



MATHS

BOOKS - EDUCART PUBLICATION

SAMPLE PAPER 3 [CBSE 2019 (TOPPER SOLVED)]

Section A

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



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



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



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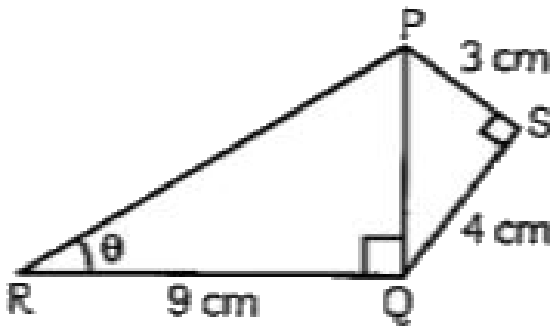
4. Two concentric circles of radii a and b ($a > b$) are given. Find the length of the chord of the larger circle which touches the smaller circle.



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5. In Figure, $PS = 3$ cm, $QS = 4$ cm, $\angle PRQ = \theta$, $\angle PSQ = 90^\circ$, $PQ \perp RQ$ and $RQ = 9$ cm.

. Evaluate $\tan\theta$



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6. If $\tan\alpha = \frac{5}{2}$, find the value of $\sec\alpha$.

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Section B

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 $A(-2, 0)$ 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 following pair of linear equations

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



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

$$65m - 117, \text{ then the value of } m \text{ is}$$



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

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



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

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7. 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?

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1. The perpendicular AD on the base BC of a ABC intersects BC at D so that $DB = 3CD$. Prove that $2 AB^2 = 2 AC^2 + BC^2$.



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



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3. Check whether $g(x)$ is a factor of $p(x)$ by dividing polynomial $p(x)$ by polynomial

$$p(x) = x^5 - 4x^3 + x^2 + 3x + 1, g(x) = x^3 - 3x + 1$$

.

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4. Find the area of the triangle formed by joining the mid-points of the sides of the triangle whose vertices are $(0, -1)$, $(2, 1)$ and $(0, 3)$. Find the ratio of this area to the area of the given triangle.

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5. Draw the graph of the equations $x-y+1 = 0$ and $3x + 2y - 12 = 0$. Using this graph, find the values of x and y which satisfy both the equations.



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



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7. Find the greatest number which on dividing 151 and 377 leaves remainders 1 and 2 respectively.



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8. If A , B and C are interior angles of a triangle ABC ,

then show that $\sin\left(\frac{B + C}{2}\right) = \frac{\cos A}{2}$.



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9. if $\angle A = 90^\circ$, then find the value of $\tan\left(\frac{B + C}{2}\right)$



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10. 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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11. 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 .



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



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13. 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?



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14. 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.



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15. 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.



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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



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2. If m times the m^{th} term of an A.P. is equal to n times its n^{th} term, show that the $(m + n)^{\text{th}}$ term of the A.P. is zero.



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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.



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



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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.



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7. A bucket is in form of a frustum of a cone with a capacity of 12308.8cm^3 of water. The radii of the top and 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 $\pi = 3.14$.]



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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.

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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 the other two sides.

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

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11. Change the following distribution to a 'more than type' distribution. Hence, draw the 'more than type' ogive for this distribution.

Class interval	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Frequency	10	8	12	24	6	25	15



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12. The shadow of a tower standing on a level ground is found to be 40 m longer when the Sun's altitude is 30° than when it is 60° . Find the height of the tower.



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