MATHS

BOOKS - OSWAL PUBLICATION

C.B.S.E 2020 CLASS -X (OUTSIDE DELHI)

Outside Delhi Set I Section A

1. The HCF of two numbers is 27 and their LCM is 162. If one of numbers is 54, what is the

other number ?

A. 36

B. 35

C. 9

D. 81

Answer: D

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2. The cumulative frequency table is useful in determining the

A. Mean

B. Median

C. Mode

D. All of these

Answer: D

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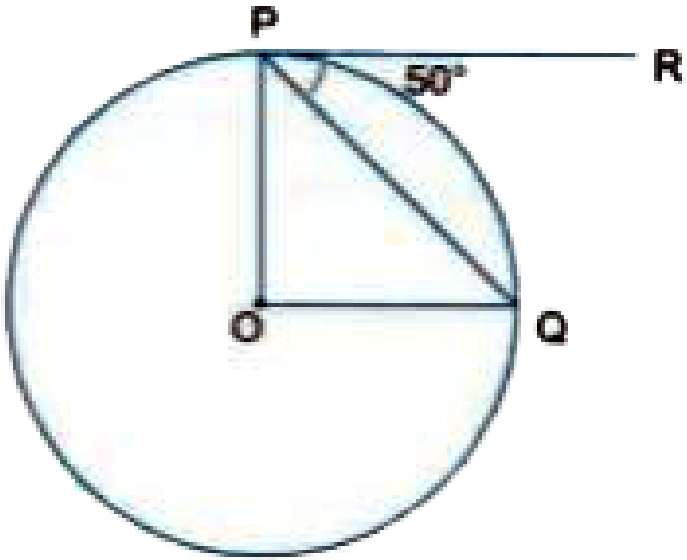
3. In Fig , O is the centre of a circle , PQ is a chord and the tangent PR at P makes an angle of 50° with PQ. Find $\angle POQ$.



A. 130°

B. 90°

C. 100°

D. 75°

Answer: C

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4. $2\sqrt{3}$ is

A. an integer

B. a rational number

C. an irrational number

D. a whole number

Answer: C

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5. Two coins are tossed simultaneously. The probability of getting at most one head is

A. $\frac{1}{4}$

B. $\frac{1}{2}$

C. $\frac{2}{3}$

D. $\frac{3}{4}$

Answer: D

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6. If one zero of the polynomal $\left(3x^2 + 8x + k\right)$ is the reciprocal of the other, then value of k is

A. 3

B. -3

C. $\frac{1}{3}$

D. $-\frac{1}{3}$

Answer: A

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7. The decimal expansion of $\frac{23}{2^5 \times 5^2}$ will terminate after how many places of decimal ?

A. 2

B. 4

C. 5

D. 1

Answer: C

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8. The maximum number of zeroes a cubic polynomial can have, is

A. 1

B. 4

C. 2

D. 3

Answer: D

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9. The distance of the point (-12,5) from the origin is

A. 12

B. 5

C. 13

D. 169

Answer: C

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10. If the centre of a circle is (3,5) and end points of a diameter are (4,7) and (2, y), then the value of y is

A. 3

B. -3

C. 7

D. 4

Answer: A

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11. The area of triangle formed with the origin and the points (4,0) and (0,6) is .....

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12. The co-ordinate of the point dividing the line segment joining the points A(1, 3) and B(4, 6) in the ratio 1:2 is..... .

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13. Value of the roots of the quadratic equation, $x^2 - x - 6 = 0$ are .....

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14. If $\sin\theta = \frac{5}{13}$ then the value of $\tan\theta$ is .....

.

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15. The value of $\left(\tan^2 60^\circ + \sin^2 45^\circ\right)$ is

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16. The corresponding sides of two similar triangles are in the ratio 3:4, then the ratios of the areas of triangles is ..... .

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17. Evaluate :

$\cos 48^\circ - \sin 42^\circ$

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18. Evaluate : $(\tan 23^\circ) \times (\tan 67^\circ)$

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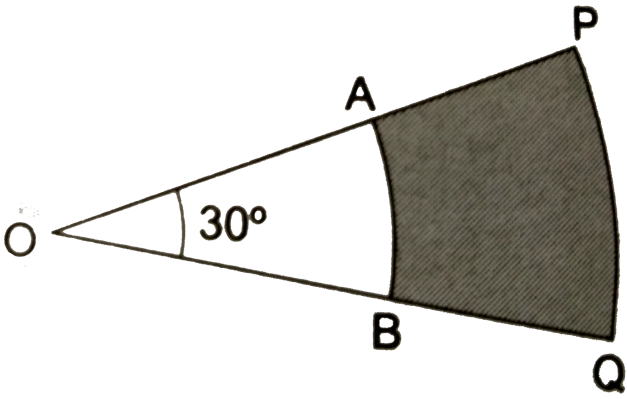
19. In the given figure PQ and AB are respectively the arcs of two concentric cicles

of radii 7 cm and 3.5 cm with centre O. If $\angle POQ = 30^\circ$, find the area of the shaded region.



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20. A card is drawn at random from a well shuffled deck of 52 playing cards. What is the

probability of getting a black king?

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21. A ladder 25 m log just reaches the top of a building 24 m high from the ground. What is the distance of the foot of the ladder from the building ?

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22. If 3k - 2, 4k - 6 and k + 2 are three consecutive terms of A.P., then find the value of k.

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Outside Delhi Set I Section B

1. In a lottery, there are 5 prizes and 15 blanks. What is the probability of getting a prize ?

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2. In a family of three children, find the probability of having at least two boys.

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3. Two dice are tossed simultaneously. Find the probability of getting

(i) an even number on both dice.

(ii) the sum of two numbers more than 9.

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4. Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.

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5. Prove that : $\frac{1-\tan^2\theta}{1+\tan^2\theta} = \cos^2\theta - \sin^2\theta$

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6. The wheel of a motorcycle is of radius 35 cm .How many revolutions are required to travel a distance of 11 m ?

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7. Divide $\left(2x^2 - x + 3\right)$ by (2-x) and write the quotient and the remainder.

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Outside Delhi Set I Section C

1. If α and β are the zeroes of the polynomial $f(x) = 5x^2 - 7x + 1$ then find the value of $\left(\frac{\alpha}{\beta} + \frac{\beta}{\alpha}\right)$.

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2. Draw a line segment of length 7 cm and divide it in the ratio 2:3.

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3. Draw a circle of radius 4 cm and construct the pair of tangents to the circle from an external point, which is at a distance of 7 cm from its centre.

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4. The minute hand of a clock is 21 cm long. Calculate the area swept by it and the distance travelled by tip in 20 minutes.

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5. If x = 3sinθ + 4cos θ and y = 3cos θ − 4 sin θ then prove that $x^2 + y^2 = 25$.

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

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

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8. Use Euclid's algorithm of find the HCF of 272 and 1032.

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9. Let $ABCD$ be a rectangle and P be any point in its plane. Show that $AP^2 + PC^2 = PB^2 + PD^2$.

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10. In a classroom, 4 friends are seated at the points A. B. C and D as shown in Fig. 7.8. Champa and Chameli walk into the class and after observing for a few minutes Champa asks Chameli, "Don't you think ABCD is a square?" Chameli disagrees. Usi

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11. Solve for x and y:

2x - 3y-13 =0 , 3x -2y+12 =0

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Outside Delhi Set I Section D

1. The product of two consecutive positive integers is 306. Find the integers.

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2. The 17th term of an A.P. is 5 more than twice its 8th term. If the 11th term of the A.P. is 43,

find the n^{th} term.

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3. How many terms of the AP 3, 5, 7, 9, ... must be added to get the sum 120?

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4. A person standing on the bank of a river observes that the angle of elevation of the top of a tree standing on the opposite bank is 60°

. When he moves 40 m away from the bank, he finds the angle of elevation to be 30°. Find the height of the tree and width of the river. $(\sqrt{3} = 1.73)$

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5. Prove that the ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding sides.

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6. Prove that the length of the tangents drawn from an external point to a circle are equal.

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7. From a solid cylinder whose height is 15 cm and diameter 16 cm, a conical cavity of the same height and same diameter is hollowed out. Find the total surface area of the remaining solid. $[Use \pi = 3.14.]$

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8. The height of a cone is 10 cm. The cone is divided into two parts using a plane parallel to its base at the middle of its height. Find the ratio of the volumes of the two parts.

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9. The mode of following frequency distribution is 36 . Find the missing frequency (f) .

Class	0 - 10	10 - 20	20 - 30	30 - 40	40 -50	50 - 60	60-70
Frequency	8	10	f	16	12	6	7

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Outside Delhi Set Ii Section A

1. If α and β are the zeroes of the polynomial $2x^2 - 13x + 6$, then $\alpha + \beta$ is equal to

A. -3

B. 3

C. $\frac{13}{2}$

D. $-\frac{13}{2}$

Answer: C

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2. The mid-point of the line-segment AB is P(0,4). If the coordinates of B are (-2, 3) then the co-ordinates of A are

A. (2,5)

B. 3

C. $\frac{13}{2}$

D. $-\frac{13}{2}$

Answer: A

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3. AP, AQ and BC are tangents to the circle. If AB = 5 cm, AC = 6 cm and BC = 4 cm, then the length of AP (in cm) is

A. 15

B. 10

C. 9

D. 7.5

Answer: D

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4. The value of $(\sin 43^\circ \cos 47^\circ + \cos 43^\circ \sin 47^\circ)$ is ..... .

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5. In Fig. 1, S and T are points on the sides PQ and PR, respectively of Delta PQR, such that PT = 2 cm, TR = 4 cm and ST is parallel to QR. Find

the ratio of the areas of Delta PST and Delta PQR.

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6. Two coins are tossed simultaneously. What is the probability of getting at least one head?

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Outside Delhi Set Ii Section B

1. A circle is inscribed in a ΔABC touching AB, BC and AC at P, Q and R respectively. If AB = 10 cm, AR = 7 cm and CR = 5 cm, then find the length of BC.

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2. The length of the minute hand of clock is 14 cm. Find the area swept by the minute hand in 15 minutes.

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Outside Delhi Set Ii Section C

1. A toy is in 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 total surface area of the toy.

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2. In Fig. 10.21, two circles touch each other at the point C . Prove that the common tangent

to the circles at C , bisects the common tangent at P and Q . (FIGURE)

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Outside Delhi Set Ii Section D

1. Find the median for the given frequency distribution:

Class	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75
Frequency	2	3	8	6	6	3	2

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2. If the price of book is reduced by Rs. 5, a person can buy 4 more books for Rs. 600. Find the original price of the book.

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Outside Delhi Set Iii Section A

1. x-axis divides the line segment joining A(2, -3) and B(5,6) in the ratio :

A. $2:3$

B. $3:5$

C. $1:2$

D. $2:1$

Answer: C

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2. If the sum of the zeroes of the quadratic polynomial f(x) = $mx^2 + 2x + 3m$ is equal to their product, then m equals

A. $\frac{1}{3}$

B. $-\frac{1}{3}$

C. $\frac{2}{3}$

D. $-\frac{2}{3}$

Answer: D

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3. The chord of a circle of radius $10cm$ subtends a right angle at its centre. The length of the chord (in cm) is

A. $\frac{5}{\sqrt{2}}$

B. $5\sqrt{2}$

C. $10\sqrt{2}$

D. $10\sqrt{2}$

Answer: C

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4. The value of $\frac{\sin\theta}{\cos(90^\circ - \theta)} + \frac{\cos 43^\circ}{\sin 47^\circ}$ is ..... .

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5. A card is drawn at random from a well-shuffled pack of 52 cards. Find the probability of getting a red king.

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6. The aeas of two similar triangles ΔAbc and ΔPQR are $25cm^2$ and $49cm^2$ respectively. If `QR=9.8 cm, find BC.

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Outside Delhi Set Iii Section B

1. An isosceles triangle ABC, with AB = AC, circumscribes a circle, touching BC at P, AC at Q and AB at R. Prove that the contact point P bisects BC.

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2. The radius of a circle is 17.5 cm. Find the area of the sector enclosed by two radii and an arc 44 cm in length.

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Outside Delhi Set Iii Section C

1. A horse is tethered to one corner of a rectangular field of dimensions 70 m $\times$ 52 m,

by a rope of length 21 m. How much area of the field can it graze?

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2. Find the quadratic polynomial, the sum and product of whose zeroes are - 3 and 2 respectively. Hence find the zeroes.

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Outside Delhi Set Iii Section D

1. Three consecutive positive integers are such that the sum of the square of the first and the product of other two is 46, fond the integers.

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2. Find the mean of the following distribution:

Class	10 - 25	25 - 40	40 - 55	55 - 70	70 - 85	85 - 100
Frequency	2	3	7	6	6	6

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