



MATHS

BOOKS - MBD NCERT SOLUTIONS

MBD NEW STYPE MODEL TEST PAPER - 2

Set A Section A

1. If H.C.F. of 56 and 98 is 14, then its L.C.M.



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2. Find the product of the zeroes of the quadratic polynomial $x^2 - 3$.



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3. For what value of K , the pair of equations $2x + ky = 1$, $3x - 5y = 7$ has a unique solution?

A. $K = \frac{-10}{3}$

B. $K \neq \frac{-10}{3}$

C. $K \neq \frac{10}{3}$

D. $K \neq \frac{3}{10}$

Answer: A



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4. The 15th term of the A.P. 7,13, 19, is:

A. 105

B. -78

C. 97

D. 91

Answer: A



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5. Find the common difference of the A.P.
 $13, 15\frac{1}{2}, 18, 20\frac{1}{2}, \dots\dots\dots$

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6. Fill in the blank using correct word given in bracket :

Two polygons of the same number of sides are similar, if their corresponding angles are

(equal/propotional)

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7. $\triangle ABC \sim \triangle DEF$. Their areas are 64cm^2 and 121cm^2 . If

$EF = 12.1\text{cm}$, then value of BC is :

A. 8.8 cm

B. 12.1

C. 12.4 cm

D. None of these

Answer: A



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8. If the length of the tangent drawn from a point P outside the circle is 15 cm and radius of circle is 8 cm, then distance of point P from the centre of circle is :

A. 7cm

B. 23 cm

C. 17 cm

D. 7.5 cm

Answer: B

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9. There are exactlyto a circle through a point outside the circle.

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10. Find the distance between the points $(0,0)$ and $(36,15)$.

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11. Find the midpoint of the line joining the points (7,1) and (3,5).



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12. Evaluate : $\cos 38^\circ \cos 52^\circ - \sin 38^\circ \sin 52^\circ$.



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13. In $\triangle ABC$, angle B is right angle, AB = 20 cm and BC = 21 cm. The value of $\sin A$ is :

A. $\frac{20}{21}$

B. $\frac{21}{29}$

C. $\frac{20}{21}$

D. $\frac{21}{20}$

Answer: A



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14. Find the area of sector of a circle with radius 4 cm and angle 60° .



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15. The volume of a cone having radius 3 cm and height 7 cm will be :

A. 166cm^3

B. 66cm^3

C. 266cm^3

D. None of these

Answer: b



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16. A die is thrown once. Find the probability of getting a number less than or equal to 4.



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1. Apply the division algorithm to find the quotient and remainder on dividing $p(x)$ by $g(x)$.

$$p(x) = x^3 - 3x^2 + 5x - 3, g(x) = x^2 - 2.$$

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2. ABCD is a trapezium in which $AB \parallel DC$ and its diagonals intersect each other as the point O. Show that

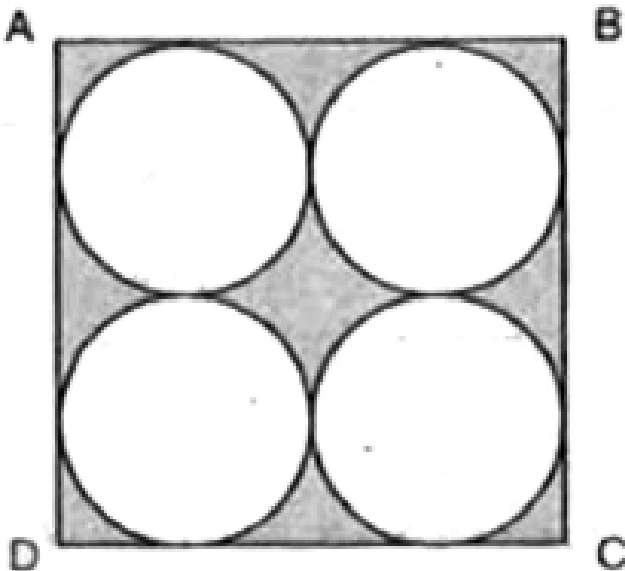
$$\frac{AO}{BO} = \frac{CO}{DO}.$$

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3. If $\tan(A + B) = \sqrt{3}$ and $\tan(A - B) = \frac{1}{\sqrt{3}}$, $0^\circ < A + B \leq 90^\circ$, $A > B$, then find the value of A and B.

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4. Find the area of the shaded region in figure where ABCD is a square of side 14 cm.





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Set A Section C

1. Solve the following pairs of equation by elimination method:

$$x + y = 6$$

$$2x - 3y = 4.$$



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2. Find the roots of the quadratic equation $2x^2 + x - 6 = 0$ by factorisation method.



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3. An AP consists of 50 terms of which 3rd term is 12 and the last term is 106. Find the 29th term.



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4. Find the coordinates of the point which divides the join $(-1, 7)$ and $(4, -3)$ in the ratio 2:3.



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5. Savita and Hamida are friends. What is the probability that both will have (i) different birth days? (ii) the same birthday? (ignoring a leap year).



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Set A Section D

1. In a class test, the sum of Shelall'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.



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2. From a point on a ground the angle of elevation of the bottom and top of a transmission tower fixed at the top of

a 20 m high building are 45° and 60° respectively . Find the height of the tower.

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3. Prove that :

$$\frac{\cot A - \cos A}{\cot A + \cos A} = \frac{\operatorname{cosec}A - 1}{\operatorname{cosec}A + 1}.$$

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4. Metallic spheres of radii 6 cm, 8 cm and 10 cm respectively, are melted to form a single solid sphere. Find the radius of the resulting sphere.

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5. A survey was conducted by a group of student as a part of their environment awareness programme, in which they collected the following data regarding the number of plants in 20 houses in a locality. Find the mean number of plants per house.

Number of plants	0-2	2-4	4-6	6-8	8-10	10-12	12-14
Number of houses	1	2	1	5	6	2	3

Which method did you use for finding the mean, and why?

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Set B Section A

1. If H.C.F. of 306 and 657 is 9, then their L.C.M.



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2. Find the sum of the zeroes of the quadratic polynomial

$$3x^2 + 5x - 2.$$



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3. For what value of k , the following pair of linear equations have infinitely many solution?

$$kx + 4y + 6 = 0, 3x + 8y + 12 = 0.$$

A. $k = 0$

B. $k = 3$

C. $k = 2$

D. $k = 1.5$

Answer: C

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4. 15th term of the A.P. $\frac{1}{3}, \frac{5}{3}, \frac{9}{3}, \frac{13}{3}, \dots$, is :

A. $\frac{61}{3}$

B. 6

C. 5

D. 19

Answer: C

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5. Find the common difference of the A.P. $5, 6\frac{1}{2}, 8, 9\frac{1}{2}$

,..... .

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6. In the given figure $\triangle ODC \sim \triangle OAB$, $\angle BOC = 100^\circ$, $\angle ODC = 60^\circ$, then

$\angle OAB \dots\dots (40^\circ)$

Length (in-mm)	Number of leaves
118 – 126	3
127 – 135	5
136 – 144	9
145 – 153	12
154 – 162	5
163 – 171	4
172 – 180	2



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7. The maximum number of tangents drawn from an external point to a circle is :

A. 0

B. 1

C. 2

D. 4

Answer: B

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8. If TP and TQ are the two tangents to a circle with centre O , so that $\angle POQ = 115^\circ$, then $\angle PTQ = \dots\dots\dots (65^\circ)$.

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9. Find the distance between the points (a,b) and $(-a, -b)$.



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10. Find the midpoint of the line joining the points $(-5,7)$ and $(-1,3)$.



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11. In $\triangle ABC$, angle B is right angle, $AB = 15$ cm and $BC = 8$ cm. The value of $\sin A$ is :

A. $\frac{15}{17}$

B. $\frac{8}{17}$

C. $\frac{15}{8}$

D. $\frac{8}{15}$

Answer: B

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12. Find the area of the sector of a circle with radius 5 cm and angle 60° .

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13. The side of a cube is 12 cm. Volume of cube is

A. $144m^3$

B. $1008m^3$

C. $1728m^3$

D. None of these

Answer: C

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14. A card is drawn from a well shuffled deck of 52 cards.

Find the probability of getting an ace.

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15. Apply the division algorithm to find the quotient and remainder on dividing $p(x)$ by $g(x)$.

$$p(x) = x^3 - 3x^2 + 5x - 3, g(x) = x^2 - 2.$$

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16. The diagonal of a quadrilateral ABCD intersect each other at the point D such that $\frac{AO}{BO} = \frac{CO}{DO}$. Show that ABCD is a trapezium.

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17. If $\sin 3A = \cos(A - 26^\circ)$, where $3A$ is an acute angle, then find the value of A .

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18. The length of the minute hand of a clock is 14 cm. Find the area swept by minute hand in 5 minutes.



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Set B Section C

1. Solve the following pair of linear equations by elimination methods :

$$3x + 4y = 10 \text{ and } 2x - 2y = 2.$$



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2. Find two such numbers whose sum is 27 and product is 182.



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3. Find the 31st term of an A.P. whose 11th term is 38 and 16th term is 78.



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4. In which ratio the point $(-1, 6)$ divides the line segment joining the points $(-3, 10)$ and $(6, -8)$?



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5. Two players Sangeets and Reshma play a tennis match. It is known that the probability of Sangeets winning the match is 0.62. What is the probability of Reshma winning the match?



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Set B Section D

1. The diagonal of a rectangular field is 60 metres more than the shorter side. If the longer side is 30 metres more than the shorter side, then find the side of the fields.



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2. A 1.5m tall boy is standing at some distance from a 30m tall building. The angle of elevation from his eyes to the top of the building increases from 30° to 60° as he walks

towards the building. Find the distance he walked towards the building.

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3. Prove that :

$$\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \operatorname{cosec} \theta .$$

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4. A 20 m deep well with diameter 7 m is dug and the earth from digging is evenly spread out to form a platform 22 m by 14 m. Find the height of the platform.

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5. The following distribution shows the daily pocket allowance of children of a locality. The mean pocket allowance is Rs 18. Find the missing frequency f .

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6. If the median of the distribution given below is 28.5, find the values of x and y .

Class interval	Frequency
0 - 10	5
10 - 20	x
20 - 30	20
30 - 40	15
40 - 50	y
50 - 60	5
Total	60



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Set C Section A

1. If H.C.F. of 96 and 404 is 4, then their L.C.M.

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2. Find the product of the zeroes of the quadratic polynomial $x^2 - 3x - 4$.

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3. The values of p , for which the equations $6x + py - 5 = 0$ and $3x + 2y - 8 = 0$ have unique solution is :

A. $p = 4$

B. $p \neq 4$

C. $p = -4$

D. $p \neq -4$

Answer: A

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4. 20th term of the A.P. 2 , 7, 12,..... is :

A. -47

B. 47

C. 57

D. 97

Answer: A



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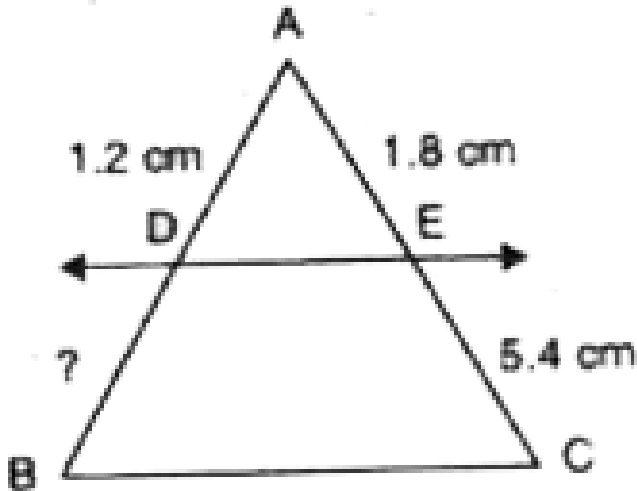
5. Find the common difference of the A.P $7, 13, 19, \dots$. Also find the first term.



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6. In the given figure $DE \parallel BC$, then the value of DB is

.....



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7. Areas of two similar triangle are in the ratio of $5:3$, then the ratio of their corresponding sides is :

A. $5:3$

B. 25 : 9

C. 9.25

D. $\sqrt{5} : \sqrt{3}$

Answer: B



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8. The distance of point A from the centre of the circle is 5 cm. The length of the tangent is 4 cm. The radius of the circle is :

A. 3 cm

B. 4 cm

C. 5 cm

D. 8 cm

Answer: D

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9. The line intersecting the circle in two points is called

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10. Find the distance between the points $(-5, 7)$ and $(-1, 3)$.

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11. Find the midpoint of the line segment joined the two points (2,3) and (4,1).



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12. If $\tan A = \cot B$, then prove that $A + B = 90^\circ$.



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13. In $\triangle ABC$, angle B is right angle, $AB = 12$ cm and $BC = 5$ m. The value of $\sin C$ is :

A. $\frac{12}{13}$

B. $\frac{5}{13}$

C. $\frac{12}{5}$

D. $\frac{5}{12}$

Answer: C



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14. Find the area of the sector of a circle with radius 6 cm and angle 30° .



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15. The radius of base of a cone is 3.5 cm and height is 9 cm, its volume is :

A. 36π

B. 110.75π

C. 36.75π

D. None of these

Answer: C



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16. If $P(E) = 0.05$, then find the probability of $\neg E$.



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Set C Section B

1. Divide $3x^2 - x^3 - 3x + 5$ by $x - 1 - x^2$.



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2. If $\tan = 2A = \cot(A - 18^\circ)$, where $2A$ is an acute angle, then find the value of A .



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3. The radii of two circle are 8 cm and 6 cm respectively. Find the radius of the circle having are equal to sum of the areas of two cicles.



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1. Solve the following pair of linear equation by elimination method:

$$3x = 5y - 4 = 0 \text{ and } 9x = 2y + 7.$$

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2. Find the roots of the quadratic equation

$$3x^2 - 2\sqrt{6}x + 2 = 0.$$

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3. The 17th term of an A.P. exceeds its 10th term by 7. Find the common difference.



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4. Find the coordinates of a point A, where AB is the diameter of a circle whose centre is $(2, -3)$ and B is $(1, 4)$.



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5. Suppose we throw a die once. (i) What is the probability of getting a number greater than 4? (ii) What is probability of getting a number less than or equal to 4?



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Set C Section D

1. The difference of squares of two number is 180. The square of the smaller number is 8 times the larger number. Find the two numbers.



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2. A statue 1.6 m tall stands on the top of a pedestral . From a point on the ground, the angle of elevation of the top of the statue is 60° and from the same point the

angle of elevation of the top of the pedestal is 45° . Find the height of the pedestal.

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3. Prove that : (Using identify $\operatorname{cosec}^2 A = 1 + \cot^2 A$)

$$\frac{\cos A - \sin A + 1}{\cos A + \sin A - 1} = \operatorname{cosec} A + \cot A.$$

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4. How many silver coins 1.75 cm in diameter and of thickness 2 mm, must be melted to form a cuboid of dimensions $5.5\text{cm} \times 10\text{cm} \times 3.5\text{cm}$.

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5. The following frequency distribution gives the monthly consumption of electricity of 68 consumers of a locality. Find the median, mean and mode of the data and compare them.

Monthly consumption (in units)	Number of consumers
65–85	4
85–105	5
105–125	13
125–145	20
145–165	14
165–185	8
185–205	4

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Set D Section A

1. If H.C.F. of 135 and 225 is 45, then find their L.C.M.



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2. Find the sum of the zeroes of the quadratic polynomial

$$x^2 + 2x + 3.$$



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3. For what value of K , the pair of equations

$2x - 3y = 1$ and $kx + 5y = 7$ has a unique solution?

A. $k \neq \frac{10}{3}$

B. $k \neq \frac{-10}{3}$

C. $k \neq \frac{10}{-3}$

D. None of these

Answer: C

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4. 10th term of the A.P. 2,7,12,.....is

A. -47

B. 47

C. 57

D. None of these

Answer: D



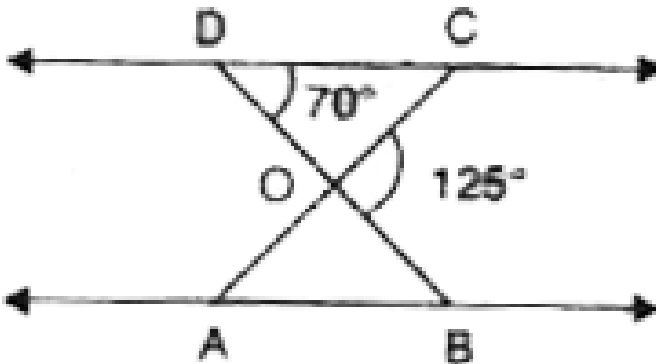
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5. Find the common difference of the A.P - 8 , -5, - 2, 1..... .



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6. In the given figure $\triangle ODC \sim \triangle OBA$, $\angle BOC = 125^\circ$, $\angle OCD = 70^\circ$, then $\angle OCB$



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7. The ratio of the sides of two similar triangles is 3:7, ratio of areas of these two triangles is :

A. 15 : 3.5

B. 9 : 49

C. 6 : 14

D. 49 : 9

Answer: C



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8. Number of tangents drawn from a point inside the circle is :

A. 1

B. 2

C. 4

D. 0

Answer: A



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9. If TP and TQ are the two tangents to a circle with centre O. So that $\angle PQR = 105^\circ$, then $\angle PTQ$ is

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10. Find the distance between the point (2,3) and (4,1) .

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11. Find the midpoint of the line segment joining the points $(-3,4)$ and $(1, - 2)$.

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12. Express $\sin 67^\circ + \cos 75^\circ$ in terms of trigonometric ratio of angles between 0° and 45° .

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13. In $\triangle ABC$, $\angle B$ is right angle, $AB = 5$ cm and $BC = 12$ cm ,
then the value of $\cos C$ is :

A. $\frac{5}{12}$

B. $\frac{12}{5}$

C. $\frac{5}{13}$

D. $\frac{12}{13}$

Answer: D



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14. In a circle of radius 5 cm an arc subtends an angle of 30° , then find the area of the sector.



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15. A solid sphere of radius 3 cm is melted and recast into a cylinder of radius 2cm. The height of the cylinder is :

A. 8 cm

B. 9 cm

C. 7 cm

D. 10 cm

Answer: C



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16. A coin is tossed once. What is the probability of getting a head?



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Set D Section B

1. Divide $2x^2 + 3x + 1$ by $x + 2$.



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2. If $A \sec 4A = \operatorname{cosec}(A - 20^\circ)$, where $4A$ is an acute angle, then find the value of A .

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3. The radii of two circle 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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1. Solve the following pair of linear equation by elimination method:

$$\frac{x}{2} + \frac{2y}{3} = 1 \text{ and } x - \frac{y}{3} = 3.$$

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2. Find the roots of the quadratic equation $6x^2 - x - 2 = 0$.

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3. Find the sum of first 51 terms of an A.P. whose second and third are 14 and 18 respectively.

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4. Find the value of K for which the points $(8,1)$, $(k, -4)$, $(2, -5)$ are collinear.

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5. A bag contains a red ball, a blue ball and a yellow ball, all the balls being of the same size. Kritika takes out a ball from the bag without looking into it. What is the probability that she takes out the (i) yellow ball? (ii) red ball? (iii) blue ball?

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1. A train travels 360 km at a uniform speed. If the speed had been 5 km/h more, it would have taken 1 hour less for the same journey. Find the speed of the train.

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2. From the top of a 7m high buildings, the angle of elevation of the top of a cable tower is 60° and the angle of depression of its foot is 45° . Determine the height of the tower.

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3. Prove that

$$(\sin \theta + \operatorname{cosec} \theta)^2 + (\cos \theta + \sec \theta)^2 = (7 + \tan^2 \theta + \cot^2 \theta).$$



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4. A drinking glass is in the shape of a frustum of a cone of height 14 cm. The diameter of its two circular ends 4 cm and 2 cm. Find the capacity of the glass.



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5. The marks scored by 30 students of class X of a certain school in a Mathematics paper consisting of 100 marks are presented in table below. Find the mean of the marks

obtained by the students.

Class interval	10–25	25–40	40–55	55–70	70–85	85–100
Number of students	2	3	7	6	6	6



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6. A survey regarding the heights (in cm) of class X of a school was conducted and the following data was obtained.

Height.(in cm)	Number of girls
Less than 140	4
Less than 145	11
Less than 150	29
Less than 155	40
Less than 160	46
Less than 165	51

Find the median height.



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