



MATHS

BOOKS - OSWAL PUBLICATION

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

Delhi Set I Section A

1. The HCF of 144 and 198 is .

A. 9

B. 18

C. 6

D. 12

Answer: B



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2. The mean and mode of a frequency distribution are 26 and 29 respectively. Then , the median is

A. 27.5

B. 24.5

C. 28.4

D. 25.8

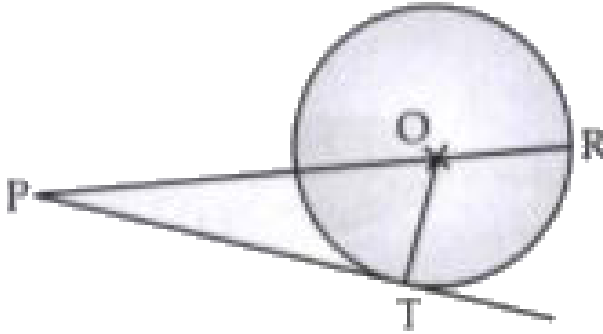
Answer: B



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3. In Fig. 1, on a circle of radius 7 cm, tangent PT is drawn from a point P such that $PT = 24$ cm. If O is the centre of the circle, then the length of

PR is



A. 30 cm

B. 28 cm

C. 32 cm

D. 25 cm

Answer: C



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4. 225 can be expressed as

A. 5×3^2

B. $5^2 \times 3$

C. $5^2 \times 3^2$

D. $5^3 \times 3$

Answer: C



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5. The probability of a number selected at random from the numbers 1, 2, 3, ..., 15 is a multiple of 4 is:

A. $\frac{4}{15}$

B. $\frac{2}{15}$

C. $\frac{1}{15}$

D. $\frac{1}{5}$

Answer: D



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6. If one zero of the quadratic polynomial

$kx^2 + 3x + k$ is 2 then the value of k is

A. $\frac{5}{6}$

B. $-\frac{5}{6}$

C. $\frac{6}{5}$

D. $-\frac{6}{5}$

Answer: D



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7.2. $\overline{25}$ is

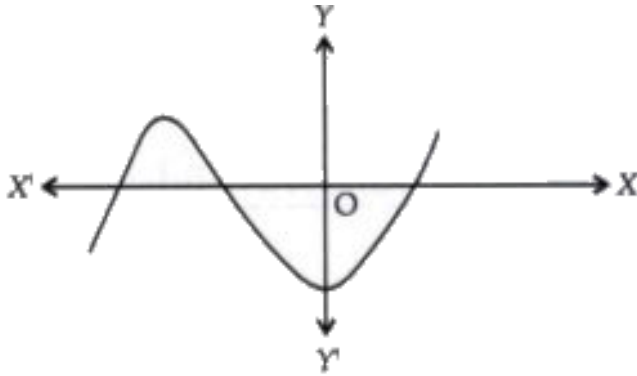
- A. an integer
- B. a rational number
- C. an irrational number
- D. a natural number

Answer: B



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8. The graph of a polynomial is shown in Fig. 2, then the number of its zeroes is



A. 3

B. 1

C. 2

D. 4

Answer: A



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9. Distance of point $P(3, 4)$ from x-axis is

A. 3 units

B. 4 units

C. 5 units

D. 1 unit

Answer: B



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

A. 4 only

B. -4 only

C. ± 4

D. 0

Answer: C



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11. If the point $C(k, 4)$ divides the line segment joining two points $A(2,6)$ and $B(5, 1)$ in ratio $2:3$, the value of k is



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12. If points $A(-3, 12)$, $B(7,6)$ and $C(x, 9)$ are collinear, then the value of x is.....



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13. If the equations $kx - 2y = 3$ and $3x + y = 5$ represent two intersecting lines at unique point, then the value of k is



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14. If quadratic equation $3x^2 - 4x + k = 0$ has equal roots, then the value of k is.....



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15. The value of $(\sin 20^\circ \cos 70^\circ + \sin 70^\circ \cos 20^\circ)$ is



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16. If $\tan (A + B) = \sqrt{3}$ and $\tan (A - B) = \frac{1}{\sqrt{3}}$, $A > B$, then the value of A is



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17. The perimeters of two similar triangles are 25 cm and 15 cm respectively. If one side of the first triangle is 9 cm, then the corresponding side of second triangle is



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18. If $5 \tan \theta = 3$, then what is the value of

$$\left(\frac{5 \sin \theta - 3 \cos \theta}{4 \sin \theta + 3 \cos \theta} \right) ?$$



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19. The area of two circles are in the ratio 4 : 9.
What is the ratio between their
circumferences?



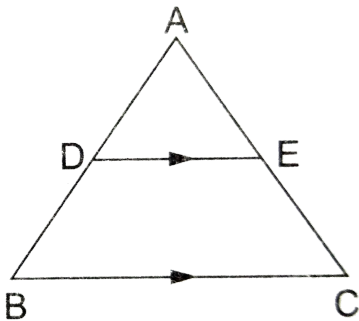
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20. If a pair of dice is thrown once, then what is
the probability of getting a sum of 8 ?



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21. In $\triangle ABC$, $DE \parallel \parallel BC$ so that $AD = 2.4\text{cm}$, $AE = 3.2\text{cm}$ and $EC = 4.8\text{cm}$, then, $AB = ?$



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22. The n th term of an AP is $(7-4n)$. Find its common difference.



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Delhi Set I Section B

1. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball from the bag is thrice that of a red ball, find the number of blue balls in the bag.



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2. Prove that:

$$\sqrt{\frac{1 - \sin \theta}{1 + \sin \theta}} = \sec \theta - \tan \theta.$$



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3. Prove that : $\frac{\tan^2 \theta}{1 + \tan^2 \theta} + \frac{\cot^2 \theta}{1 + \cot^2 \theta} = 1$



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4. Two different dice are thrown together, find the probability that the sum of the numbers

appeared is less than 5.



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5. Find the probability that 5 Sundays occur in the month of November of a randomly selected year.



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6. In Figure 3, a circle touches all the four sides of a quadrilateral ABCD whose sides are $AB = 6$

cm, $BC = 9$ cm and $CD = 8$ cm. Find the length of side AD.



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7. The perimeter of a certain sector of a circle of radius 6.5 cm is 31cm. Find the area of the sector.



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8. Divide the polynomial $(4x^2 + 4x + 5)$ by $(2x + 1)$ and write the quotient and the remainder.



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Delhi Set I Section C

1. If α and β are the zeroes of the polynomial $f(x) = x^2 - 4x - 5$ then find the value of $\alpha^2 + \beta^2$.



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2. Draw a circle of radius 4 cm. From the point 7 cm away from its centre, construct the pair of tangents to the circle.



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3. Draw a line segment of length 8 cm and divides it in the ratio 2:3



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4. A solid metallic cuboid of dimension $24\text{ cm} \times 11\text{ cm} \times 7\text{ cm}$ is melted and recast into solid cones of base radius 3.5 cm and height 6 cm . Find the number of cones so formed.



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5. Prove that $(1 + \tan A - \sec A) \times (1 + \tan A + \sec A) = 2 \tan A$



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6. Prove that:

$$\frac{\operatorname{cosec}\theta}{\operatorname{cosec}\theta - 1} + \frac{\operatorname{cosec}\theta}{\operatorname{cosec}\theta + 1} = 2 \sec^2 \theta$$



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



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8. An army contingent of 612 members is to march behind an army band of 48 members in

a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march ?



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9. Prove that in a right angle triangle, the square of the hypotenuse is equal to the sum of the squares of other two sides.



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10. To conduct Sports Day activities, in your rectangular shaped school ground ABCD, lines have been drawn with chalk powder at a distance of 1m each. 100 flower pots have been placed at a distance of 1m from each other along AD, as shown in Figur



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11. Solve graphically : $2x + y = 8$, $x - y = 1$



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12. A two - digit number is such that product of its digits is 14. If 45 is added to the number, the digits interchange their places. Find the number.



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13. If 4 times the 4^{th} term of an A.P. is equal to 18^{th} times the 18^{th} term, then find the 22^{nd} term.



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14. How many terms of the AP : 24, 21,18,... must be taken so that their sum is 78?



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15. The angle of elevation of the top of a building from the foot of a tower is 30° . The angle of elevation of the top of the tower from the foot of the building is 60° . If the tower is 60 m high, find the height of the building.



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16. In fig.7.84, DEFG is a square and $\angle BAC = 90^\circ$. Prove that:

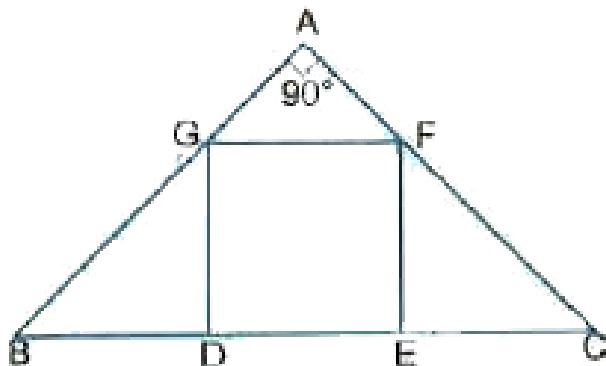


Fig. 7.84

(i) $\triangle AGF \sim \triangle DBG$ (ii) $\triangle AGF \sim \triangle EFC$ (iii)

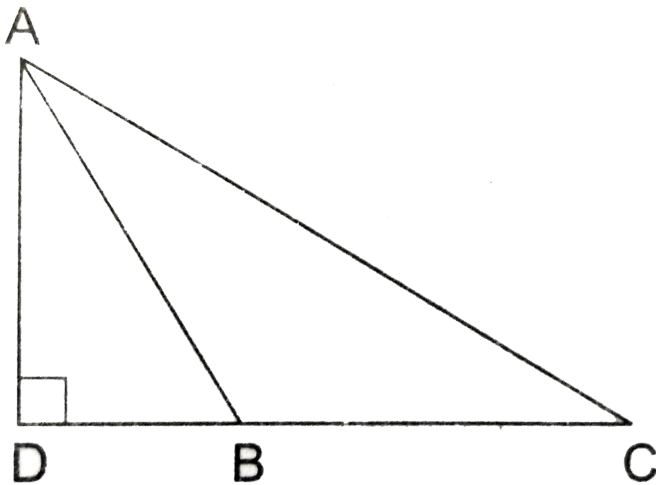
$\triangle DBG \sim \triangle EFC$ (iv) $DE^2 = BD \times EC$



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17. In the given figure, $\triangle ABC$ is an obtuse triangle, obtuse-angled at B. If $AD \perp CB$ (produced) prot that

$$AC^2 = AB^2 + BC^2 + 2BC \cdot BD$$



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18. An open metal bucket is in the shape of a frustum of cone of height 21 cm with radii of its lower and upper ends are 10 cm and 20 cm respectively. Find the cost of milk which can completely fill the bucket at the rate of ₹ 40 per litre.



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19. A solid is in the shape of a cone surmounted on a hemi-sphere, the radius of each of them is being 3.5 cm and the total height of solid is 9.5

cm. Find the volume of the solid. (Use

$$\pi = 22/7)$$



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20. Find the mean of the following data.

Classes	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120
Frequency	20	35	52	44	38	31



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Delhi Set II Section A

1. The area of a triangle with vertices $A(5, 0)$, $B(8, 0)$ and $C(8, 4)$ in square units is

A. 20

B. 12

C. 6

D. 16

Answer:



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2. The sum and the product of the zeros of a quadratic polynomial are 3 and -10 respectively. The quadratic polynomial is

A. $x^2 - 3x + 10$

B. $x^2 + 3x - 10$

C. $x^2 - 3x - 10$

D. $x^2 + 3x + 10$

Answer:



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3. From an external point Q , the length of tangent to a circle is 12 cm and the distance of Q from the centre of circle is 13 cm. The radius of circle (in cm) is

A. 10

B. 5

C. 12

D. 7

Answer: B



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4. $\sin^2 25^\circ + \sin^2 65^\circ$ is equal to



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5. $\triangle ABC$ is isosceles with $AC = BC$. If $AB^2 = 2AC^2$ then find the measure of $\angle C$



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Delhi Set II Section B

1. Divide the polynomial $(9x^2 + 12x + 10)$ by $(3x + 2)$ and write the quotient and the remainder.



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2. A road which is 7 m wide surrounds a circular park whose circumference is 88 m. Find the area of the road.



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1. Prove that the tangent at any point of circle is perpendicular to the radius through the point of contact.



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2. A right triangle ABC , right angled at A , is circumscribing a circle. If $AB = 8$ cm and $BC = 6$ cm, find the radius of the circle.



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3. Find the zeroes of the quadratic polynomial $y^2 + 7x + 10$, and verify the relationship between the zeroes and the coefficients.



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Delhi Set Ii Section D

1. The difference of two natural numbers is 5 and the difference of their reciprocals is $\frac{1}{10}$.

Find the numbers.



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Delhi Set Iii Section A

1. PQ is a tangent to a circle with centre O at the point P . If $\triangle OPQ$ is an isosceles triangle, then $\angle OQP$ is equal to

A. 30°

B. 45°

C. 60°

D. 90°

Answer: B



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2. If α and β are the zeroes of the polynomial

$x^2 + 2x + 1$, then $\frac{1}{\alpha} + \frac{1}{\beta}$ is equal to :

A. -2

B. 2

C. 0

D. 1

Answer: A



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3. The coordinates of a point A on y-axis, at a distance of 4 units from x-axis and below it, are

A. $(4, 0)$

B. $(0,4)$

C. $(-4, 0)$

D. $(0, -4)$

Answer: D



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4. If $\cot \theta = \frac{12}{5}$ then the value of $\sin \theta$ is



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5. The areas 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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Delhi Set Iii Section B

1. The radii of two circles are 19 cm and 9 cm respectively. Find the radius of the circle which has circumference equal to the sum of the circumferences of the two circles.



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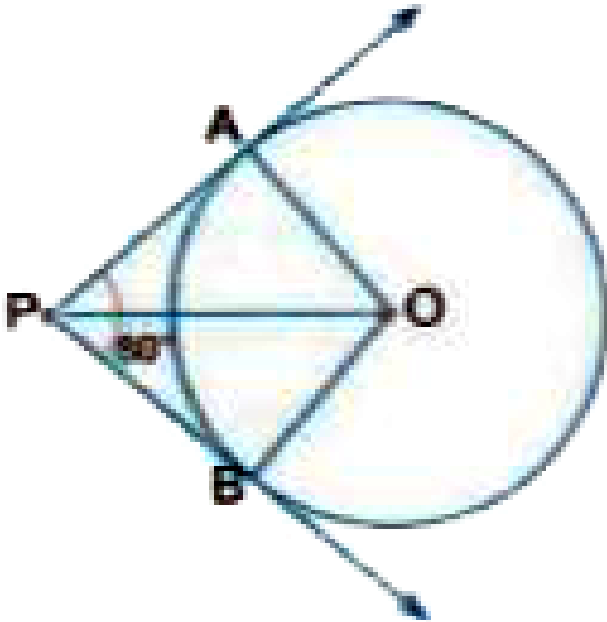
2. Divide the polynomial $16x^2 + 24x + 15$ by $(4x + 3)$ and write the quotient and the remainder.



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Delhi Set Iii Section C

1. If tangents PA and PB from a point P to a circle with centre O are inclined to each other at angle of 80° , then find $\angle POA$.



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2. Find the zeros of the quadratic polynomial $6x^2 - 3 - 7x$ and verify the relationship between the zeros and the coefficients of the polynomial.



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3. Three horses are tethered with 7 metre long ropes at the corners of a triangular field having sides 20m, 34m and 42m. Find the area of the plot which can be grazed by the horses. Also,

find the area of the plot which remains ungrazed.



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4. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.



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Delhi Set Iii Section D

1. A person on tour has Rs. 4200 for his expenses. If he extends his tour for 3 days, he has to cut down his daily expenses by Rs. 70. Find the original duration of the tour.



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