

JAIPUR EDUCATION PLUS

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BOARD EXAM SECONDARY EXAMINATIONS, 2012

SECTION-A

- Q.1. Write rational number $17/8$ in terminating decimal expansion without actually performing the long division. [Ans. 2.125]
- Q.2. Write the solution of the pair of linear equations $\sqrt{2x} + \sqrt{3y} = 0$ and $\sqrt{3x} - \sqrt{2y} = 0$. [Ans. $x = 0, y = 0$]
- Q.3. If $a_n = 9 - 5n$ is n th term of an arithmetic progression (A.P.) then write the common difference. [Ans. -5]
- Q.4. Write the distance of the point $(-2, 9)$ from x axis. [Ans. 9]
- Q.5. Write the coordination of the point which divides the line segment joining the points $(4, -3)$ and $(8, 5)$ in $3:1$ internally. [Ans. 3]
- Q.6. If tangents AB AC from a point A to a circle with centre O are such that $\angle BOC = 140^\circ$ then write the value of $\angle BAC$. [Ans. 40°]
- Q.7. Write the area of a sector of angle d° of a circle with radius R . [Ans. $R^2 / 360$]
- Q.8. A tangent PQ at a point of a circle of radius 5 cm meets a line through the centre O at a point Q so that $OQ = 13$ cm then find the length of PQ . [Ans. 12 cm]
- Q.9. A die is thrown once then what is the probability of getting prime number. [Ans. $1/2$]
- Q.10. A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag what is the probability that the ball drawn is not black? [Ans $3/8$]

SECTION-B

- Q.11. $ABCD$ is a trapezium in which $AB \parallel DC$ and its diagonals intersect each other at the point O . Prove that $\frac{AO}{BO} = \frac{CO}{DO}$. [Ans. $\frac{AO}{BO} = \frac{CO}{DO}$]
- Q.12. Two tangents AB and AC are drawn to a circle with a circle with centre O from an external point A . Prove that $\angle BAC = 2 \angle OBC$.

Q.13 In a circle of radius 21 cm, an arc subtends an angle 60° at the centre. Find the area of the corresponding major sector. [Ans. 1155 cm^2]

Q.14 Two circular flower beds lie on two sides AB and CD of a square lawn ABCD of side 56 m. If the centre of each circular flower bed is the point of intersection O of the diagonals of the square lawn. Find the sum of the areas of the lawn and the flower beds.

[Ans. 4032 m^2]

Q.15 Two dice are thrown at the same time. What is the probability that the sum of the two members appearing on the dice is 7. [Ans. $1/6$]

SECTION-C

Q.16 What is Euclid's Division lemma? Use this to find the highest common factor (HCF) of the numbers 196, 3820.

Q.17 On dividing polynomial $x^3 - 3x^2 + x + 2$ by a polynomial $g(x)$, the quotient and remainder were $x - 2$ and $-2x + 4$ respectively. Then find the function $g(x)$.

[Ans. $g(x) = x^2 - x + 1$]

Q.18 Find the roots and their nature of the quadratic equation $3x^2 - 4\sqrt{3}x + 4 = 0$.

[Ans. $\frac{2\sqrt{3}}{3}$]

Q.19 The sum of the reciprocals of Rehman's ages (in years) 3 years ago and 5 years from now is $\frac{1}{3}$. Find the present age. [Ans. 7 years]

Q.20 Find the sum of the numbers between 1 to 100 divisible by 6. [Ans. 816]

Q.21 Find the point on the x-axis which is equidistant from the points A(6, 5) and B(-4, 5).

[Ans. (1, 0)]

Q.22 If the points A(6, 1), B(8, 2), C(9, 4) and D(x, y) are the vertices of a parallelogram, taken in order. Find the point D (x, y). [Ans. Point D = (7, 3)]

Q.23 If $\tan A = \frac{3}{4}$ then find the value of $\sec A (1 - \sin A) (\sec A + \tan A)$ [Ans. 1]

Q.24 Two poles of equal heights are standing opposite to 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. [Ans. 20 m and 60 m]

- Q.25 Draw a line segment AB of length 8 cm. Taking A as centre, draw a circle of radius 4 cm and construct the pair of tangents to the circle from point B and measure their lengths.

SECTION-D

- Q.26 Draw a graphs of the linear equations $x - y + 1 = 0$ and $3x + 2y - 12 = 0$. Determine the co-ordinates of the vertices of triangle formed by these lines and the x-axis, and shade the triangular region.

- Q.27 BL and CM are medians of a right angled triangle ABC and $\angle A = 90^\circ$ then prove that $4(BL^2 + CM^2) = 5BC^2$.

- Q.28 Prove that $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \csc \theta$.

OR

- Q.28 Prove that $\frac{\sin \theta - 2 \sin^3 \theta}{2 \cos^3 \theta - \cos \theta} = \tan \theta$.

- Q.29 Container shaped like a right circular cylinder having diameter 12 cm and height 15 cm is full of ice-cream. The ice-cream is to be filled into cones of height 12 cm and diameter 6 cm, having a hemispherical shape on the top. Find the number of such cones which can be filled with ice-cream. [Ans. 10]

- Q.30 During the medical checkup of 30 students of a class their weights were recorded as follows. Find the mean weight of the students:

Wight (in kg)	40-45	45-50	50-55	55-60	60-65	65-70	70-75
No. of Students	2	3	8	6	6	3	2

OR

- Q.30 The median of the following data is 525. Find the x and y, if the total frequency is 100:

Class-interval	0-100	100-200	200-300	300-400	400-500
Frequency	2	5	x	12	17

Class-interval	500-600	600-700	700-800	800-900	900-1000
Frequency	20	Y	9	7	4

[Ans. $x = 9$, $y = 15$]

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