



REVISION SHEET

SUBJECT: MATHS

CLASS-X

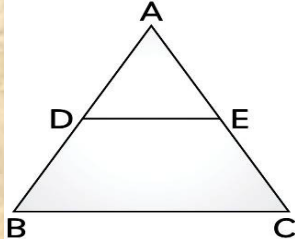
TERM 1

MULTIPLE CHOICE QUESTIONS (1 mark questions)

Q1. The value of k for which the lines $5x + 7y = 3$ and $15x + 21y = k$ coincide is:

- (a) 9 (b) 5 (c) 7 (d) 18

Q2. In the figure, if $DE \parallel BC$, $AD = 3$ cm, $BD = 4$ cm and $BC = 14$ cm, then DE equals:



- (a) 7 cm (b) 6 cm (c) 4 cm (d) 3 cm

Q3. The ratio of the volumes of two spheres is 8: 27. The ratio between their surface areas is

- (a) 2: 3 (b) 4: 27 (c) 8:9 (d) 4 : 9

Q4. The shortest distance (in units) of the point (2,3) from y-axis is

- (a) 2 (b) 3 (c) 5 (d) 1

Q5.

If the area of the base of a right circular cone is 51cm^2 and its volume is 85cm^3 , then the height of the cone is given as

- (A) $\frac{5}{6}$ cm (B) $\frac{5}{3}$ cm (C) $\frac{5}{2}$ cm (D) 5 cm

Q6. A pair of dice is tossed. The probability of not getting the sum eight is

- (A) $\frac{5}{36}$ (B) $\frac{31}{36}$ (C) $\frac{5}{18}$ (D) $\frac{5}{9}$

Q7.If $\text{LCM}(x, 18) = 36$ and $\text{HCF}(x, 18) = 2$, then x is:

- (a) 2 (b) 3 (c) 4 (d) 5

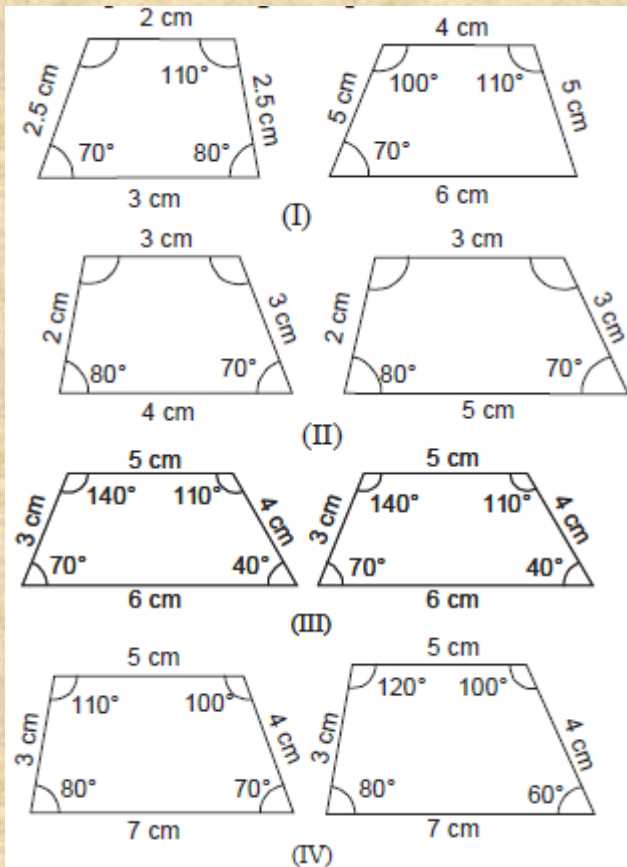
Q8.

If $a = 2^2 \times 3^x$, $b = 2^2 \times 3 \times 5$, $c = 2^2 \times 3 \times 7$ and $\text{LCM}(a, b, c) = 3780$, then x is equal to

- (A) 1 (B) 2 (C) 3 (D) 0

Q9. Which pair of the given quadrilaterals is similar?

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



Q10. The points $(-4, 0)$, $(4, 0)$ and $(0, 3)$ are the vertices of a/an

- (a) right triangle (b) isosceles triangle
(c) equilateral triangle (d) scalene triangle

Q11. The value of $\sin^2 30^\circ - \cos^2 30^\circ$ is

- (a) $-\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$
 (c) $\frac{3}{2}$ (d) $\frac{2}{3}$

Q12.If ΔABC is right angled at C, then the value of $\cos (A + B)$ is

- (a) 0 (b) 1
 (c) $\frac{1}{2}$ (d) $\frac{\sqrt{3}}{2}$

Q13.

In a survey, it is found that every fifth person has a vehicle. The probability of a person NOT having a vehicle is,

- (A) $\frac{1}{5}$ (B) 5% (C) $\frac{4}{5}$ (D) 95%

Q14.The next term of the A.P. 7 , 28 , 63 , is :

- (A) $\sqrt{81}$ (B) $\sqrt{126}$ (C) $\sqrt{112}$ (D) $5\sqrt{7}$

Q15.If two solid hemispheres of the same base radius r are joined together along their bases, then curved surface area of this new solid is

- (a) $4\pi r^2$ (b) $6\pi r^2$
 (c) $3\pi r^2$ (d) $8\pi r^2$

Q16.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 (b) 2.1
 (c) 8.1 (d) 1.05

Q17.A square and a rhombus are always

- (a) similar (b) congruent (c) similar but not congruent (d) neither similar nor congruent

Q18.The general term of an AP whose 7th term is -1 and 16th term is 17 is

- (a) $3n - 33$ (b) $3n - 6$ (c) $2n - 15$ (d) $3n + 6$

Q19. If $\sin A = \frac{1}{3}$, the value of $2\cot^2 A + 2$ is

- (a) 16 (b) 20 (c) 12 (d) 18

Q20.Probability of happening of an event is denoted by p and probability of non happening of the event is denoted by q . Relation between p and q is

- (A) $p + q = 1$ (B) $p = 1, q = 1$ (C) $p = q - 1$ (D) $p + q + 1 = 0$

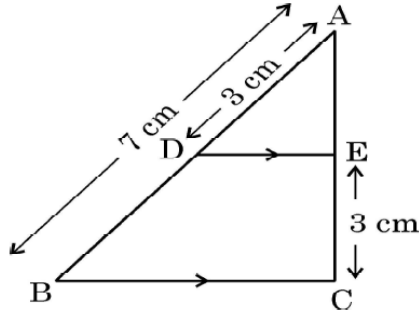
Q21.

If θ is an acute angle of a right angled triangle, then which of the following equation is **not** true ?

- (A) $\sin \theta \cot \theta = \cos \theta$ (B) $\cos \theta \tan \theta = \sin \theta$
 (C) $\operatorname{cosec}^2 \theta - \cot^2 \theta = 1$ (D) $\tan^2 \theta - \sec^2 \theta = 1$

In the given figure, $DE \parallel BC$. If $AD = 3$ cm, $AB = 7$ cm and $EC = 3$ cm, then the length of AE is

(A) 2 cm
(B) 2.25 cm
(C) 3.5 cm
(D) 4 cm



- (A) 2 cm (B) 2.25 cm
(C) 3.5 cm (D) 4 cm

The volume of a right circular cone whose area of the base is 156 cm^2 and the vertical height is 8 cm , is

(A) 2496 cm^3 (B) 1248 cm^3
(C) 1664 cm^3 (D) 416 cm^3

- (A) 2496 cm³ (B) 1248 cm³
(C) 1664 cm³ (D) 416 cm³

A card is drawn at random from a well shuffled deck of 52 playing cards.
The probability of getting a face card is

(A) $\frac{1}{2}$ (B) $\frac{3}{13}$
(C) $\frac{4}{13}$ (D) $\frac{1}{13}$

A card is drawn at random from a well shuffled deck of 52 playing cards. The probability of getting a face card is

- (A) $\frac{1}{2}$

(C) $\frac{4}{13}$

(B) $\frac{3}{13}$

(D) $\frac{1}{13}$

Cards bearing numbers 3 to 20 are placed in a bag and mixed thoroughly. A card is taken out of the bag at random. What is the probability that the number on the card taken out is an even number ?

(A) $\frac{9}{17}$ (B) $\frac{1}{2}$

(C) $\frac{5}{9}$ (D) $\frac{7}{18}$

Cards bearing numbers 3 to 20 are placed in a bag and mixed thoroughly. A card is taken out of the bag at random. What is the probability that the number on the card taken out is an even number ?

- (A) $\frac{9}{17}$ (B) $\frac{1}{2}$
(C) $\frac{5}{9}$ (D) $\frac{7}{18}$

Q26.

$(\cos^4 A - \sin^4 A)$ on simplification, gives

(A) $2 \sin^2 A - 1$

(B) $2 \sin^2 A + 1$

(C) $2 \cos^2 A + 1$

(D) $2 \cos^2 A - 1$

Q27.

The coordinates of the point where the line $2y = 4x + 5$ crosses x -axis is

(A) $\left(0, \frac{-5}{4}\right)$

(B) $\left(0, \frac{5}{2}\right)$

(C) $\left(\frac{-5}{4}, 0\right)$

(D) $\left(\frac{-5}{2}, 0\right)$

Q28.

The volume of a right circular cone whose area of the base is 156 cm^2 and the vertical height is 8 cm, is

(A) 2496 cm^3

(B) 1248 cm^3

(C) 1664 cm^3

(D) 416 cm^3

Q29.

If $\Delta PQR \sim \Delta ABC$; $PQ = 6 \text{ cm}$, $AB = 8 \text{ cm}$ and the perimeter of ΔABC is 36 cm, then the perimeter of ΔPQR is

(A) 20.25 cm

(B) 27 cm

(C) 48 cm

(D) 64 cm

Q30.

Two dice are thrown together. The probability of getting the difference of numbers on their upper faces equals to 3 is :

(a) $\frac{1}{9}$

(b) $\frac{2}{9}$

(c) $\frac{1}{6}$

(d) $\frac{1}{12}$

If α, β are zeroes of the polynomial $x^2 - 1$, then value of $(\alpha + \beta)$ is :

(a) 2

(b) 1

(c) -1

(d) 0

Assertion Reason Questions

- (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.

Q31. **Assertion(A):** The point $(-1, 6)$ divides the line segment joining the points $(-3, 10)$ and $(6, -8)$ in the ratio 2: 7 internally.

Reason(R): Given three points, i.e. A, B, C form an equilateral triangle, then $AB = BC = AC$

Q32. **Assertion(A):** The number 6^n , n being a natural number, ends with the digit 5.

Reason(R): The number 9^n cannot end with digit 0 for any natural number n.

Q33.

Assertion (A): If $\cos A + \cos^2 A = 1$, then $\sin^2 A + \sin^4 A = 1$

Reason (R): $\sin^2 A + \cos^2 A = 1$

Q34. **Assertion (A):** The quadratic equation $4x^2 - 12x + 9 = 0$ has repeated roots.

Reason (R): The quadratic equation $ax^2 + bx + c = 0$ has repeated roots if $D > 0$.

Q35. **Assertion (A) :** If product of two numbers is 5780 and their HCF is 17, then their LCM is 340

Reason(R): HCF is always a factor of LCM

Q36.

Assertion (A) : If the graph of a polynomial intersects the x-axis at exactly two points, then the number of zeroes of that polynomial is 2.

Reason (R) : The number of zeroes of a polynomial is equal to the number of points where the graph of the polynomial intersects x-axis.

Q37.

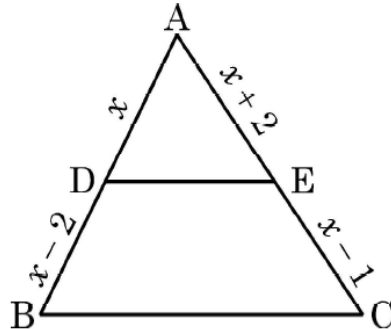
Statement A (Assertion) : For $0 < \theta \leq 90^\circ$, $\operatorname{cosec} \theta - \cot \theta$ and $\operatorname{cosec} \theta + \cot \theta$ are reciprocal of each other.

Statement R (Reason) : $\operatorname{cosec}^2 \theta - \cot^2 \theta = 1$

SHORT ANSWER QUESTIONS (2 mark questions)

Q38.

In the given figure, ABC is a triangle in which $DE \parallel BC$. If $AD = x$, $DB = x - 2$, $AE = x + 2$ and $EC = x - 1$, then find the value of x .



Q39.

Find the length of the shadow on the ground of a pole of height 18 m when angle of elevation θ of the sun is such that $\tan \theta = \frac{6}{7}$.

Q40.

Solve the pair of equations $x = 3$ and $y = -4$ graphically.

Q41.

Find the ratio in which the y-axis divides the line segment joining the points $(5, -6)$ and $(-1, -4)$.

Q42.

Find the points on the x-axis, each of which is at a distance of 10 units from the point $A(11, -8)$.

Q43.

Using graphical method, find whether following system of linear equations is consistent or not:

$$x = 0 \text{ and } y = -7$$

Q44.

If $\sin \theta + \sin^2 \theta = 1$, then prove that $\cos^2 \theta + \cos^4 \theta = 1$.

Q45. If a number x is selected at random from the numbers 1,2,4 and another number y is selected at random from the numbers 1,3,6. Find the probability that $xy = 10$.

Q46. If $(-2, -1)$; $(a, 0)$; $(4, b)$ and $(1, 2)$ are the vertices of a parallelogram, find the values of a and b .

Q47. Determine the nature of the roots of the quadratic equation: $2x^2 + 5x + 5 = 0$

Q48. The A.P 8, 10, 12,..... has 60 terms. Find the sum of last 10 terms.

Q49. Find the middle term of A.P 6,13, 20, ...,230

Q50. Determine the values of a and b for which the following system of linear equations has infinite solutions: $2x - (a - 4) y = 2b + 1$; $4x - (a - 1) y = 5b - 1$.

Q51. If $\sin(A + B) = 1$ and $\cos(A - B) = \sqrt{3}/2$, $0^\circ < A + B \leq 90^\circ$ and $A > B$, then find the measures of angles A and B .

Q52. In triangle ABC, right-angled at B, if $\tan A = \frac{1}{\sqrt{3}}$, find the value of:

$$\sin A \cos C + \cos A \sin C.$$

Q53. If the numbers $2n - 1$, $3n + 2$ and $6n - 1$ are in A.P., then find n and hence find the numbers.

LONG ANSWER QUESTIONS (3 mark questions)

Q54.

Which term of the A.P. : 65, 61, 57, 53, is the first negative term ?

Q55.

Solve the equation :

$$-4 + (-1) + 2 + 5 + \dots + x = 437.$$

Q56.

Find the sum of integers between 100 and 200 which are (i) divisible by 9 (ii) not divisible by 9.

Q57.

If α and β are roots of the quadratic equation $x^2 - 7x + 10 = 0$, find the quadratic equation whose roots are α^2 and β^2 .

Q58.

If $\sin \theta + \cos \theta = p$ and $\sec \theta + \operatorname{cosec} \theta = q$, then prove that $q(p^2 - 1) = 2p$.

Q59.

A natural number, when increased by 12, equals 160 times its reciprocal. Find the number.

Q60.

The sum of first seven terms of an A.P. is 182. If its 4th term and the 17th term are in the ratio 1 : 5, find the A.P.

Q61.

The sum of first q terms of an A.P. is $63q - 3q^2$. If its p^{th} term is -60 , find the value of p . Also, find the 11th term of this A.P.

Q62.

Prove that :

$$\left(\tan \alpha + \frac{1}{\cos \alpha} \right)^2 + \left(\tan \alpha - \frac{1}{\cos \alpha} \right)^2 = 2 \left(\frac{1 + \sin^2 \alpha}{1 - \sin^2 \alpha} \right)$$

Q63.

If α, β are the zeroes of the polynomial $3x^2 - 13x - 10$, then find the value of $(3\alpha + 1)(3\beta + 1)$.

Q64. Solve for x: $\frac{2x}{x-3} + \frac{1}{2x+3} + \frac{3x+9}{(x-3)(2x+3)} = 0$, $x \neq 3, -\frac{3}{2}$

Q65. If $\sec \theta + \tan \theta = p$, prove that $\sin \theta = \frac{p^2 - 1}{p^2 + 1}$.

Q66. Three sets of English, Hindi and Mathematics books have to be stacked in such a way that all the books are stored subject wise and the height of each stack is the same. The number of English books is 96, the number of Hindi books is 240 and the number of Mathematics books is 336. Assuming that the books are of the same thickness, determine the number of stacks of English, Hindi and Mathematics books.

Q67. Given that $\sqrt{3}$ is irrational, prove that $(2 + 5\sqrt{3})$ is an irrational number.

Q68. Find the zeroes of the quadratic polynomial $x^2 + \frac{1}{6}x - 2$, and verify the relationship between the zeroes and the coefficients.

Q69. Find the value of $\frac{5 \sin^2 30^\circ + \cos^2 45^\circ - 4 \tan^2 30^\circ}{2 \sin 30^\circ \cos 30^\circ + \tan 45^\circ}$

Q70. Prove that $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$

Q71. Two dice are thrown at the same time.

- (i) What is the probability that the sum of the two numbers appearing on the top of the dice is 8?
- (ii) What is the probability that the sum of the two numbers appearing on the top of the dice is 7?
- (iii) What is the probability that the sum of the two numbers appearing on the top of the dice is less than or equal to 12?

VERY LONG ANSWER QUESTIONS (5 mark questions)

Q72.

A solid is in the shape of a right-circular cone surmounted on a hemisphere, the radius of each of them being 7 cm and the height of the cone is equal to its diameter. Find the volume of the solid.

- Q73. A shopkeeper buys a number of books for ₹ 1,800. If he had bought 15 more books for the same amount, then each book would have cost him ₹ 20 less. Find how many books he bought initially.
- Q74. Find the common difference of an AP whose first term is 5 and the sum of its first four terms is half the sum of the next four terms.
- Q75. 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 40m, find the height of the chimney. According to pollution control norms, the minimum height of a smoke emitting chimney should be 100m. State if the height of the above mentioned chimney meets the pollution norms.
- Q76. In a class of 50 students, there are 18 girls and 32 boys. Of these students, 20 are vegetarians and rest are non vegetarians. 12 of the vegetarians are boys. If a student is chosen at random, what is the probability of
- (a) choosing a girl?
 - (b) choosing a non vegetarian student?
 - (c) choosing a boy student who is non vegetarian?
 - (d) choosing a girl who is vegetarian?
- Q77. In a class test, the sum of Shefali's marks in Mathematics and English is 30. Had she got 2 marks more in Mathematics and 3 marks less in English, the product of their marks would have been 210. Find her marks in the two subjects.
- Q78. Find two consecutive odd positive integers, sum of whose square is 290.

Q79.

A student was asked to make a model shaped like a cylinder with two cones attached to its ends by using a thin aluminium sheet. The diameter of the model is 3 cm and its total length is 12 cm. If each cone has a height of 2 cm, find the volume of air contained in the model.

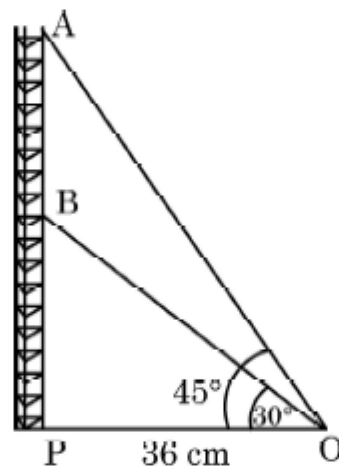
- Q80. Sides AB and AC and median AD of a triangle ABC are respectively proportional to sides PQ and PR and median PM of another triangle PQR. Show that $\Delta ABC \sim \Delta PQR$

Case Study Questions

Q81.

Radio towers are used for transmitting a range of communication services including radio and television. The tower will either act as an antenna itself or support one or more antennas on its structure. On a similar concept, a radio station tower was built in two Sections A and B. Tower is supported by wires from a point O.

Distance between the base of the tower and point O is 36 cm. From point O, the angle of elevation of the top of the Section B is 30° and the angle of elevation of the top of Section A is 45° .



Based on the above information, answer the following questions :

- (i) Find the length of the wire from the point O to the top of Section B.
- (ii) Find the distance AB.

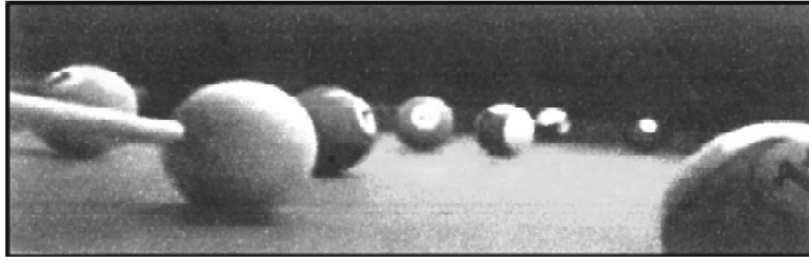
OR

Find the area of $\triangle OPB$.

- (iii) Find the height of the Section A from the base of the tower.

Q82.

“Eight Ball” is a game played on a pool table with 15 balls numbered 1 to 15 and a “cue ball” that is solid and white. Of the 15 numbered balls, eight are solid (non-white) coloured and numbered 1 to 8 and seven are striped balls numbered 9 to 15.



The 15 numbered pool balls (no cue ball) are placed in a large bowl and mixed, then one ball is drawn out at random.

Based on the above information, answer the following questions :

- (i) What is the probability that the drawn ball bears number 8 ?
- (ii) What is the probability that the drawn ball bears an even number ?

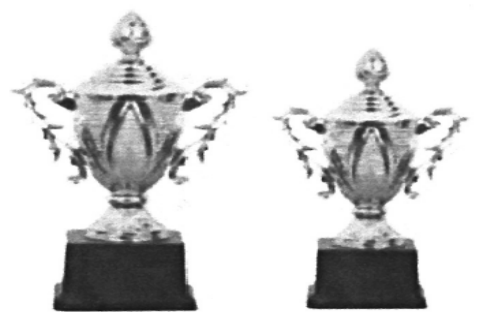
OR

What is the probability that the drawn ball bears a number, which is a multiple of 3 ?

- (iii) What is the probability that the drawn ball is a solid coloured and bears an even number ?

Q83.

Two schools ‘P’ and ‘Q’ decided to award prizes to their students for two games of Hockey ₹ x per student and Cricket ₹ y per student. School ‘P’ decided to award a total of ₹ 9,500 for the two games to 5 and 4 students respectively; while school ‘Q’ decided to award ₹ 7,370 for the two games to 4 and 3 students respectively.



Based on the above information, answer the following questions :

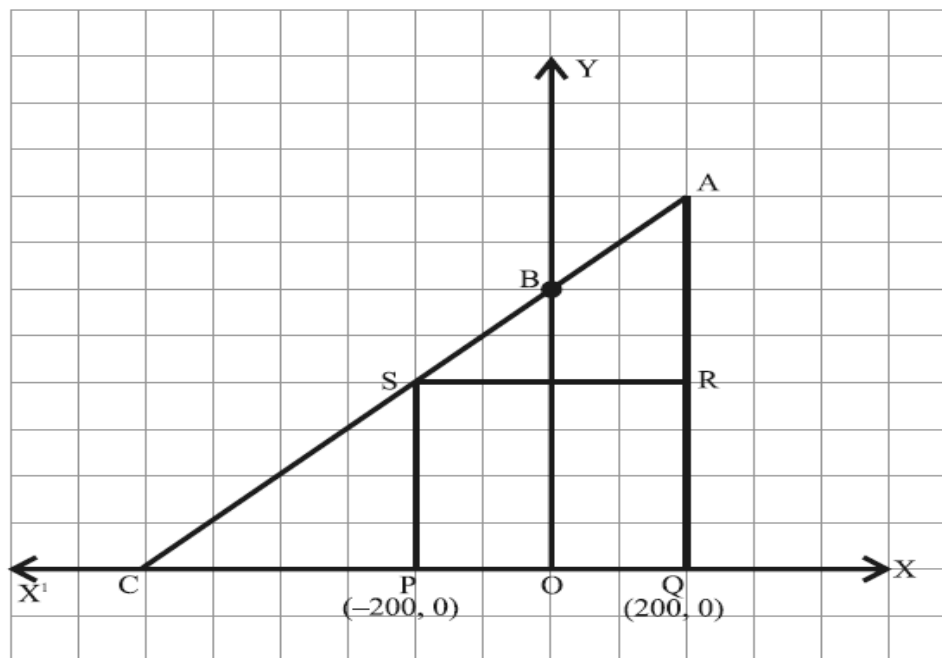
- (i) Represent the following information algebraically (in terms of x and y).
- (ii) (a) What is the prize amount for hockey ?

OR

- (b) Prize amount on which game is more and by how much ?
- (iii) What will be the total prize amount if there are 2 students each from two games ?

Q84.

Jagdish has a field which is in the shape of a right angled triangle AQC. He wants to leave a space in the form of a square PQRS inside the field for growing wheat and the remaining for growing vegetables (as shown in the figure). In the field, there is a pole marked as O.



Based on the above information, answer the following questions :

- (i) Taking O as origin, coordinates of P are $(-200, 0)$ and of Q are $(200, 0)$. PQRS being a square, what are the coordinates of R and S ?

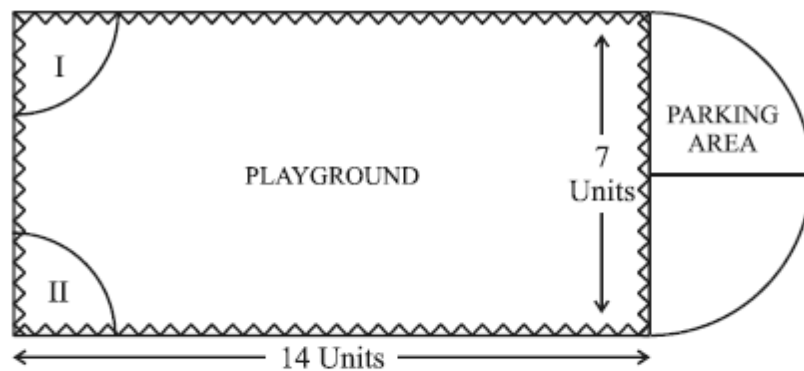
- (ii) (a) What is the area of square PQRS ?

OR

- (b) What is the length of diagonal PR in square PQRS ?
- (iii) If S divides CA in the ratio $K:1$, what is the value of K, where point A is $(200, 800)$?

Q85.

Governing council of a local public development authority of Dehradun decided to build an adventurous playground on the top of a hill, which will have adequate space for parking.



After survey, it was decided to build rectangular playground, with a semi-circular area allotted for parking at one end of the playground. The length and breadth of the rectangular playground are 14 units and 7 units, respectively. There are two quadrants of radius 2 units on one side for special seats.

Based on the above information, answer the following questions :

- (i) What is the total perimeter of the parking area ?
- (ii) (a) What is the total area of parking and the two quadrants ?

OR

- (b) What is the ratio of area of playground to the area of parking area ?
- (iii) Find the cost of fencing the playground and parking area at the rate of ₹ 2 per unit.

Q86.

The residents of a housing society, on the occasion of environment day, decided to build two straight paths in the central park of the society and also plant trees along the boundary lines of each path. Taking one corner of the park as origin and the two mutually perpendicular lines as the x axis and y axis, the paths were represented by the two linear equations $2x - 3y = 5$ and $-6x + 9y = 7$.

Based on the above information, answer the following questions:

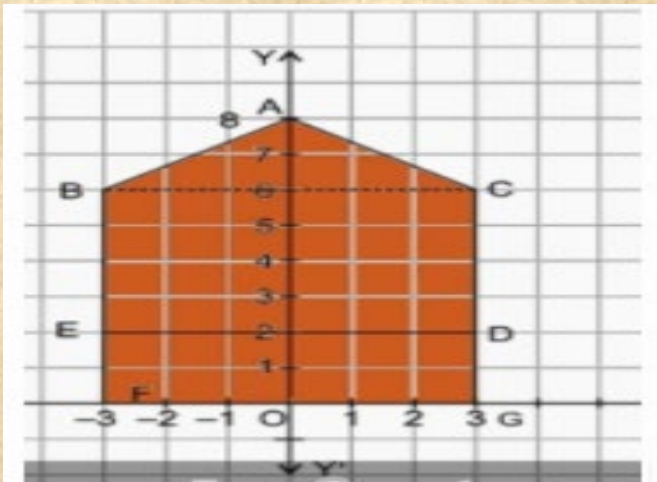
- (i) Find out whether the two paths represented by the equations intersect at a point, are parallel or coincident.
- (ii) If the line $-6x + 9y = 7$ intersects the y axis at a point, then find the coordinates of that point.
- (iii) How many solutions a linear equation in two variables has? Find out any one solution of the path represented by the equation $2x - 3y = 5$.

Q87). Radhika's mother start a new shoe shop. To display the shoes, she put 3 pairs of shoes in 1st row, 5 pairs in 2nd row , 7 pairs in 3rd row and so on.

Based on the given information, answer the following questions:

- (i) Find the difference of pairs of shoes in 17th row and 9th row. (1)
- (ii) Find the total number of pairs of shoes in 5th and 8th row (1)
- (iii) If she puts a total of 120 pairs of shoes, then find the number of rows required for such an arrangement. (2)

Q88). Aditya asked a carpenter to make the front door of his guesthouse. The carpenter suggested him a design which is plotted on a graph as shown in the given figure.



Based on the given information, answer the following questions:

- (i) Find the length of the line segment AB (1)
- (ii) Find the coordinates of the mid point of BE (1)
- (iii) Find the ratio in which the Y axis divides the line segment joining B and D (2)

Q89). In the month of April to June 2022, the exports of passenger cars from India increased by 26% in the corresponding quarter of 2021–22, as per a report. A car manufacturing company planned to produce 1800 cars in 4th year and 2600 cars in 8th year. Assuming that the production increases uniformly by a fixed number every year.



Based on the above information answer the following questions.

- (i) Find the production in the 1st year. (1)
- (ii) Find the production in the 12th year. (1)
- (iii) Find the total production in first 10 years. (2)
- (iv) In how many years will the total production reach 31200 cars. (2)

Q90. We can find A.P. in many situations in our day-to-day life. One such example is a tissue paper roll, in which the first term is the diameter of the core of the roll and twice the thickness of the paper is the common difference. If the sum of first n rolls of tissue on a roll is

$$S_n = 0.1n^2 + 7.9n$$

then answer the following questions.



- (i) Find S_{n-1} .
- (ii) What is the diameter of roll when one tissue sheet is rolled over it?