



# MATHS

## BOOKS - EDUCART PUBLICATION

### SAMPLE PAPER - 6

#### Part A Section I

1.  $\frac{\cot A + \tan B}{\cot B + \tan A}$  is :



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2. For any two positive integers 'a' and b, what is the value of HCF ( $a, b$ ), LCM ( $a, b$ )?



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3. Using prime factorisation method, find the HCF and LCM of 210 and 175.



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4. Find the mean of first 10 odd natural numbers.



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5. If  $2x$ ,  $x + 10$ ,  $3x + 2$  are in A.P., find the value of  $x$ .



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6. By taking  $A = 90^\circ$  and  $B = 30^\circ$ , show that  $\sin(A - B) = \sin A \cos B - \cos A \sin B$ .



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7. The value of  $(\cos 0^\circ + \sin 45^\circ + \sin 30^\circ)(\sin 90^\circ - \cos 45^\circ + \cos 60^\circ)$  is



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8. Determine the degree of the polynomial:  $(x+ 1)$   
 $(x^2 - x - x^4 + 1)$ .



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9. Find the ratio of the volume of a right circular cone to that of the volume of right circular cylinder, of equal diameter and height.



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10. What is the shape of a glass (tumbler) (see figure) ?



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11. Write a quadratic polynomial sum of whose zeros is 3 and product is -6.



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**12.** Find the value of  $K$  for which the pair of linear equations  $kx - y = 2$  and  $6x - 2y = 3$  will have no solutions.

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**13.** Determine the probability of getting a number which is neither prime nor composite in single throw of a fair dice.

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14. Find the mean of the following data:

1,7,9,3,4,5,6.



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15. If  $P(E) = 0.001$ , then find the value of  $P(\overline{E})$ .



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16. One card is drawn at random from a well shuffled deck of 52 cards. What is the probability to get a face card ?



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17. An unbiased dice is rolled once. What is the probability of getting an even prime number?



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18. The ratio of the length of a rod and its shadow is  $1 : \sqrt{3}$ . The angle of elevation of the sun is



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19. What is the sum of the roots of the quadratic equation  $x^2 - 2x - 15 = 0$ ?



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20. Form cubic polynomial in  $x$  with the sum, sum of the products of its zeros taken two at a time, and product of its zeros are 8, 0 and 9 respectively.

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21. What is the value of 'p' for which the quadratic equation  $2px^2 + 6x + 5 = 0$  has equal roots.

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1. Selvis house has an overhead tank in the shape of a cylinder. This is filled by pumping water from a sump (an underground tank) which is in the shape of a cuboid. The sump has dimensions  $1.57m \times 1.44m \times 95cm$ . The overhead tank has its radius 60 cm and height 95 cm. Find the height of the water left in the underground tank after the overhead tank has been completely filled with water from underground tank which had been full. Compare the capacity of both the tanks. (take  $\pi = 22/7$ )

A. 1:2

B. 2:1

C. 1:4

D. 4: 1

**Answer:**



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2. Dimensions of cylindrical overhead tank are, radius = 6m and height = 7m. If it is to be painted to save it from corrosion, how much area needs to be painted?



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3. Dimensions of cylindrical overhead tank are, radius = 6m and height = 7m. The capacity (in litres) of the

overhead tank is



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4. Dimensions of cylindrical overhead tank are, radius = 6m and height = 7m. If water is filled in at the rate of 20 litre per minute, the tank will be completely filled in how much time?



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**Part B Section Iii**

1. Determine the AP whose 3<sup>rd</sup> term is 5 and the 7<sup>th</sup> term is 9.



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2. Find the zeros of  $2x^2 - 5x + 3$ .



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



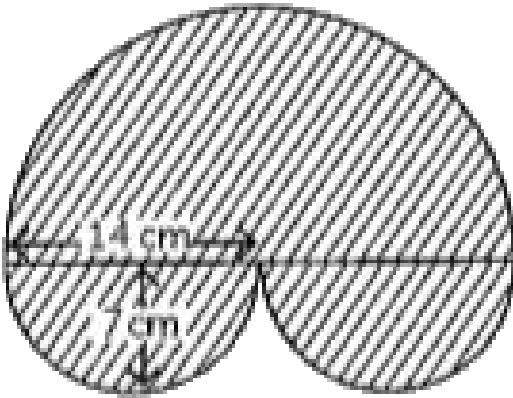
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4. Find the third vertex of a triangle, if two of its vertices are at  $(-3, 1)$  and  $(0, -2)$  and the centroid is at the origin.



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5. Find the area of the shaded region:



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6. A dice is thrown and the outcomes are noted. Find the probability that:  
composite number is obtained



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7. Two dice are thrown simultaneously and the outcomes are noted. Find the probability that:  
sum of numbers on the two dice is 5.



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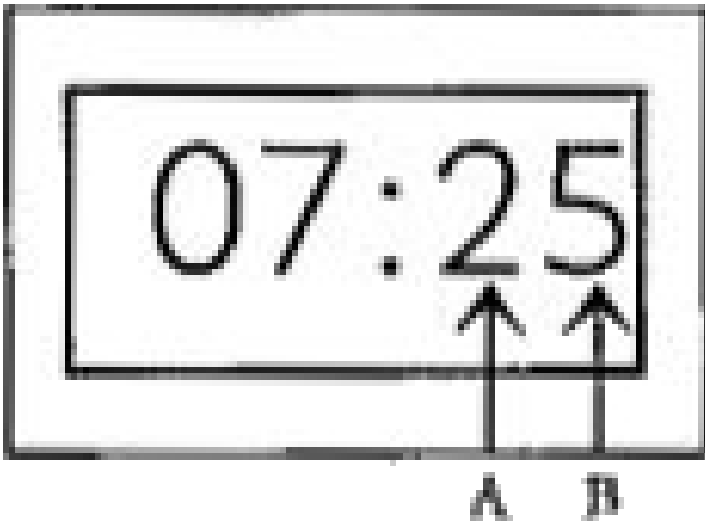
8. If 0.3528 is expressed in the form of  $\frac{p}{2^m 5^n}$  find the smallest values of m, n and p.



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9. Amrish wakes up in the morning and notices that his digital clock reads 07:25 am. After noon, he looks at the clock again.

What is the probability that the number in column A is 4 ?

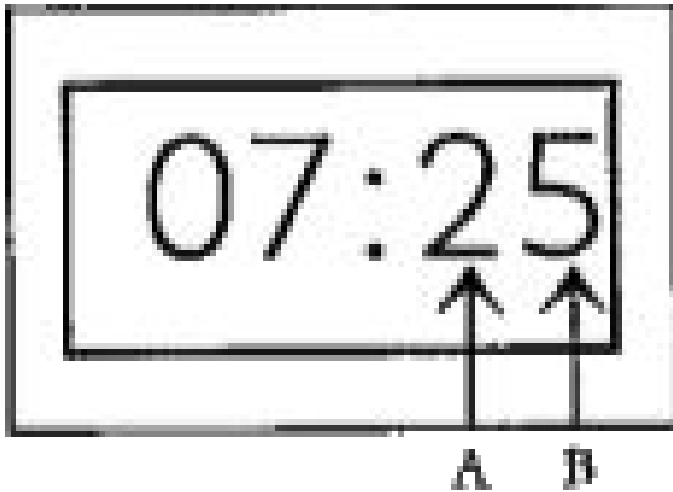


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10. Amrish wakes up in the morning and notices that his digital clock reads 07:25 am. After noon, he looks at the clock again.

What is the probability that the number in column B is 8?



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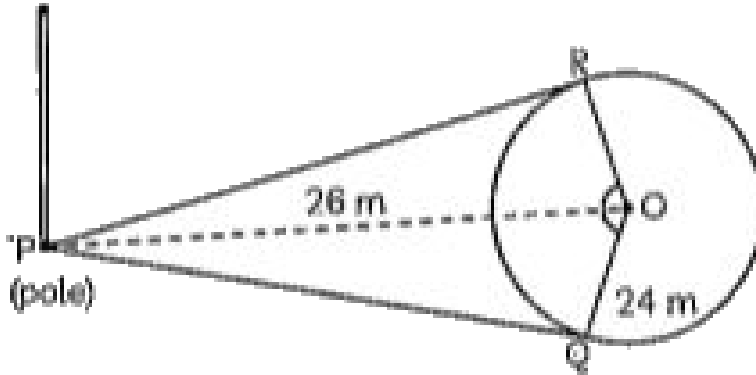
1. In a morning walk, three persons step off together and their steps measure  $40\text{cm}$ ,  $42\text{cm}$  and  $45\text{cm}$ , respectively. What is the minimum distance each should walk so that each can cover the same distance in complete steps?



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2. There is a circular park of radius  $24\text{ m}$  and there is a pole at a distance of  $26\text{ m}$  from the centre of the park as shown in the figure. It is planned to enclose the park by planting trees along line segments  $PO$  and  $PR$

tangential to the park.



Find the length of PQ and PR.

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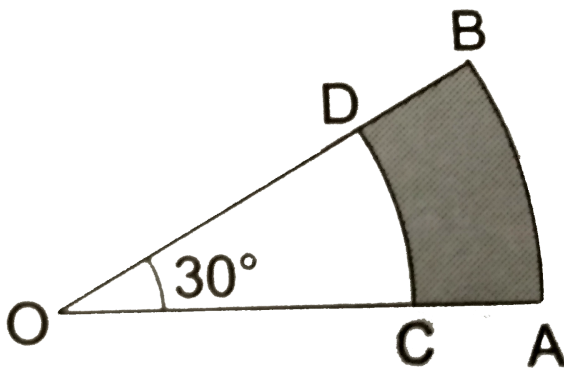
3. The perpendicular from A on side BC of a  $\triangle ABC$  intersects BC at D such that  $DB = 3 CD$ . Prove that  $2AB^2 = 2AC^2 + BC^2$ .

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

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5. In the give figure, the sectors of two concentric circles of radii 7 cm and 3.5 cm are shown. Find the area of the shaded region.



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6. The mean of the following frequency distribution is 62.8 and the sum of all frequencies is 50. Compute the missing frequencies  $f_1$  and  $f_2$ :



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7. Solve for  $x$  and  $y$  :

$$7x - 4y = 49, 5x - 6y = 57$$



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8. The sum of the reciprocals of Rehman's ages, (in years) 3 years ago and 5 years from now is  $\frac{1}{3}$ . Find his present age.



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9. A natural number when increased by 12, equals 160 times its reciprocal. Find number.



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10. A number consists of two digits. When it is divided by the sum of its digits, the quotient is 6 with no

remainder. When the number is diminished by 9, the digits are reversed. Find the number.



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**11.** Two poles of equal heights are standing opposite each other on either side of the road, which is 80 m wide. From a point between them on the road, the angles of elevation of the top of the poles are  $60^\circ$  and  $30^\circ$ , respectively. Find the height of the poles.



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12.

Prove

that:

$$\left( \frac{\tan \theta}{1 - \tan \theta} \right) - \left( \frac{\cot \theta}{1 - \cot \theta} \right) = \frac{\cos \theta + \sin \theta}{\cos \theta - \sin \theta}$$



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13. If a dice is thrown once then find the probability of getting

(i) an odd number

(ii) an even number



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