MATHS

BOOKS - EDUCART PUBLICATION

SAMPLE PAPER 2019

Section A

1. Write the discriminant of the quadratic equation $(x + 5)^2 = 2(5x - 3)$.

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2. Find after how many places of decimal the decimal form of the number $\dfrac{27}{2^3 . 5^4 . 3^2}$ will terminate.

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3. Express 429 as a product of its prime factors.

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4. Find the sum of first 10 multiples of 6.

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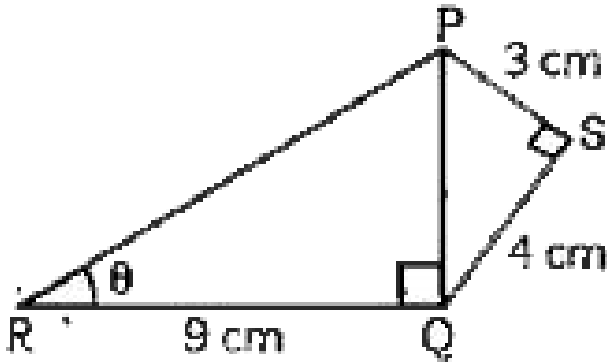**5.** Find the value (s) of x , if the distance between the points A(0,0) and B(x,-4) is 5 units.

6. Two concentric circles of radii a and $b(a > b)$ are given. Find the length of the chord of the larger circle which touches the smaller circle.

7. In Figure ,PS=3cm, QS=4 cm,

$\angle PRQ = \theta$, $\angle PSQ = 90°$, $PQ \perp RQ$ and $RQ = 9$

cm . Evaluate $\tan \theta$.

8. If $\tan \alpha = \dfrac{5}{12}$, find the value of $\sec \alpha$.

1. Points A (3,1), B(5,1), C(a,b) and D (4,3) are vertices of a parallelogram ABCD .Find the values of a and b .

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2. Points P and Q trisect the line segment joining the points A (-2,0) a and B(0,8) such that ,P is near to A . Find the coordinates of points P and Q.

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3. Solve the pair of linear equations. $y - 4x = 1$

and $6x - 5y = 9$

4. If HCF of 65 and 117 is expressible in the form

$65m - 117$, then the value of m is

5. On a morning walk ,three persons step out

together and their steps measure 30 cm , 36 cm

and 40 cm respectively .What is the minimum distance each should walk so that each can cover the same distance in complete steps?

6. A die is thrown once .Find the probability of getting

(i) a composite number , (ii) a prime number.

7. Using completing the square method ,show that the equation $x^2 - 8x + 18 = 0$ has no solution.

8. Cards numbered 7 to 40 were put in a box . Poonam selects a card at random .What is the probability that Poonam selects a card which is a multiple of 7 ?

Section C

1. The perpendicular from A on side BC of a $\triangle ABC$ meets BC at D such that DB = 3CD .Prove that $2AB^2 = 2AC^2 + BC^2$.

2. If AD and PM are medians of triangles ABC and PQR, respectively where$\triangle ABC \triangle PQR$, prove that $\dfrac{AB}{PQ} = \dfrac{AD}{PM}$

3. Check whether g(x) is a factor of p(x) by dividing polynomial p(x) by polynomial g(x), where $p(x) = x^5 - 4x^3 + x^2 + 3x + 1, g(x) = x^3 - 3x + 1$

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4. Find the area of the triangle formed by joining the mid -points of the sides of the triangle ABC ,whose vertices are A(0,-1),B(2,1)andC(0,3).

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5. Find the values of x and y which satisfy both the equations:

x-y=11 and 4x+y=14.

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

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7. Find the greatest number which an dividing 1251 , 9377 and 15628 leaves remainders 1,2 and 3 respectively .

8. (i) A,B and C are interior angles of a triangle ABC.Show that $\sin\left(\dfrac{B+C}{2}\right) = \cos\left(\dfrac{A}{2}\right)$.

(ii) If $\angle A = 90°$, then find the value of $\tan\left(\dfrac{B+C}{2}\right)$.

9. If $\tan(A+B) = \sqrt{3}$ and $\tan(A-B) = \dfrac{1}{\sqrt{3}}, 0° < A+B \le 90°, A > B,$ then find the value of A and B.

10. PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangents at P and Q intersect at a point T. Find the length TP.

11. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.

12. Water in a canal, 6 m wide and 1.5 m deep, is flowing with a speed of 10 km/h. How much area will it irrigate in 30 minutes, if 8 cm of standing water is needed?

13. A class teacher has the following absentee record of 40 students of a class for the whole term. Find the mean number of days a student was absent.

14. A car has two wipers which do not overlap. Each wiper has a blade of length 21 cm, sweeping through an angle of $120°$. Find the total area cleaned at each sweep of the blades.

Section D

1. A pole has to be erected at a point on the boundary of a circular park of diameter 13 metres in such a way that the differences of its distances

from two diametrically opposite fixed gates A and B on the boundary is 7 metres. Is it possible t

2. If m time the mth term of an Arithmetic Progression is equal to n times its nth term and $m \neq n$,show that the $(m + n)^{th}$ term of the AP is zero .

3. The sum of the first three numbers in an Arithmetic Progression is 18. If the product of the first and the third term is 5 times the common difference, find the three numbers.

4. Draw a triangle ABC with side BC = 6 cm, AB = 5 cm and $\angle ABC = 60°$. Then construct a triangle whose sides are $\dfrac{3}{4}$ of the corresponding sides of the triangle ABC.

**5.** The decorative block is made of two solids a cube and a hemisphere. The base of the block is a cube with edge 5 cm, and the hemisphere fixed on the top has a diameter of 4.2 cm. Find the total surface area of the block.

6. In Figure a decorative block is shown which is made of two solids , a cube and a hemisphere .The base of the block is cube with edge 6 cm and the hemisphere fixed on the top has a diameter of 4.2 cm .Find :

4.2 cm

6 cm

6 cm

6 cm
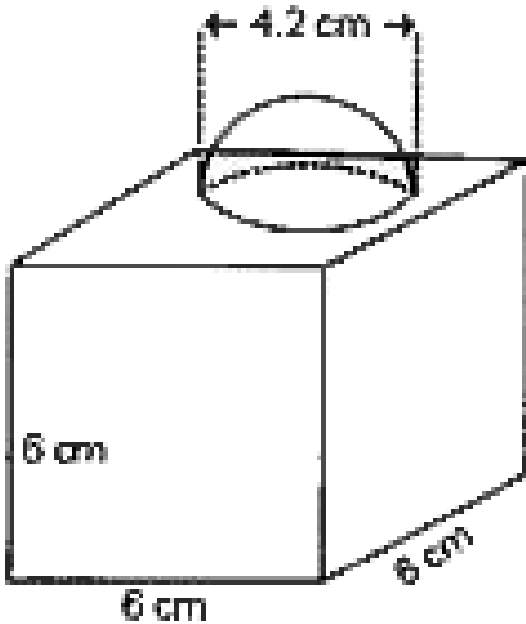
the volume of the block formed `

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7. A bucket is in form of a frustum of a cone with a copacity of $12308.8cm^3$ of water. The radii of the

tope bottom circular ends are 20 cm and 12 cm respectively. Find the height of the bucket and the area of the metal sheet used in its making. [Use $\pi = 3.14.$]

8. Theorem 6.1 : If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.

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

10. If $1 + \sin^2 \beta = 3\sin\beta . \cos\beta$, then prove that $\tan\alpha = 1$ or $\tan\alpha = \dfrac{1}{2}$.

11. For what values of x does the equation hold true?

$$2^{4x^2 + 5x - 2} = 16$$

12. The shadow of a tower standing on a level ground is found to be 40 m longer when the Suns altitude is $30o$than when it is $60o$. Find the height of the tower.