Tender Heart High School, Sector 33B, Chd.

Class : 10th Date : 9.12.2024

Subject : Mathematics Teacher : Ms. Reena

REVISION

Practice Paper 2

Ques1

(a) Given $A = \begin{bmatrix} p & 0 \\ 0 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 0 & -q \\ 1 & 0 \end{bmatrix}$, $C = \begin{bmatrix} 2 & -2 \\ 2 & 2 \end{bmatrix}$ and $BA = C^2$. Find the values of p and q.

(b) Prove the identity :-

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

(c) Ria purchased a mobile phone for ₹ 37170, which includes a discount of 10% on the printed price and 18% GST on the remaining price. Find the printed price of the mobile phone.

Ques2

(a) If $\frac{b+c-a}{y+z-x} = \frac{c+a-b}{z+x-y} = \frac{a+b-c}{x+y-z}$, then prove that each ratio is equal to $\frac{a}{x} = \frac{b}{y} = \frac{c}{z}$.

(b) Find the value of p for the following distribution whose mean is 10 :-

Variate (x_i)	5	7	9	11	13	15	20
Frequency (f_i)	4	4	p	7	3	2	1

(c) Find the image of the point $P(-3, 1)$ in the line $2x - 3y = 4$

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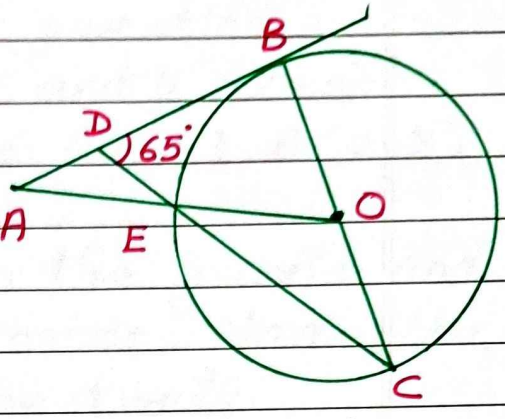
Question 3

(a) In the given figure, O is the centre of the circle and AB is a tangent to it at point B. If $\angle BDC = 65°$, find $\angle BAO$.

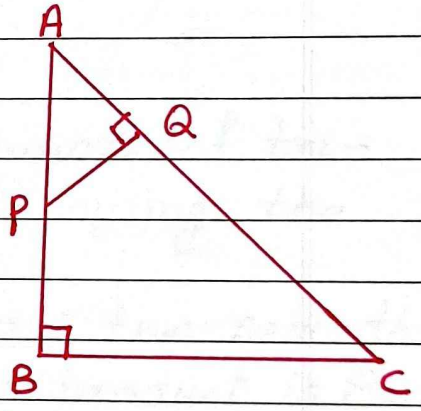


(b) If the replacement set is the set of integers lying between -3 and 10, find the solution set of $14 - 5x \geq 3x - 40$. Also represent the solution set on the number line.

(c) In ΔABC, $AB = 8cm$, $AC = 10cm$ and $\angle B = 90°$. P and Q are points on the sides AB and AC respectively such that $PQ = 2cm$ and $\angle PQA = 90°$, find

(i) the area of ΔAQP

(ii) area of quad. PBCQ : area of ΔABC.



Question 4

(a) In an A.P., if $S_n = n(4n+1)$, find the A.P.

(b) Shobana has a cumulative time deposit account in State Bank of India. She deposits ₹500 per month for a period of 4 years. If at the time of maturity she gets ₹28410, find the rate of interest.

(c) Use a graph paper for this question.
(Take 1 cm = 1 unit on both x and y axes).
(i) Plot the following points: A(0,4), B(2,3), C(1,1) and D(2,0)
(ii) Reflect points B, C, D on the y-axis and write down their coordinates. Name the images as B', C', D' respectively.
(iii) Join the points A, B, C, D, D', C', B' and A in order, so as to form a closed figure. Write down the equation of the line symmetry of the figure formed.

Question 5

(a) Find the coordinates of the points of trisection of the line segment joining the points A(-4,3) and B(2,-1)
(b) The sum of the third term and the seventh terms of an A.P. is 6 and their product is 8. Find the sum of first sixteen terms of the A.P.
(c) Find the equations of the diagonals of a rectangle whose sides are $x = -1$, $x = 4$, $y = -1$ and $y = 2$

Question 6

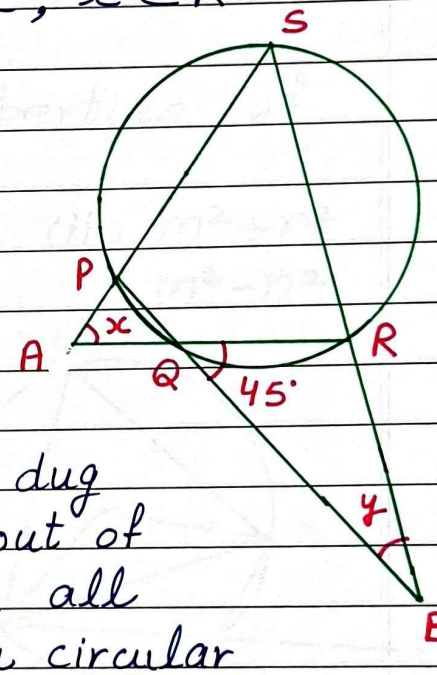
(a) Mr. Ramesh has a recurring deposit account in a bank for 3 years at 7.5% p.a. simple interest. If he gets ₹8325 as interest at the time of maturity, find :-

(i) the monthly deposit (ii) the maturity value.

(b) Solve the given inequation and represent the solution set on the number line :-

$$4x - 19 < \frac{3x}{5} - 2 \leq -\frac{2}{5} + x, \quad x \in R$$

(c) In the adjoining figure, $\angle BQR = 45°$ and $x = 2y$. Calculate the values of x and y.



Question 7

(a) A well of diameter 3m is dug 14m deep. The earth taken out of it has been spread evenly all around it in the shape of a circular ring of width 4m to form an embankment. Find the height of the embankment.

(b) The table shows the distribution of scores obtained by 160 shooters in a shooting competition. Use a graph sheet and draw an ogive for the distribution.

Scores	0-10	10-20	20-30	30-40	40-50	50-60
No. of shooters	9	13	20	26	30	22

60-70	70-80	80-90	90-100
15	10	8	7

Use graph to estimate (i) median
(ii) Inter quartile range.

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Question 8

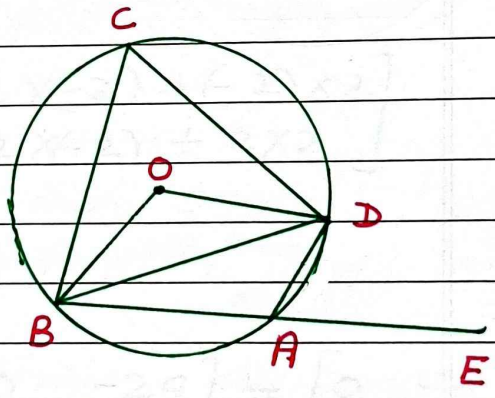
(a) Water flows at the rate of 10 m/minute through a cylindrical pipe 5 mm in diameter. How long will it take to fill a conical vessel whose diameter at the base is 40 cm and depth 24 cm?

(b) If $\frac{7m+2n}{7m-2n} = \frac{5}{3}$, use properties of proportion to find (i) $m:n$ (ii) $\frac{m^2+n^2}{m^2-n^2}$

(c) In the adjoining figure, O is the centre of the circle. $\angle DAE = 70°$. Find giving suitable reasons the measure of (i) $\angle BCD$

(ii) $\angle BOD$

(iii) $\angle OBD$



OR

A motor boat whose speed is 15 km/hr in still water goes 36 km upstream and comes back to the starting point in 5 hours. Find the speed of the stream.

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