JAIPUR EDUCATION PLUS
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(P.No. 51, First floorLane No. 3, Moti Nagar, Queen's Road)
Mob. : 7615012588, 9929544574
Email: jaipureducationplus@gmail.com
www.jaipureducationplus.com

Sample Paper-2

(Pattern of Secondary Education Board)

SECTION-A

Q.1 Write rational number in $\frac{17}{625}$ terminating decimal expansion without performing the long division. [Ans. 0.0272]

Q.2 Write the condition of a pair of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ has a unique solution.

Q.3 Write the first term and the common difference for the following AP : $\frac{1}{3}, \frac{5}{3}, \frac{9}{3}, \frac{13}{3}$, ... [Ans. $\frac{4}{3}$]

Q.4 Find the distance between two points A(–5, 7) and B(–1, 3). [Ans. $4\sqrt{2}$ unit]

Q.5 Write the distance of the point (–3, 9) from x-axis. [Ans. 9]

Q.6 If tangent PR and QR from a point R to a circle with centre O are such that $\angle POQ = 110°$, then the write value of $\angle PRQ$. [Ans. 70°]

Q.7 Find the radius of a circle whose circumference is 52.8 cm. [Ans. 8.4]

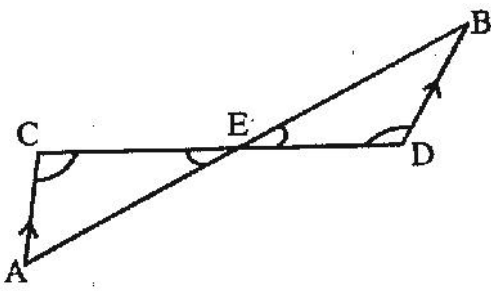
Q.8 How many parallel tangents can be drawn in a circle? [Ans. Two]

Q.9 A die is thrown one. What is the probability of getting a number other than 4.

Q.10 A box contain 3 blue, 2 white and 4 red marbles. If a marble is drawn at random from the box, what is the probability that it will be red? [Ans. $\frac{4}{9}$]

SECTION-B

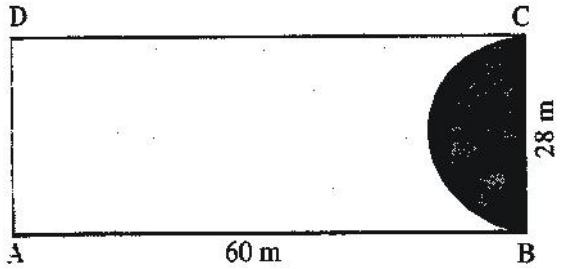
Q.11 In the given figure AC||BD. Prove that : $\frac{AE}{CE} = \frac{BE}{DE}$.



Q.12 Prove that the tangents at the extremities of any chord make equal angle with the chord.

Q.13 The circumference of a circular plot in 220 m. A 15 m. wide concrete track runs round outside the plot. Find the area of the track. [Ans. 4007 sq. m]

Q.14 A plot is in the form of a rectangular ABCD having emiicircle on BC as shown in figure. The semicircle portion is grassy while the remaining plot is without grass. Find the area of the plot without grass were AB = 60 m and BC = 28 m. [Ans. 1372 sq. m]



Q.15 Three unbiased coins are tossed simultaneously. Find the probability of getting exactly two heads. [Ans. $\frac{3}{8}$]

SECTION-C

Q.16 What is Euclid's Division Lemma? Use this to find the highest common factor (HCF) of the numbers 236, 422. [Ans. H.C.F. = 2]

Q.17 Find all the zeroes of the polynomial $f(x) = 2x^2 - 3x^3 - 5x^2 + 9x - 3$ it being given that two of tis zero are $\sqrt{3}$ and $-\sqrt{3}$. [Ans. $\sqrt{3}$, $-\sqrt{3}$ and $\frac{1}{2}$]

Q.18 Find the sum of the numbers between 1 to 100 divisible by 6. [Ans. 816]

Q.19 Without using trigonometric tosses evaluate.

$$\frac{\cos 70^\circ}{\sin 20^\circ} + \frac{\cos 55^\circ \operatorname{cosec} 35^\circ}{\tan 5^\circ \tan 25^\circ \tan 45^\circ \tan 65^\circ \tan 85^\circ}.$$

[Ans. 1 + 1 = 2]

Q.20 A man standing on the deck of a ship. Which is 10 m above water level, observes the angle of elevation of the top of a hill as 60° and angle of depression of the base of the hill as 30°. Find the distance of the hill from the ship and height of the hill.

[Ans. Ship = 17.3 and Hill = –40 m]

Q.21 One side of a rectangle exceeds its other side by 2 cm. If its area is 195 cm^2. Determine the sides of the rectangle. [Ans. 15 cm]

Q.22 Find the value of c for which the quadratic equation $4x^2 - 2(c + 1)x + (c + 4) = 0$ has equal roots. [Ans. c = 5]

Q.23 Find the coordination of the circumcentre of the triangle, whose vertices are (8, 6), (8, –2) and (2, –2). Also its circum-radius. [Ans. (5, 2)]

Q.24 Find the point on the x-axis which is equidistant from (2, –5) and (–2, 9).

Q.25 Draw a circle of diameter 7 cm. Form a point P. 8 cm away from its centre, construct a pair of tangents to the circle. Measure the lengths of the tangent segments.

[Ans. PA=PB=7.2 cm]

SECTION-D

Q.26 Solve the following system of linear equations graphically: $3x + y - 12 = 0$, $x - 3y + 6 = 0$. Shade the region bounded by these lines with the x-axis. Also find the ratio of areas of triangles formed by the given lines with x-axis and y-axis. [Ans. ratio 1 : 1]

Q.27 A toy is the form of a cone of radius 3.5 cm mounted on a hemisphere of same radius. The total height of the toy is 15.5 cm. Find the surface area of the toy. [Ans. 214.5 cm^2]

Q.28 Prove that the sum of the squares of the sides of a rhombus is equal to the sum of the squares of its diagonals.

OR

Q.28 Prove that the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides.

Q.29 Prove that:

(i) $\sqrt{\sec^2\theta + \operatorname{cosec}^2\theta} = \tan\theta + \cot\theta$

(ii) $\frac{\tan A}{1-\cot A} - \frac{\cot A}{1-\tan A} = 1 + \tan A + \cot A.$

Q.30 Given below is a frequency distribution with median 46. In this distribution, some of the frequencies are missing:

Marks	10-20	20-30	30-40	40-50	50-60	60-70	70-80	Total
No. of Students	12	30	?	65	?	25	18	229

Determine the missing frequencies. [Ans. x = 34 and y = 45]

OR

Q.30 The mean of the following frequency distribution is 62.8 and the sum of all frequencies is 50. Compute the wising frequencies f_1 and f_2:

Class	0-20	20-40	40-60	60-80	80-100	100-120	Total
Frequency	5	f_1	10	f_2	7	8	50