9 PRACTICE PAPER

General Instructions: As given in Practice Paper 1.

Part – A

SECTION – I

1. The LCM and HCF of two numbers a and b are a and b respectively. The relationship between a and b is

   (a) $a = 1$
   (b) $b = 1$
   (c) $a = kb$
   (d) no relation

   OR

   There are 96 apples and 112 oranges. These fruits are packed in boxes in such a way that each box contains fruits of the same variety, and every box contains an equal number of fruits. The minimum number of boxes in which all the fruits can be packed are

   (a) 12
   (b) 13
   (c) 14
   (d) 15

2. If the distance between the points $(4, p)$ and $(1, 0)$ is 5 units, then the value of p is

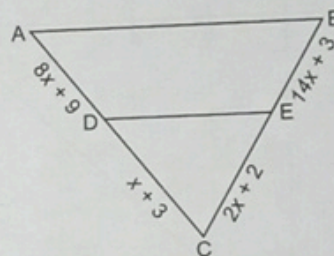   (a) 4 only
   (b) ± 4
   (c) -4 only
   (d) 0

   OR

   The ratio in which the line segment joining the points $(6, 4)$ and $(1, -7)$ is divided by the x-axis is

   (a) $7 : 11$
   (b) $4 : 11$
   (c) $7 : 4$
   (d) $4 : 7$

3. The prime factors of 32760 are

   (a) 2, 3, 57
   (b) 2, 3, 5, 7, 23
   (c) 2, 3, 5, 7, 13
   (d) 1, 3, 5, 7, 13

4. What value (s) of x will make DE ∥ AB in the given figure?

   (a) -1 and 3
   (b) 2 and -1
   (c) 9 and 1
   (d) 1 and $\dfrac{9}{2}$

5. Mallesh has some cows and some hens in his shed. The total number of legs is 92 and the total number of heads is 29. The number of cows in his shed are

   (a) 17
   (b) 16
   (c) 12
   (d) 15

6. The radius (in cm) of the largest right circular cone that can be cut out from a cube of edge 4.2 cm is

   (a) 4.2 cm
   (b) 3 cm
   (c) 2.1 cm
   (d) 1 cm

7. In $\triangle ABC$, D and E are points on sides AB and AC respectively such that DE ∥ BC and AD : DB = 3 : 1. If EA = 6.6 cm, then AC is

   (a) 6.6 cm
   (b) 8.8 cm
   (c) 2.2 cm
   (d) 1.1 cm

8. If $\sin x + \operatorname{cosec} x = 2$, then $\sin^{19} x + \operatorname{cosec}^{20} x =$

   (a) 2^{19}
   (b) 2^{20}
   (c) 2
   (d) 2^{39}

OR

In $\triangle ABC$, right-angled at C, the value of $\cos(A+B) =$

(a) 2   (b) 1

(c) $\sqrt{3}$ (d) 0

9. If the greater than cumulative frequency of a class is 60 and that of the next class is 40, then find the frequency of that class

10. Find the number of terms in the AP : $17, 14\frac{1}{2}, 12,$ ....., -38.

11. For an event E, $P(E) + P(\overline{E}) = q$, then find the value of $5q + 1$.

OR

The probability of getting blue ball from 12 balls is $\frac{1}{2}$. What are the number of blue balls?

12. If $\left(\frac{a}{2}, 4\right)$ is the mid-point of the line segment joining the points A $(-6, 5)$ and B $(-2, 3)$, then find the value of 'a'.

13. Find the HCF of 196 and 38220.

14. PQ is a tangent drawn from an external point P to a circle with centre O, QOR is the diameter of the circle. If $\angle POR = 120°$, what is the measure of $\angle OPQ$?

15. If the total surface area of a solid hemisphere is 462 cm^2, find its volume. [Take $\pi = \frac{22}{7}$]

16. If the equation $px^2 + 4x - 3 = 0$ has real roots, then find the value of p.

OR

The product of two consecutive positive integers is 182. Form the quadratic equation in x to find the integers, If x denotes the smaller integer

SECTION – II

17. **Case Study – 1**

   POSITION OF FLAGS

   For annual day practice students of a class are standing in rows and columns. Four students Ashish, Bipin, Cintha and Damodar are holding flags. their position is shown as in the figure.
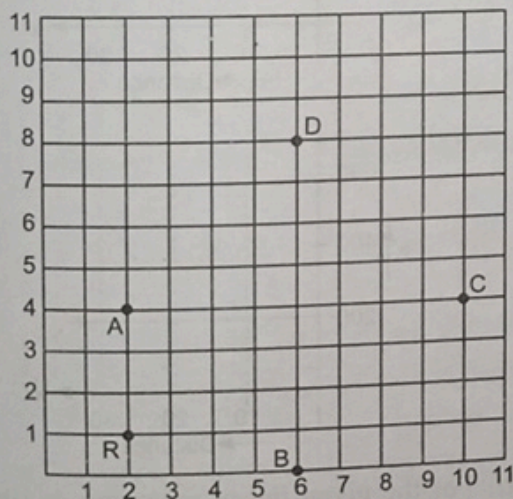
   (a) What are the coordinates of D?

       (i) (8, 6)   (ii) (6, 8)

       (iii) (9, 6)   (iv) (6, 9)

   (b) What is the distance of A from D?

       (i) $3\sqrt{2}$ units   (ii) $4\sqrt{2}$ units

       (iii) 4 units   (iv) 6 units

   (c) Ram is positioned at R. He moves from R and take his position such that he is equidistant from A and C. What are the coordinates of Ram in its new position?

       (i) (4, 6)   (ii) (5, 6)

       (iii) (6, 4)   (iv) (6, –5)

   (d) How much distance is covered by Ram to move to the new position?

       (i) 5 units   (ii) 6 units

       (iii) 7 units   (iv) 8 units

   (e) Which of the following is not true?

       (i) AB = BC   (ii) AB = AD

       (iii) BD = AC   (iv) AC = BC

18. **Case Study – 2**

   BIRTHDAY PARTY

   Jenny invites Pooja, Aditi, Somuya, Rajni and 6 more friends for her birthday party. In the party 10 friends of Jenny decide to play a musical chair game. Jenny plays the music and stop playing music at any time within 2 minutes. After she starts playing

   (a) What is the probability that Jenny will stop music within the first half minute after starting?

       (i) $\frac{1}{2}$ (ii) $\frac{1}{3}$

       (iii) $\frac{1}{4}$ (iv) $\frac{1}{5}$

(b) What is the probability that Pooja will be out of the game after first round?

(i) $\frac{1}{8}$ (ii) $\frac{1}{9}$

(iii) $\frac{1}{10}$ (iv) $\frac{1}{7}$

(c) If Pooja is out of the game in first round, Rajni is out of the game in second round then what is the probability that Aditi will be out of the game in third round?

(i) $\frac{1}{5}$ (ii) $\frac{1}{6}$

(iii) $\frac{1}{7}$ (iv) $\frac{1}{8}$

(d) If Somuya is still in the game in fourth, round, what is the probability that she will remain in the game in fifth round?

(i) $\frac{1}{7}$ (ii) $\frac{2}{7}$

(iii) $\frac{5}{7}$ (iv) $\frac{6}{7}$

(e) What is the probability that Jenny will stop music within the first one minute after starting?

(i) $\frac{1}{4}$ (ii) $\frac{1}{3}$

(iii) $\frac{1}{2}$ (iv) 1

19. Case Study – 3

APPLICATION OF LINEAR EQUATIONS

A cab company charges ₹ 200 boarding rate in addition to this they also charges ₹ 10 for travelling every kilometre

(a) What linear equation represents the rate of this company?

(i) $y = 200 + 10$ (ii) $y = 200x + 10$
(iii) $y = 10x + 200$ (iv) $y = 12x + 1200$

where 'x' is distance travelled in km and ₹ y is total charges.

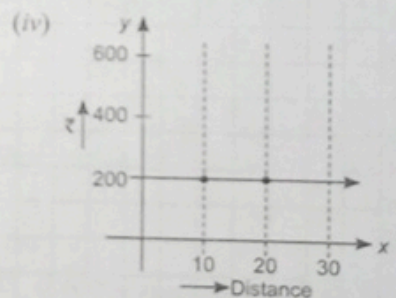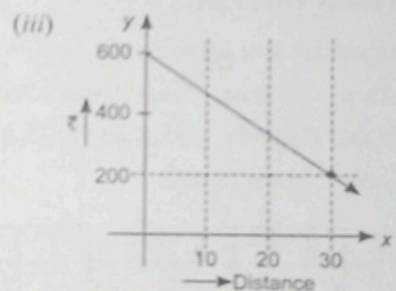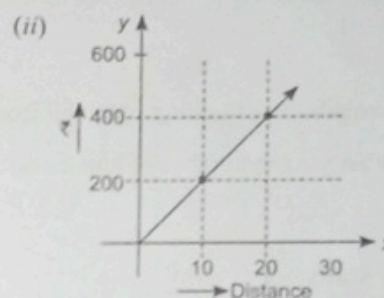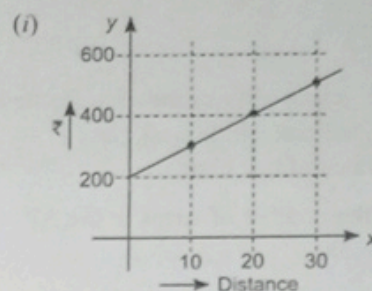(b) What are the charges, if a person travels 12 km in day

(i) ₹ 320 (ii) ₹ 372
(iii) ₹ 720 (iv) ₹ 1272

(c) The graphical representation of given situation is.

(i)

(ii)

(iii)

(iv)

(d) For the given linear equation $y = 10x + 200$, which of the following linear equations in two variables represents intersecting lines.

(i) $x - 10y + 200 = 0$

(ii) $10x - y + 200 = 0$

(iii) $y - 200 = 10x$

(iv) $10x - y = -200$

(e) For the given linear equation $y = 10x + 200$; which of the following linear equation in two variables represents parallel lines

    (i) $x - 10y + 200 = 0$

    (ii) $-x + 10y - 200 = 0$

    (iii) $10x - y + 200 = 0$

    (iv) $10x + 10y + 200 = 0$

20. Case Study – 4

FLYING A KITE

Anish and Dhruv are standing 500 m apart in a ground. Dhruv notices a kite exactly above Anish and at an elevation of 60°. Kite is moving in a straight line. When kite is exactly above the Dhruv, Anish observes the angle of elevation of the kite to be 45°.
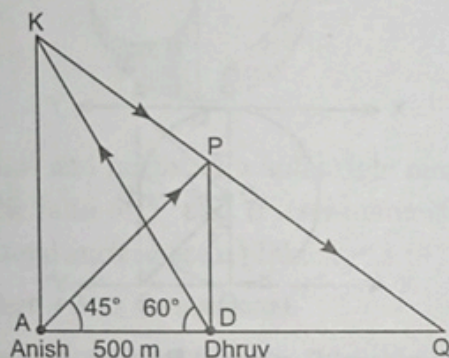
(a) The height of kite when it is exactly above Anish is

    (i) 500 m

    (ii) $\dfrac{500}{\sqrt{3}}$ m

    (iii) $500\sqrt{3}$ m

    (iv) $400\sqrt{3}$ m

(b) The height of the kite when it is exactly above Dhruv is

    (i) 500 m

    (ii) $\dfrac{500}{\sqrt{3}}$ m

    (iii) $500\sqrt{3}$ m

    (iv) $400\sqrt{3}$ m

(c) The angle of depression of A from the point P is

    (i) 60°

    (ii) 30°

    (iii) 45°

    (iv) none of these

(d) The angle of depression of D from K is

    (i) 60°

    (ii) 30°

    (iii) 45°

    (iv) none of these

(e) What is the distance of kite from Anish when it is exactly above Dhruv?

    (i) 500 m

    (ii) $500\sqrt{3}$ m

    (iii) $500\sqrt{2}$ m

    (iv) $\dfrac{500}{\sqrt{2}}$ m

21. Case Study – 5

THREE FRIENDS

Raghav, Jim and Mohit together forms a polynomial. Raghav and Jim gives some conditions to Mohit. They discuss together and finally Mohit forms a polynomial.

(a) Raghav and Jim say sum of zeroes of polynomial is 6 and product of zeroes is 4, then polynomial formed by Mohit is

    (i) $k(x^2 - 6x + 4)$

    (ii) $k(x^2 + 6x + 4)$

    (iii) $k(x^2 + 6x - 4)$

    (iv) none of these

(b) Mohit forms a polynomial whose zeroes are $(5 + \sqrt{2})$ and $(5 - \sqrt{2})$, then polynomial is

    (i) $k(x^2 + 10x)$

    (ii) $k(x^2 - 10x + 21)$

    (iii) $k(x^2 - 10x - 21)$

    (iv) $k(x^2 + 10x + 21)$

(c) Mohit forms a polynomial whose sum of zeroes is 0 and one zero is 5 then polynomial is

    (i) $kx^2 + 5$

    (ii) $(x^2 + 6x)$

    (iii) $k(x^2 - 5x)$

    (iv) none of these

(d) A quadratic polynomial, whose both zeroes are –1 is

    (i) $k(x^2 - 1)$

    (ii) $k(x^2 - 2x + 1)$
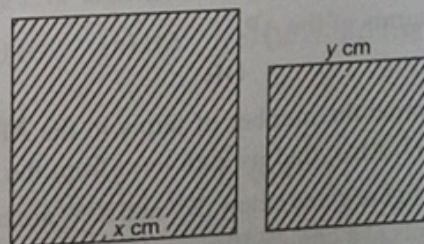
    (iii) $k(x^2 - 2x - 1)$

    (iv) $k(x^2 + 2x + 1)$

(e) If zero of the polynomial $x^2 - x + k = 0$ is 1 then $k =$

    (i) –1

    (ii) –2

    (iii) 1

    (iv) 0

22. Case Study – 6

SQUARE FIELDS

There are two square fields as shown in figure.

Sum of their areas is 640 m² and difference of their perimeter is 64

(a) Condition representing sum of areas of square

(i) $x^2 + y^2 = 640$ (ii) $x^2 - y^2 = 640$

(iii) $x^2 y^2 = 640$ (iv) $x^2 + 2y^2 = 640$

(b) Condition representing difference of their perimeters is

(i) $4x + 4y = 64$ (ii) $4x + 4y = 16$

(iii) $4x - 4y = 64$ (iv) $x + y = 32$

(c) Quadratic equation representing the situation in terms of y is

(i) $y^2 + 16y - 192 = 0$

(ii) $y^2 - 16y + 192 = 0$

(iii) $y^2 + 16y + 192 = 0$

(iv) $y^2 - 16y - 192 = 0$

(d) length $y =$

(i) 24 m   (ii) 16 m

(iii) 4 m   (iv) 8

(e) length $x =$

(i) 12 m   (ii) 20 m

(iii) 4 m   (iv) 24 m

Part – B

SECTION – III

23. There are 1000 sealed envelopes in a box, 10 of them contain a cash prize of ₹ 100 each, 100 of them contain a cash prize of ₹ 50 each and 200 of them contain a cash prize of ₹ 10 each and rest do not contain any cash prize. If they are well shuffled and an envelope is picked up out, what is the probability that it contains no cash prize?

24. A ladder of length 90 m touches the wall at a height of 45 m. Find the angle made by the ladder with the horizontal.

25. A toy is in the form of a cone mounted on a hemisphere of radius 3.5 cm. The total height of the toy is 15.5 cm. Find the total surface area of the toy.

OR

A right circular cylinder and a cone have equal bases and equal heights. If their curved surface areas are in the ratio 8 : 5, show that the ratio between radius of their bases to their height is 3 : 4.

26. The sum of the 4th and 8th terms of an AP is 24 and the sum of the 6th and 10th terms is 44. Find the first three terms of the AP.
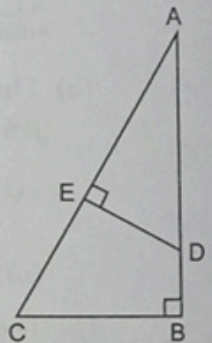
OR

Determine the number of terms in the AP, 3, 7, 11, ..., 407. Also, find its 20th term from the end.

27. In the figure given below, XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY at A and X'Y' at B. Prove that $\angle AOB = 90°$.
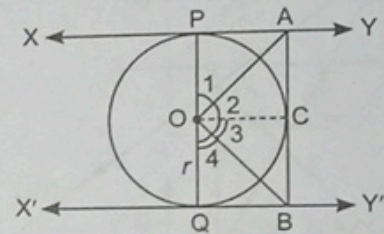
28. In the given figure, AB ⊥ BC and DE ⊥ AC. Prove that $\triangle ABC \sim \triangle AED$.

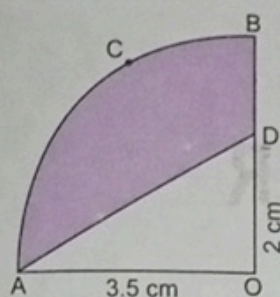29. The following is the distribution of the long jump competition organized for 50 students. Find median distance.

Distance (in m)	Number of students
0 – 20	6
20 – 40	11
40 – 60	17
60 – 80	12
80 – 100	4

30. In the given figure, OACB represents a quadrant of circle of radius 3.5 cm with centre O.
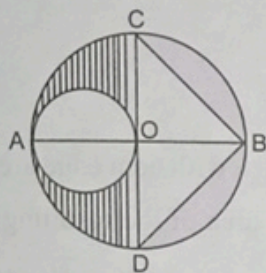
(i) Calculate the area of quadrant OACB.

(ii) Given OD = 2 cm, calculate the area of the shaded portion

OR

In figure, AB and CD are two perpendicular diameters of a circle with centre O. If OA = 7 cm, find the area of the shaded region. [use $\pi = 22/7$]


31. The radius and height of a solid right circular cone are in the ratio of 5 : 12. If its volume is 314 cm³, find its total surface area. [Take $\pi = 3.14$]

32. Prove that $\sqrt{3}$ is an irrational.

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

34. The sums of n terms of three arithmetical progressions are S_1, S_2 and S_3. The first term of each is unity and the common differences are 1, 2 and 3 respectively. Prove that $S_1 + S_3 = 2S_2$.

OR

The sums of first n terms of two A.P.'s are in the ratio $(7n + 3): (n + 4)$. Find the ratio of their 5th terms.

35. In given figure, two equal circles, with centres O and O', touch each other at X. OO' produced meets the circle with centre O' at A. AC is tangent to the circle with centre O, at the point C. O'D is perpendicular to AC. Find the value of $\dfrac{DO'}{CO}$.
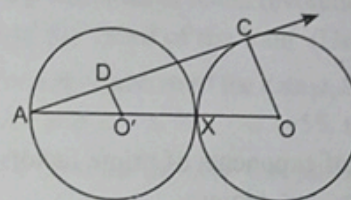
36. From a point P on the ground, the angle of elevation of a 10 m tall building is 30°. A flag is hoisted at the top of the building and the angle of elevation of the top of the flag-staff from p is 45°. Find the length of the flag-staff and the distance of the building from the point P.(Take $\sqrt{3} = 1.732$)

OR

From the top of a 7 m high building, the angle of elevation of the top of a cable tower is 60°. and the angle of depression of its foot is 45°. Determine the height of the tower.

ANSWERS