

SECTION-A

Section-A has 20 questions, carrying 1 mark each. Select the most appropriate option from the given options :

1. If $\text{HCF}(96, 104) = 8$, then $\text{LCM}(96, 104)$ is : 1
- (a) 96 (b) 404
(c) 1248 (d) 2496
2. The product of the zeroes of the polynomial $ax^2 + bx - c$ (where a, b, c are real numbers and $a \neq 0$) is : 1
- (a) $\frac{c}{a}$ (b) $-\frac{c}{a}$
(c) $\frac{b}{a}$ (d) $-\frac{b}{a}$
3. Discriminant of the quadratic equation $3x^2 - 6x + 1 = 0$ is :
- (a) 24 (b) -24
(c) 48 (d) -48
4. The following pair of linear equations have :
- $2x + 3y = -7$
 $6x - 9y = 15$
- (a) No solution (b) Infinitely many solutions
(c) Two solutions (d) Only one solution

5. HCF of two prime numbers is :

(a) 1

(b) 2

(c) 3

(d) 4

6. Distance of the point $(4, -3)$ from the origin is :

(a) 4 units

(b) 25 units

(c) 5 units

(d) $\sqrt{7}$ units

7. 20th term of the A.P. : 15, 12, 9, is :

(a) -45

(b) 45

(c) 42

(d) -42

8. If the first term of an A.P. is 7 and its 13th term is 35, then common difference of this A.P. will be:

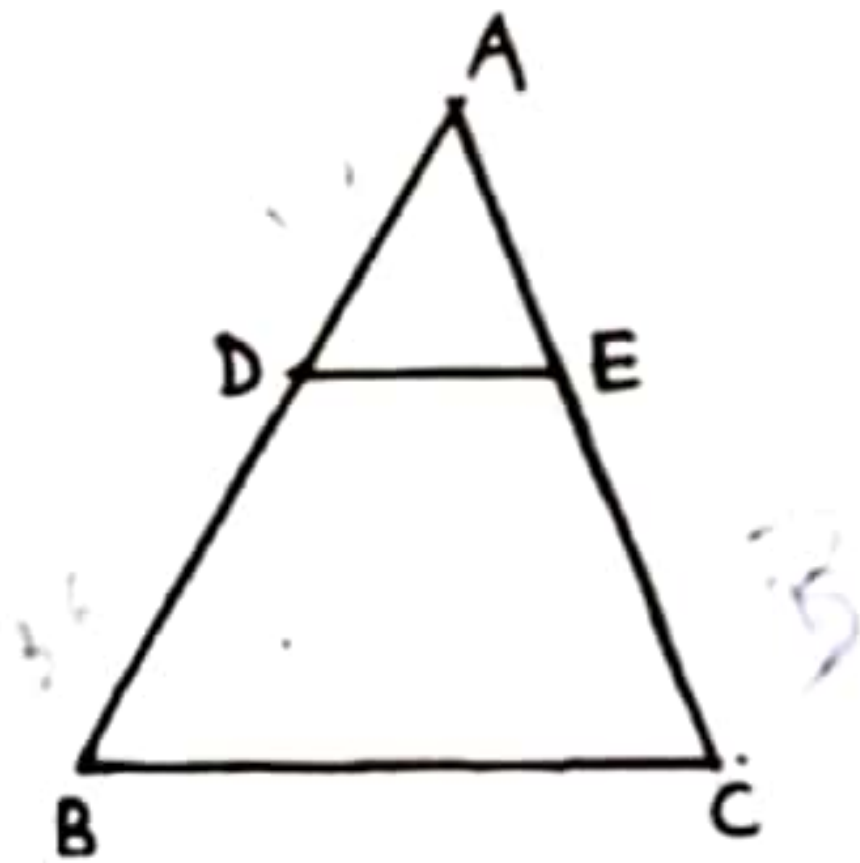
(a) $\frac{7}{3}$

(b) $\frac{3}{7}$

(c) $\frac{4}{5}$

(d) $\frac{5}{4}$

9. In figure, if $DE \parallel BC$ and $AD = 1.2$ cm, $DB = 3.6$ cm and $EC = 3$ cm, then the value of AC is :



(a) 1.2 cm

(b) 4 cm

(c) 3 cm

(d) 2 cm

10. If $\triangle ABC \sim \triangle DEF$ and $\angle A = 47^\circ$, $\angle E = 83^\circ$, then $\angle C$ is :

(a) 47°

(b) 50°

(c) 83°

(d) 130°

11. The value of $\sin 30^\circ \cos 60^\circ$ is :

(a) $\frac{1}{4}$

(b) $\frac{\sqrt{3}}{2}$

(c) $\frac{\sqrt{3}}{4}$

(d) 1

12. The maximum number of tangents a circle can have :

(a) 1

(b) 2

(c) 3

(d) Infinitely many

13. The shadow of a 5 m long stick is 2 m long. At the same time, the length of the shadow of a 12.5 m high tree (in m) is :

(a) 3

(b) 3.5

(c) 4.5

(d) 5

14. The value of $(\tan^2 45^\circ - \cos^2 60^\circ)$ is :

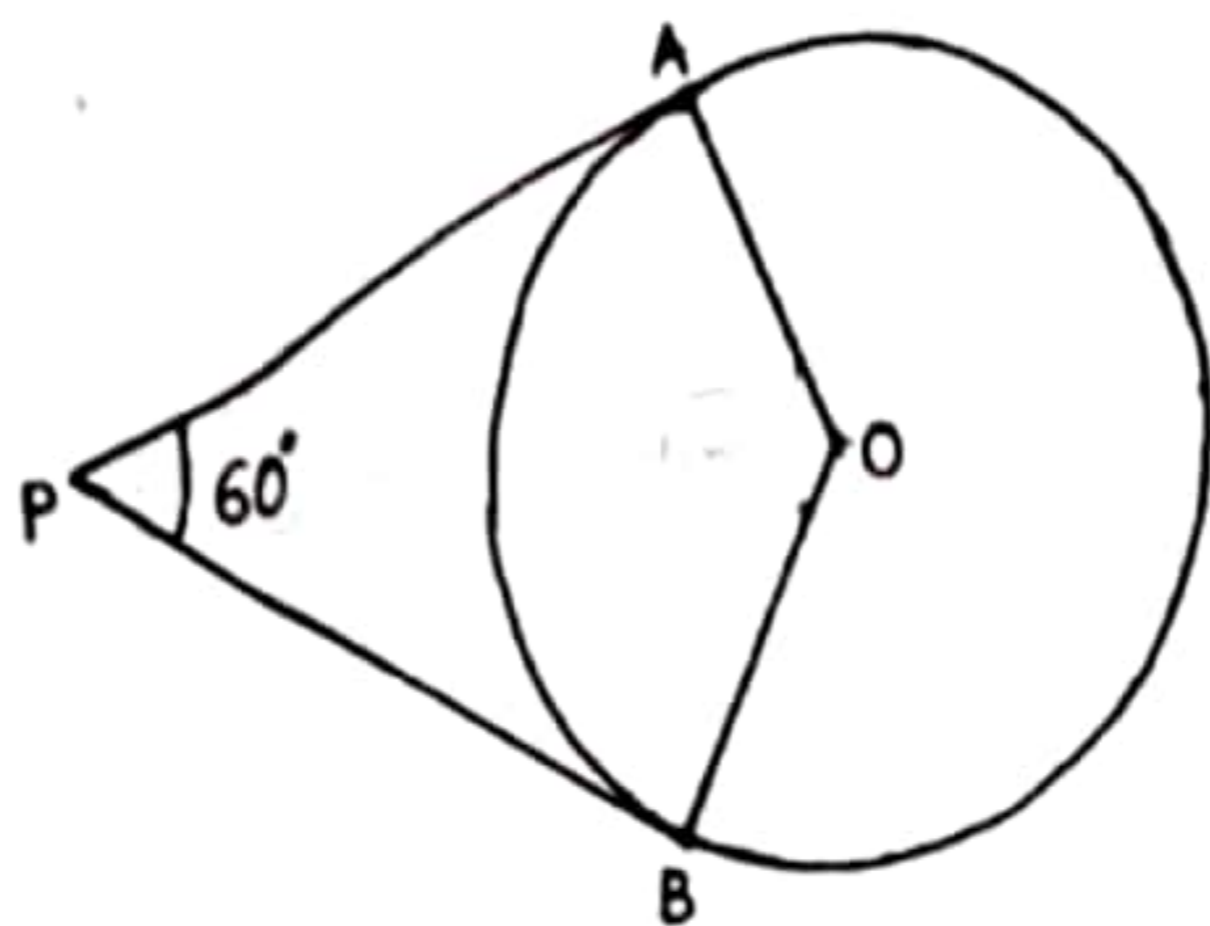
(a) $\frac{1}{2}$

(b) $\frac{1}{4}$

(c) $\frac{3}{4}$

(d) $\frac{3}{2}$

15. If figure, if PA and PB are two tangents to a circle with centre O, such that $\angle APB = 60^\circ$, then $\angle AOP$ is equal to :



- (a) 120° (b) 100°
(c) 90° (d) 60°
16. If $P(E) = 0.96$, then $P(\text{not } E)$ is :
- (a) 4.0 (b) 0.4
(c) 0.04 (d) 0.004
17. For the following distribution, the modal class is :

Class interval	0-10	10-20	20-30	30-40	40-50
Frequency	5	7	6	8	4

- (a) 10-20 (b) 20-30
(c) 30-40 (d) 40-50
18. Curved surface area of a cylinder, whose radius is 3 cm and height 14 cm is :
- (a) 396 cm^2 (b) 264 cm^2
(c) 132 cm^2 (d) 42 cm^2

Directions for Q.No 19-20:

In the question number 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the appropriate options from given below:

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

19. **Assertion (A):** The product of two consecutive positive integers is divisible by 2. 1

Reason (R): The sum of exponents of prime factors in the prime factorisation of 196 is 4.

20. **Assertion (A):** If 2 and 3 are the zeroes of a quadratic polynomial, then the polynomial is $x^2 - 5x + 6$. 1

Reason (R): If α, β are the zeroes of a quadratic polynomial, then the polynomial is $x^2 - (\alpha + \beta)x + \alpha \times \beta$.

SECTION-B

Section-B consists of 5 questions of 2 marks each.

21. Find the zeroes of the quadratic polynomial $x^2 + 3x - 10$. 2

OR

If the zeroes of the polynomial $x^2 + 4x + 2a$ are α and $\frac{2}{\alpha}$, then find the value of 'a'.

22. In $\triangle ABC$, right angled at B, $AB = 24$ cm and $BC = 7$ cm. Determine the value of $\sin C$.

2

OR

In $\triangle ABC$, right angled at B, if $15 \cot A = 8$, then find the value of $\sin A$.

23. Find the coordinates of the point which divides the line segment joining the points $(4, -3)$ and $(8, 5)$ in the ratio 3:1 internally.

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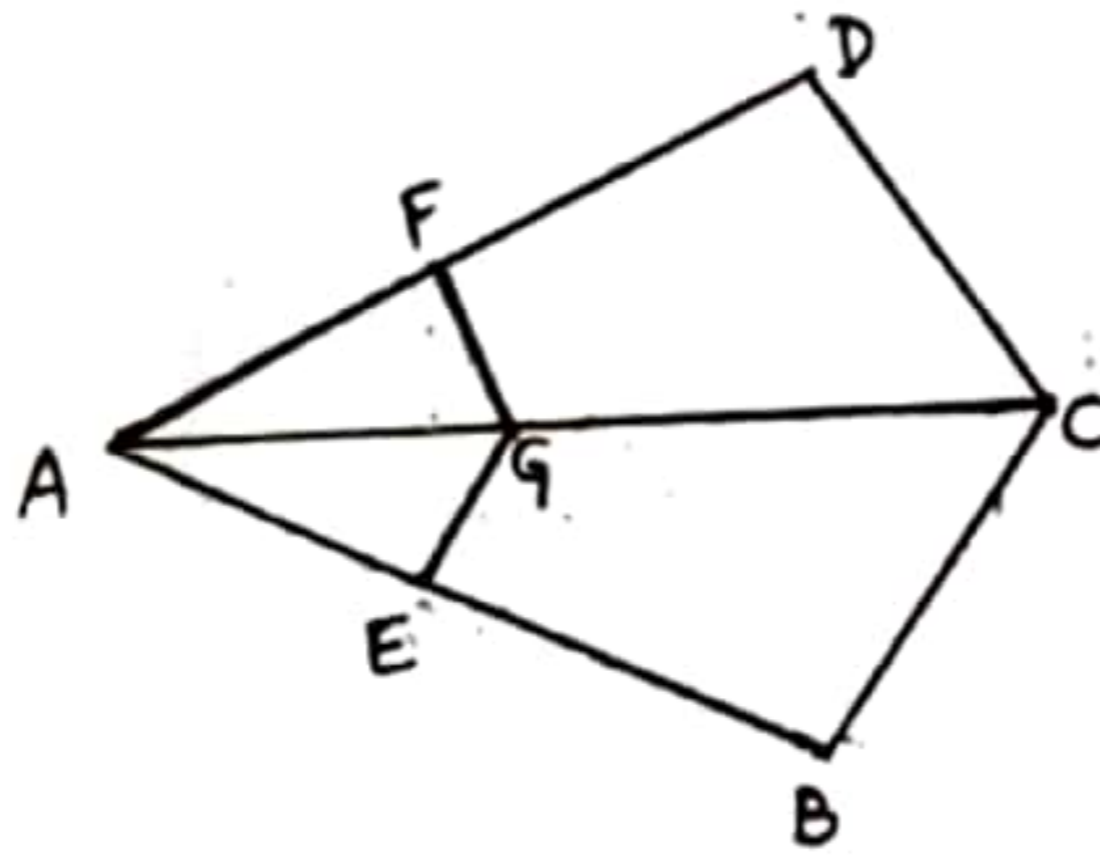
24. Find mean marks for the following distribution.

2

Marks obtained	0-10	10-20	20-30	30-40	40-50
Number of students	2	3	8	5	2

25. In figure if $GE \parallel CB$ and $GF \parallel CD$, then prove that $\frac{AF}{FD} = \frac{AE}{EB}$.

2



SECTION-C

Section-C consists of 6 questions of 3 marks each.

Prove that :

$$\frac{1 + \tan^2 A}{1 + \cot^2 A} = \sec^2 A - 1$$

A die is thrown once. Find the probability of getting:

- (i) a number divisible by 3
- (ii) a prime number
- (iii) a number greater than 5

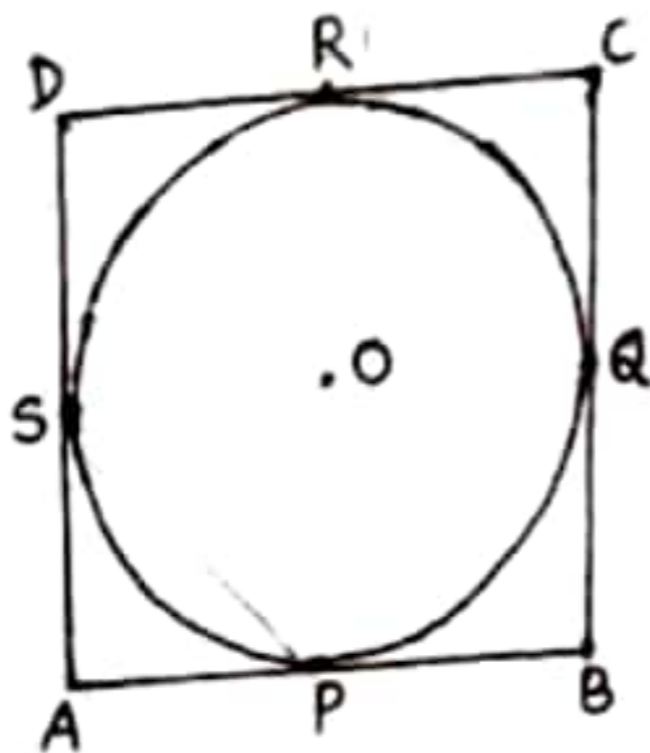
Find the point on the x-axis which is equidistant from $(2, -5)$ and $(-2, 9)$.

OR

Prove that the points $(3, 0)$, $(6, 4)$ and $(-1, 3)$ are the vertices of a right angled isosceles triangle.

Prove that $\sqrt{2}$ is an irrational number.

A parallelogram ABCD is drawn to circumscribe a circle. Prove that ABCD is a rhombus.



31. Find two numbers whose sum is 25 and product is 156.

OR

Find two consecutive positive integers, sum of whose squares is 421.

SECTION-D

Section-D consists of 4 questions of 5 marks each.

32. Prove that if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then this line divides other two sides in the same ratio. 5

OR

The diagonals of a quadrilateral ABCD intersect each other at point O such that

$\frac{AO}{BO} = \frac{CO}{DO}$. Prove that ABCD is a trapezium.

33. Find the 31st term of an A.P. whose 11th term is 38 and 16th term is 73. Also find the sum of first 10 terms of this A.P. 5

34. A toy is in the form of a cone of radius 7 cm mounted on a hemisphere of same radius. The total height of the toy is 31 cm. Find the cost of painting the toy at the rate of ₹ 5 per 100 cm². 4

As observed from the top of 80 m high lighthouse from the sea-level, the angles of depression of two ships are 30° and 45°. If one ship is exactly behind the other on the same side of the lighthouse, find the distance between the two ships. (Take $\sqrt{3} = 1.73$)

OR

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 heights of the poles and the distances of the point from the poles.

SECTION-E

Section-E consists of 3 case based questions of 4 marks each.

36. An organization held a test to provide scholarships to brilliant students of class-X. Students securing 60% or more than 60% marks in this test will be awarded a scholarship of amount ₹ 2000 each for one year.

The marks obtained by the students of a school are given below :

Marks obtained	0-20	20-40	40-60	60-80	80-100
Number of students	5	8	11	4	2

Based on the above information, answer the following questions :

- (i) Find the amount of scholarship the school will get from the organisation. 1
- (ii) Write the upper limit of modal class. 1
- (iii) Find the mode of the marks obtained by the students. 2

OR

Find the median of marks obtained by the students.

37. Priyanka went to a stationary shop and purchased 3 pencils and 2 erasers for ₹ 19. On seeing new variety of pencils and erasers, her friend Ritu also bought 5 pencils and 3 erasers of the same kind for ₹ 31.

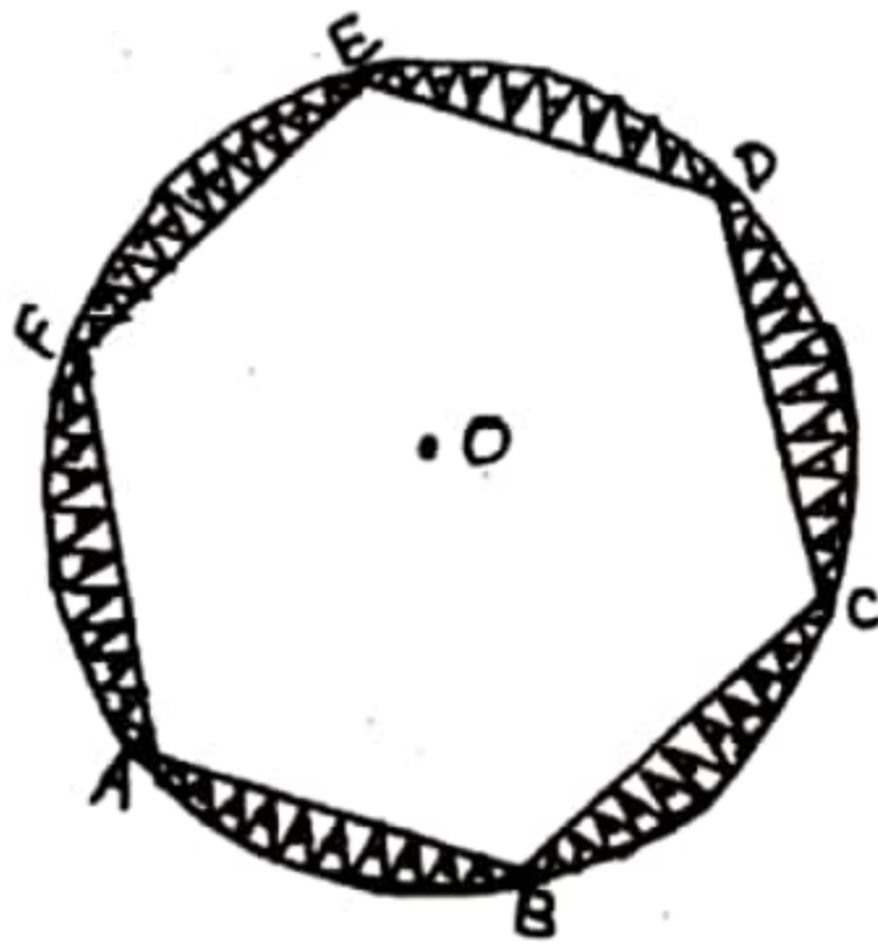
Based on the above information, answer the following questions :

- (i) Write the linear equations in two variables for both the situation. 1
- (ii) Find the cost of 1 pencil. 1
- (iii) Find the cost of 2 pencils and 5 erasers. 2

OR

Which is expensive between pencil and eraser and by how much?

Meera bought a new house. To decorate it, she purchased some items from the market. One of them was a round table cover. It had six equal designs as shown in the figure. The radius of the round table cover is 35 cm.



Based on the above information, answer the following questions :

(i) Find the measure of the angle subtended by a chord at the centre.

(ii) Find the area of sector AOC.

(iii) Find the area of major sector AOC.

OR

Find the area of one design. (Take $\sqrt{3} = 1.7$)