, as shown in given figure below. Niharika runs $\frac{1}{4}$ th the distance AD on the 2nd line and posts a green flag. Preet runs $\frac{1}{5}$ th distance AD on the eighth line and posts a red flag.

Q2

1. Find the position of green flag 1
 (a) (2,25) (b) (2,0.25)
 (c) (25,2) (d) (0, -25)

2. Find the position of red flag 1
 (a) (8,0) (b) (20,8)
 (c) (8,20) (d) (8,0.2)

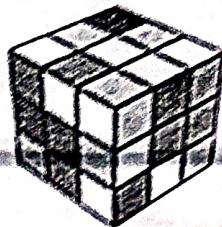
3. What is the distance between both the flags? 2
 (a) $\sqrt{41}$ (b) $\sqrt{11}$
 (c) $\sqrt{61}$ (d) $\sqrt{51}$

OR

If Rashmi has to post a blue flag exactly halfway between the line segment joining the two flags, where should she post her flag?

(a) (5, 22.5) (b) (10,22)
 (c) (2,8.5) (d) (2.5,20)

38 On a Sunday, your Parents took you to a fair. You could see lot of toys displayed, and you wanted them to buy a RUBIK's cube and strawberry ice-cream for you. Observe the figures and answer the questions:-



(i) Find the length of the diagonal if each edge measures 6cm ? 1

(ii) Find the volume of the solid figure if the length of the edge is 7cm? 1

(iii) What is the surface area of hemisphere (ice cream) if the base radius is 7cm? 2

(OR)

If the slant height of the conical part is 5 cm, and its radius is 4 cm, find its height.

$$10 \times \frac{1}{7.2}$$

P-7

PERIODIC TEST-2 (2025-2026)

CLASS – X
MATHEMATICS

Time: 90 Minutes

Maximum Marks: 40

General Instructions:

General Instructions:

1. This Question Paper has 5 Sections A, B, C, D and E comprising of 18 Questions.

2. Section A has 8 MCQs carrying 1 mark each.

3. Section B has 4 questions carrying 02 marks each.

4. Section C has 2 questions carrying 03 marks each.

5. Section D has 2 questions carrying 05 marks each.

6. Section E has 2 case-based questions carrying 04 marks each.

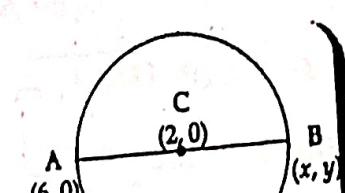
SECTION A

Section A consists of 8 questions of 1 mark each.

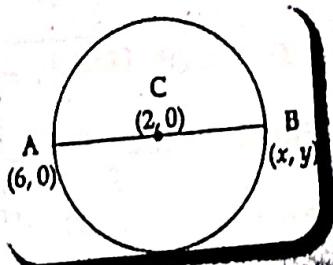
Section A consists of 5 questions

1. The centre of a circle is at $(2, 0)$. If one end of the diameter is at $(6, 0)$, then the other end is at

(a) $(0, 0)$ (b) $(4, 0)$
(c) $(-2, 0)$ (d) $(-6, 0)$

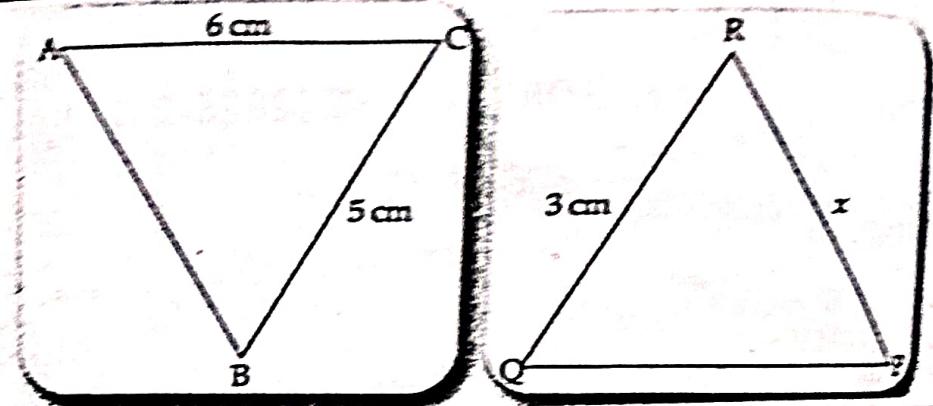


Given: $PC = 5\text{cm}$, $QR = 3\text{cm}$ and $PR = x$,



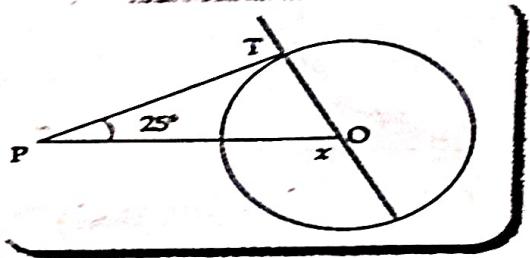
2. If $\triangle ABC \sim \triangle QPR$. If $AC=6\text{cm}$, $BC=5\text{cm}$, $QR=3\text{cm}$ and $PR=x$,
then the value of x is

(a) 3.6 cm
 (b) 2.5 cm
 (c) 10 cm
 (d) 3.2 cm



3. In the given figure, PT is a tangent at T to the circle with centre O. If $\angle TPO = 25^\circ$ then x is equal to :- 1

(a) 25° (b) 65°
 (c) 90° (d) 115°



4. If $\sin A = \frac{2}{3}$ then value of $\cot A$ is :- 1

(a) $\frac{\sqrt{5}}{2}$ (b) $\frac{3}{2}$ (c) $\frac{5}{4}$ (d) $\frac{2}{3}$

5. If $\sin A + \cos B = 1$, $A = 30^\circ$ and $\angle B$ is an acute angle, then find the value of $\angle B$ 1

(a) 30° (b) 45° (c) 60° (d) 55°

6. If a pole 6m high, casts a shadow $2\sqrt{3}$ m long on the ground, then the sun's elevation is 1

(a) 30° (b) 45° (c) 60° (d) 90°

DIRECTIONS : In questions 7 & 8, a statement of Assertion (A) is

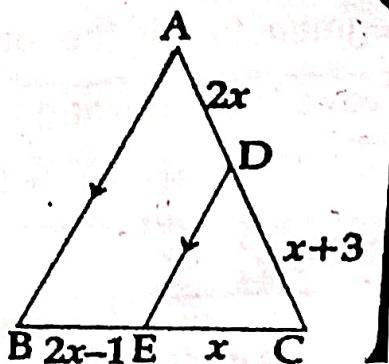
followed by a statement of Reason (R). Choose the correct option

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

7.

1

Assertion (A) : In the given figure $\triangle ABC$, the points D and E are on the sides CA, CB respectively, such that $DE \parallel AB$, $AD = 2x$, $DC = x+3$, $BE = 2x-1$ and $CE = x$, then the value of x is $\frac{3}{5}$



Reason (R) : The length of AC in $\triangle ABC$ is 4.8 units.

8.

1.

Assertion (A) : The tangents drawn at the end points of a diameter of a circle are parallel.

Reason (R) : Diameter of a circle is the longest chord

SECTION-B

Section B consists of 4 questions of 2 marks each.

9. A tangent PQ at a point P of a circle of radius 5cm meets a line through the centre O at a point Q so that $OQ=12\text{cm}$. Find the length of tangent PQ

2

10. E is a point on the side AD produced of a parallelogram ABCD and BE intersects CD at F. Show that $\triangle ABE \sim \triangle CFB$.

2

11. Evaluate

$$\frac{5 \cos^2 60^\circ + 4 \sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 30^\circ}$$

2

12. If $\sin(A-B) = \frac{1}{2}$, $\cos(A+B) = \frac{1}{2}$, $0^\circ < A+B \leq 90^\circ$, $A > B$,
Find A and B.

2

SECTION C

Section C consists of 2 questions of 3 marks each

13. Find the coordinates of the points of trisection of the line segment joining the points A (2, -2) and B (-7, 4)

3

14. Prove the following :-

$$(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A.$$

3

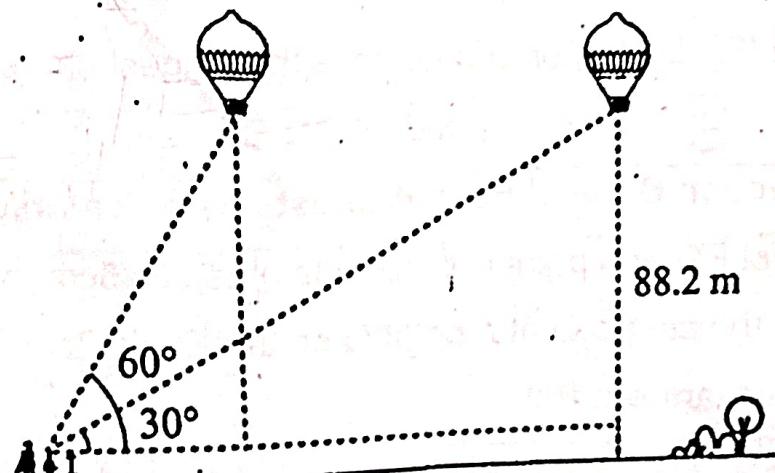
SECTION D

Section D consists of 2 questions of 5 marks each

15. State and Prove Basic Proportionality Theorem.

5

16.



3

+

2

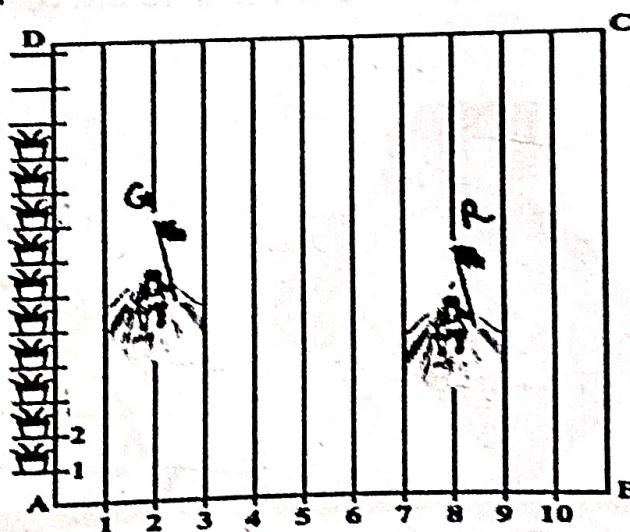
A 1.2 m tall girl spots a balloon moving with the wind in a

horizontal line at height of 88.2 m from the ground. The angle of elevation of the balloon from the eyes of the girl at any instant is 60° . After some time, the angle of elevation reduces to 30° . Find the distance travelled by the balloon during the interval.

SECTION E

Section E consists of 2 Case Study based Questions of 4 marks each

17. In order to conduct Sports Day activities in your School, lines have been drawn with chalk powder at a distance of 1m each, in a rectangular shaped ground ABCD, 100 flower pots have been placed at a distance of 1m from each other along AD, as shown in given figure below. Niharika runs $\frac{1}{4}$ th the distance AD on the 2nd line and posts a green flag. Preet runs $\frac{1}{5}$ th distance AD on the eighth line and posts a red flag.



On basis of above answer the following questions.

(299)

(i) Find the position of green flag.

1

1

(ii) Find the position of red flag. (7,7)

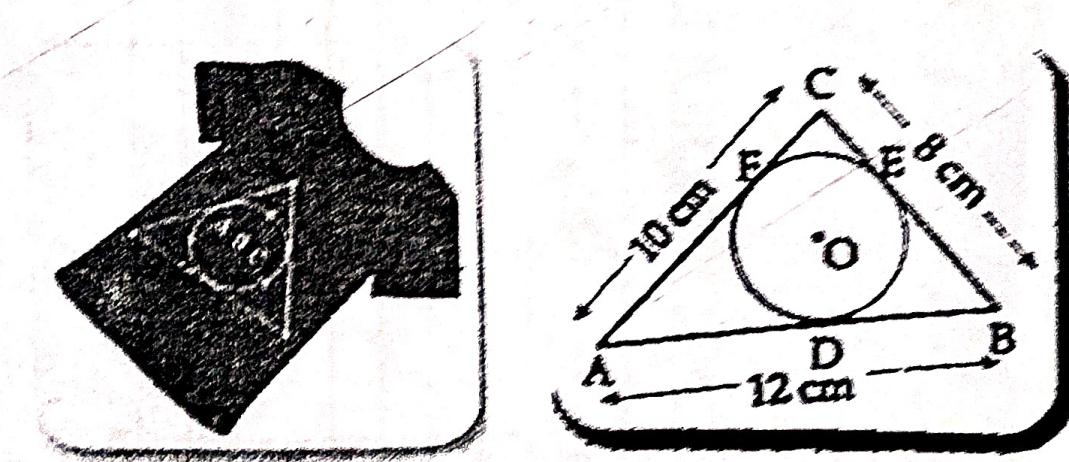
(iii) What is the distance between both the flags.

OR

(iv) If Deepti has to post a blue flag exactly halfway between the line segment joining the two flags, where should she post her flag?

18.

Varun has been selected by his School to design logo for Sports Day T-shirts for students and staff. The logo design is as given in the figure and he is working on the fonts and different colours according to the theme. In given figure, a circle with centre O is inscribed in a $\triangle ABC$, such that it touches the sides AB, BC and CA at points D, E and F respectively. The lengths of sides AB, BC and CA are 12 cm, 8 cm and 10 cm respectively.



(i) Find the length of AD.

(ii) Find the length of BE

1

(iii) Find the perimeter of $\triangle ABC$.

1

2

OR

(iv) If the radius of circle is 4cm then, find the area of $\triangle OAB$.

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PRE BOARD-1 (2025-26)

CLASS: X

SUBJECT: MATHEMATICS STANDARD

Time: 3:00 Hours

M.M80

General Instructions:

1. This Question Paper has 5 Sections A, B, C, D and E.
2. Section A has 18 MCQs And 2 Assertion and reasoning Questions carrying 1 mark each.
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with sub- parts of the values of 1, 1 and 2 marks each respectively.
7. All Questions are compulsory. However, an internal choice in 2 Questions of 5 marks, 2 Questions of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E
8. Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.

SECTION – A

Q1. The exponent of 3 in the prime factorization of 3780 is
(A) 1 (B) 2
(C) 3 (D) 4

Q2. The values of x and y satisfying the equations
 $32x+33y=34$, $33x+32y=31$ are
A) -1, 2 (B) 1, -2
(C) 2, -1 (D) -1, -4

Q3. The number of polynomials having -3 and 5 as its zeroes is
A) One (B) two
(C) three (D) Infinitely many

Q4. Which of the following equations has 2 as a root?
A) $x^2-4x+5=0$ B) $x^2+3x-12=0$
C) $2x^2-7x+6=0$ D) $3x^2-6x-2=0$

Q.5 The sum of first 16 terms of an A.P. is 10.62..... is
 (A) 220 (S) 320
 (C) 550 (D) 400

Q.6 $(x^2 + 1)^2 - 144 = 0$ has
 (A) Four real roots (S) Two real roots
 (C) No real roots (D) One real root

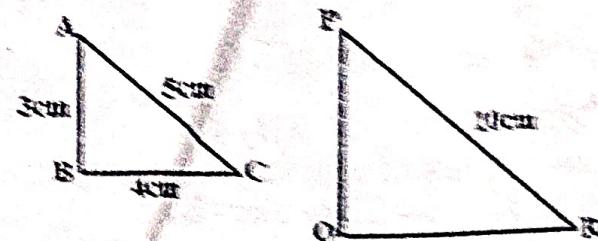
Q.7 The mid point joining the points (7, -6) and (3, 4) lies in the
 (A) I Quadrant (S) II Quadrant
 (C) III Quadrant (D) IV Quadrant

Q.8 The point on the x axis which is equidistant from points (-1, 0) and (5, 0) is
 (A) (0, 2) (S) (2, 0)
 (C) (3, 0) (D) (0, 3)

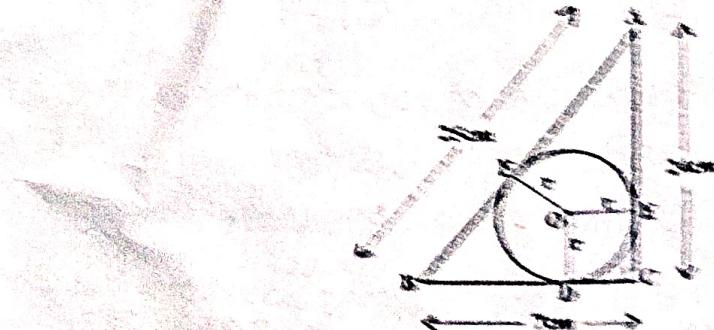
Q.9 In $\triangle ABC$ and $\triangle DEF$, $\angle B = \angle E$, $\angle C = \angle F$ and $AB = DE$. Then the two triangles are
 (A) Congruent but not similar
 (S) Similar but not congruent
 (C) Neither congruent nor similar
 (D) Congruent as well as similar

Q.10 If $\triangle ABC \sim \triangle PQR$, then perimeter of the triangle PQR (in cm) is

A) 12
 (S) 24
 C) 18
 D) 20



Q.11 In the figure given below, radius r of the circle which touches the sides of the triangle is
 (A) 3 cm
 (S) 6 cm
 (C) 7 cm
 (D) 4 cm



Q.12 If $\sec\theta + \tan\theta = m$, then the value of $\sec\theta - \tan\theta$ is

1

(A) $1 - 1/m$ (B) $(m)^2 - 1$
 (C) $1/m$ (D) $-m$

Q.13 Consider the following frequency distribution

1

Class	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25
Frequency	11	12	13	9	11

The sum of lower limit of modal class and upper limit of median class is

(A) 15 (B) 25
 (C) 10 (D) 20

Q.14 Let empirical relationship between the three measures of central tendency be

1

$$a(\text{Median}) = \text{Mode} + b(\text{Mean}), \text{ then } (2b + 3a) =$$

(A) 11 (B) 12
 (C) 13 (D) 14

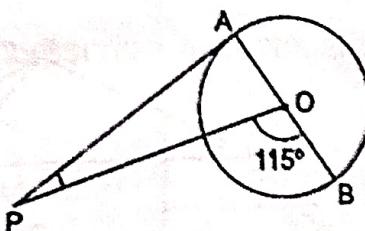
Q.15 If $\sqrt{3} \tan 2\theta - 3 = 0$ then $\theta = ?$

1

(A) 15° (B) 30°
 (C) 45° (D) 60°

Q.16 In the given figure, PA is a tangent from an external point P to a circle with centre O and diameter AB. If $\angle POB = 115^\circ$, then measure of $\angle APO$ is

(A) 25° (B) 30°
 (C) 20° (D) 65°



Q.17 Volume of two spheres are in the ratio 64: 27. The ratio of their surface areas is

1

(A) 3: 4 (B) 4: 3
 (C) 9: 16 (D) 16: 9

Q.18 An event is most unlikely to happen. Its probability is

1

(A) 0.0001 (B) 0.001
 (C) 0.01 (D) 0.1

Q.19 **ASSERTION (A):** The curved surface area of a right circular cone 1 whose slant height is 10cm and base radius is 7cm is 220 cm^2

REASON (R): Curved surface area of a cone is $\pi r l$

- 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.

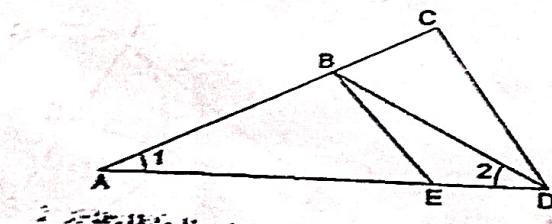
Q.20 **ASSERTION (A):** Two coins are tossed simultaneously. Possible 1 outcomes are two heads, one head and one tail, two tails. Hence, the probability of getting two heads is $1/3$

REASON (R): Probabilities of 'equally likely' outcomes of an experiment are always equal.

- 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.

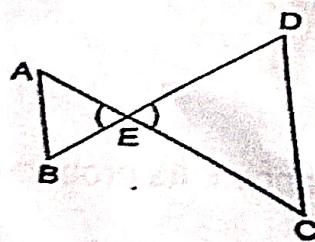
SECTION - B

Q.21 (A) In the given figure, $\angle 1 = \angle 2$ and $AD/AE = AC/BD$. Show that 2 $\Delta BAE \sim \Delta CAD$

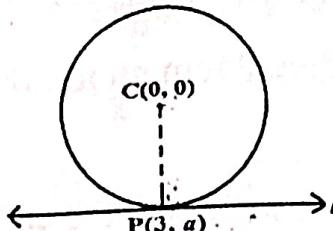


OR

(B) In the given figure, $EA/EC = EB/ED$, prove that $\Delta EAB \sim \Delta ECD$



Q.22 Find the radius of the circle with centre at origin, if line l given by $x + y = 5$ is tangent to the circle at point P. 2



Q.23 Can two numbers have 18 as their HCF and 380 as their LCM? 2
Give reasons.

Q.24 A letter of English alphabets is chosen at random. Determine the probability that the chosen letter is a consonant. 2

Q.25 (A) Evaluate: $2 \sin 30^\circ \tan 60^\circ - 3 \cos^2 60^\circ \sec^2 30^\circ$ 2
OR

(B) If $\sin x = \frac{7}{25}$, where x is an acute angle, then find the value of $\sin x \cdot \cos x (\tan x + \cot x)$.

SECTION -C

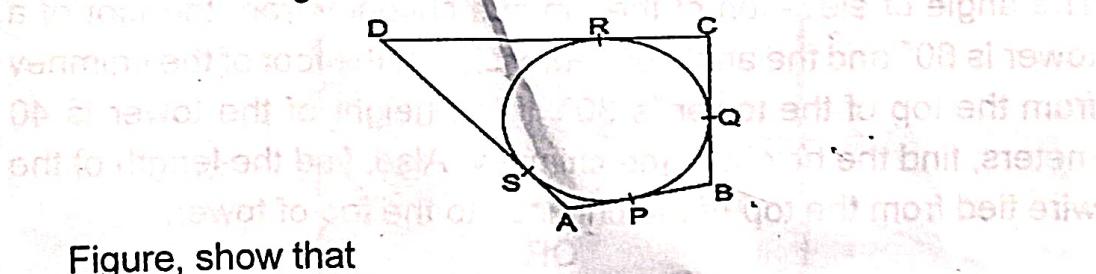
Q.26 Show that $\sqrt{5}$ is an irrational number. 3

Q.27 Find a natural number whose square is diminished by 84 is equal to thrice of 8 more than the given number. 3

OR

Find the value of p for which the quadratic equation $px(x-2)+6=0$ has two equal roots.

Q.28 A quadrilateral ABCD is drawn to circumscribe a circle, as shown in the given 3



Figure, show that

$$\frac{AB + CD}{AD + BC} = 1$$

Q.29 If α and β are zeros of the polynomial $6x^2 - 5x + 1$ then form a quadratic polynomial whose zeros are α^2 and β^2 . 3

Q.30 Prove that: $(\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2 = 7 + \tan^2\theta + \cot^2\theta$ 3

Q.31 An arc of a circle of radius 21cm subtends an angle of 60° at the center. Find: 3
 i) the length of the arc.
 ii) the area of the minor segment of the circle made by the corresponding chord.

OR

A car has two wipers which do not overlap. Each wiper has a blade of length 21cm sweeping through an angle 120° . Find the total area cleaned at each sweep of the blade.

SECTION – D

Q.32 Prove that a line drawn parallel to one side of a triangle intersecting other two sides in distinct points, divides the other two sides in the same ratio. 5

Q.33 Solve the following system of linear equations graphically: 5

$$x+2y=3, \quad 2x-3y+8=0$$

Also find the area of triangle with base on x-axis

OR

The sum of a two-digit number and the number obtained by reversing the digits is 66. If the digits of the number differ by 2, find the number. How many such numbers are there?

Q.34 The angle of elevation of the top of a chimney from the foot of a tower is 60° and the angle of depression of the foot of the chimney from the top of the tower is 30° . If the height of the tower is 40 meters, find the height of the chimney. Also, find the length of the wire tied from the top of the chimney to the top of tower. 5

OR

The angles of depression of the top and bottom of a 50m high building from the top of a tower are 45° and 60° respectively. Find the height of the tower and the horizontal distance between the tower and the building. (Use $\sqrt{3} = 1.73$)

Q.35 The monthly expenditure on milk in 200 families of a Housing Society is given below: 5

Monthly expenditure	1000-1500	1500-2000	2000-2500	2500-3000	3000-3500	3500-4000	4000-4500	4500-5000
Number of families	24	40	33	X	30	22	16	7

Find the value of x and, find the median and mean expenditure on milk.

SECTION – E

Q.36 In a construction project of making chairs, the team adds 3 chairs every day. On the first day they added 4 chairs.

i) After how many days will the office have a total of 40 chairs? 1

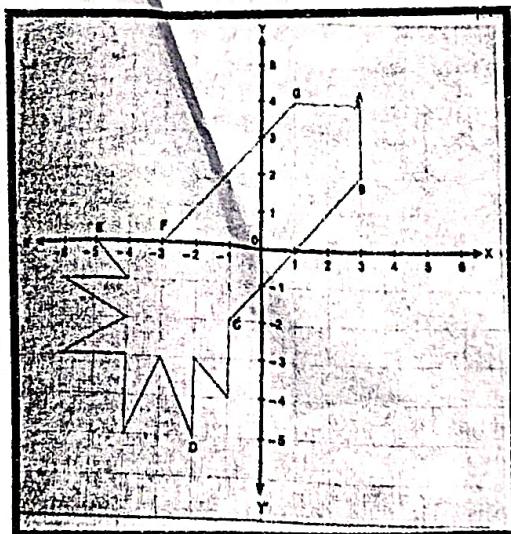
ii) Calculate the total number of chairs after 30 days. 1

iii) If they added 5 chairs instead of 3 chairs each day, find the minimum number of days after which there will be more than 150 chairs. 2

OR

iii) If they added 3 chairs on first day instead of 4 and added 7 chairs each day instead of 3, then find the minimum number of days after which there will be more than 150 chairs. 2

Q.37 Ryan, from a very young age was fascinated by the twinkling of stars and the vastness of space. He always dreamt of becoming an astronaut one day. So, he started to sketch his own rocket designs on the graph sheet. One such design is given below.



Based on above, answer the following questions.

i) Find the mid-point of the segment joining F and G. 1

ii) What is the distance between the points A and C?

OR

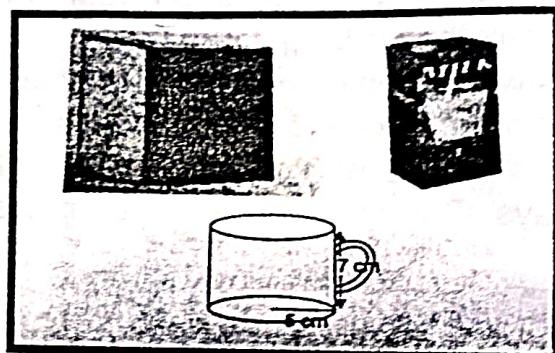
ii) Find the coordinates of the point which divides the line segment joining A and B in the ratio 1: 3 internally.

iii) what are the coordinates of the point D?

2

1

Q.38 Temper proof tetra- packed milk guarantees both freshness and security. This milk ensures uncompromised quality, preserving the nutritional values within and making it a reliable choice for health-conscious individuals.



500 ml milk is packed in a cuboidal container of dimensions $15\text{cm} \times 8\text{cm} \times 5\text{cm}$. These milk packets are then packed in cuboidal cartons of dimensions $30\text{cm} \times 32\text{cm} \times 15\text{cm}$.

Based on the above information, answer the following questions:

1

i) Find the volume of the cuboidal carton.

2

ii) Find the total surface area of the milk packet.

OR

1

ii) How many milk packets can be filled in a carton?

1

iii) How much milk can the cup (as shown in the figure) hold?
