MATHS

BOOKS - SELINA MATHS (ENGLISH)

REVISION PAPER -5

Section A

1. Find the amount of bill the following inter-state transaction of goods/services:

MRP (in ₹)	950	1,200	1,500	1,800
Discount%	32	30	28	40
GST%	28	12	18	5

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2. The maturity of a cumulative deposite amount is Rs 31,800 in 2 years. If the rate of interest is 10% per annum, find the monthly instalment of this deposit.

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3. Find how many terms of the series $17 + 15 + 13 + \ldots\ldots$ must be added to get sum equal to 72 ?

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4. What number should be added to $27x^3 - 54x^2 + 36x - 11$ so that resulting polynomial becomes divisible by $3x - 2$?

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5. If $P(9a - 2, -b)$ divides the line segment joining the points $A(31 + 1, -3)$ and $B(81, 5)$ in the ratio $3:1:$ Find the values of a and b.

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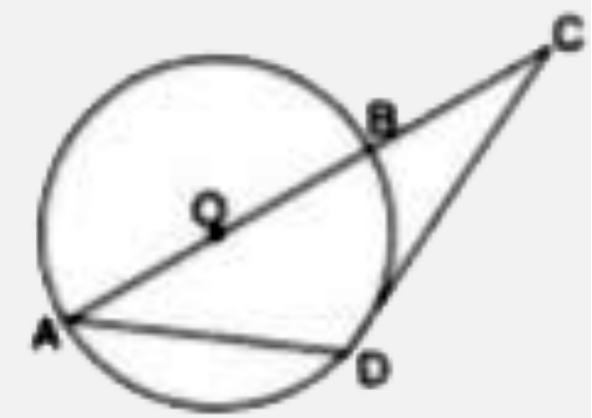
6. In the given AB is a diameter and DC is tangent which meets AB produced at point. C . If $\angle DAC = x^\circ$, find in terms of x° :



$\angle DCB$

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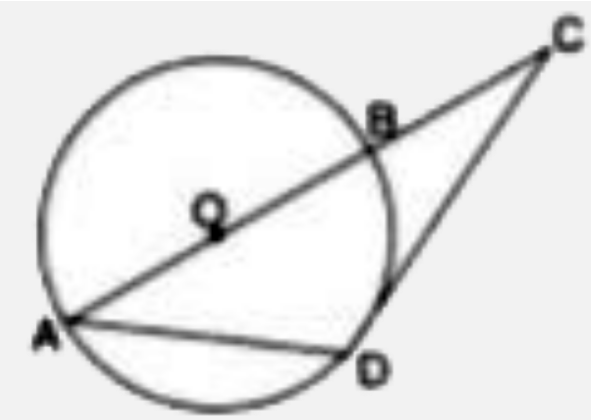
7. In the given AB is a diameter and DC is tangent which meets AB produced at point. C . If

$\angle DAC = x^\circ$, find in terms of x° :



$\angle DBC$

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8. Prove that the locus of a point equidistant from the extermities of a line segment is the perpendicular bisector if it.

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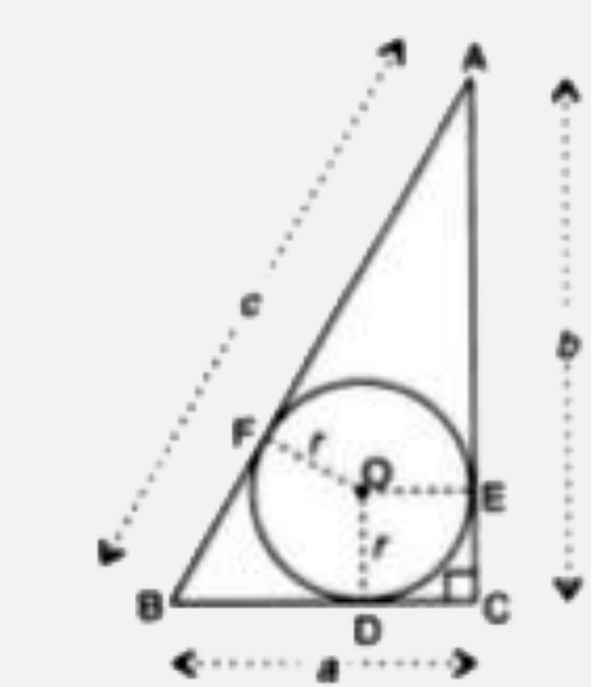
9. If a,b and c are sides of a ritht triangle where c is the hypotenuse, prove that the radius of the circle which touches the sides of the triangle is $r = \frac{a+b-c}{2}$.



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10. If one G.M., G and two A.M's p and q be inserted between two given numbers, prove that

$G^2 = (2p - q)(2q - p)$

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11. Find x, if

$: \sin 47^\circ \sec 43^\circ + \cos 43^\circ \cos ec47^\circ - x \cos^2 45^\circ = 0.$

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12. $A(8, 0), B(0, -8)$ and $C(-16, 0)$ are the vertices of a triangle ABC. If P is in AB and Q is in AC such that $AP:PB = AQ:QC = 3:5$, show that $8PQ = 3BC$.

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13. Find the value of x, if the mean of the following distribution is 18.

Date	13	15	17	19	20 + x	23
Frequency	8	2	3	4	5x	6

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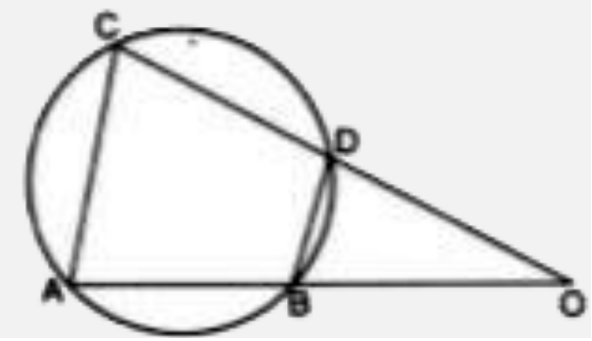
Section B

1. In the given chords A B and CD of circle are produced to meet at O. Prove that triangles ODB and OA are similar. Given that $CD = 2cm, DO = 6cm$ and $BO = 3cm,$ calculate AB. Also find: $\frac{\text{are of quad. CABD}}{\text{area of } \Delta CAO}$



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2. If $M \times [(3, 2, (2, -1)] = [-14]$, find :

the order of matrix M.

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3. If for two matrices M and N, N = $\begin{bmatrix} 3 & 2 \\ 2 & -1 \end{bmatrix}$ and product $M \times N = [-14]$, find matrix M.

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4. The diamter of a closed cylinder is 7 cm and its heght is 16 cm. Find:

the lateral surface area of the cylinder.

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5. The diamter of a closed cylinder is 7 cm and its heght is 16 cm. Find:

the total surface area of the cylinder.

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6. The diamter of a closed cylinder is 7 cm and its heght is 16 cm. Find:

the volume of the cylinder .[Take $\pi = \frac{22}{7}$]

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7. From a point of observation at the top of a 175 m high cliff, the angles of depression of two objects are x° and y° such that $\tan x^\circ = 2.5$ and $\tan y^\circ = 1.4$. If the point of observation and the two objects are long the same straight line, find the distance betwen the two objects if they are on the :

same side of the cliff

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8. From a point of observation at the top of a 175 m high cliff, the angles of depression of two objects are x° and y° such that $\tan x^\circ = 2.5$ and $\tan y^\circ = 1.4$. If the point of observation and the two objects are long the same straight line, find the distance betwen the two objects if they are on the :

opposite sides of the cliff.

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9. If $P(x, y)$ is any point on the line joining the point $A(a, 0) and B(0, b)$, then show that

$\frac{x}{a} + \frac{y}{b} = 1.$

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10. Show that , if $A = \begin{bmatrix} 1 & 3 \\ 2 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 4 \\ 2 & 1 \end{bmatrix}$ then $: (A + B)^2 \neq A^2 + 2AB + B^2.$

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11. Prove that angle in the same segment of a circle are equal.

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12. On a graph paper, plot the triangle ABC whose vertices are at the points, $A(4, 2), B(4, -1)$ and $C(6, 3)$. On the same graph, draw the image of the triangle ABC under reflection in the line $x = 2$. Mark any two pints on the graph paper which are invariant under this reflection. Also, write the co-ordinates of points marked.

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13. The point P divides the joining of $(2, 1)$ and $(-3, 6)$ in the ratio $2:3$. Doep P lie on the line x - 5y + 15=0 `?

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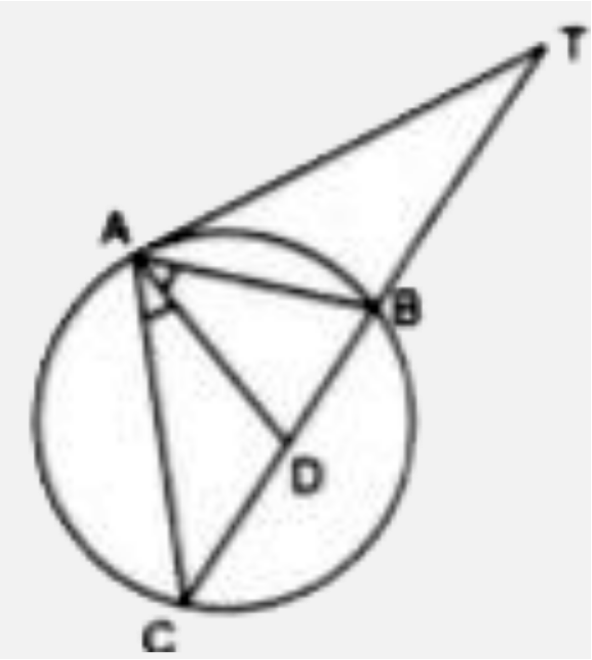
14. In the given TA is a tangent to the cirlce and TBC is a secant. If AD bisects angle BAC, prove that:

ΔADT is isosceles.



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15. The ends of a diagonal of a square have co-ordinates $(-2, p)$ and $(p, 2)$. Find p, if the area of the square is 40 sq. units.

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16. If have shares of three companies A,B and C in the ratio $2:3:4$. Company A pays 20% divident when its Rs 250 share is availabe for Rs 310 . Company B pays 18% divident when its Rs 100 share is available in the market for Rs 112. Company C pays 15% divident when its Rs 50 share is available in the maket for Rs 43. If on the whole, I earn Rs 55,200 as divident from these shares, find the number of shares of each company that I have and the total market value of these shares.

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17. Tickets numbered from 1 to 20 are mixed up together and then a ticket is drawn at random. What is the probability that the ticket has a number, which is a multiple of 3 or 5 ?

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18. A solid toy is in the form of a right circular cylinder with a hemispherical shape at one end and a cone at the other end. Their common diameter is 4.2 cm. and the height of the cylindrical and conical

portions are 12 cm and 7 cm respectively. Find the volume of the solid toy. (Use $\pi = 22/7$)

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19. The surface area of a solid metallic sphere is 1 $0256cm^2$. It is melted and recast into solid right circular cones each of radius 2.5 cm and height 8 cm. Find the number of cones formed [Take $\pi = 3.14$].

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20. The marks obtained (out of 100) by 400 students in an examination are given below:

Marks	No. of students	Marks	No. of students
0-10	10	50-60	76
10-20	20	60-70	80
20-30	22	70-80	58
30-40	40	80-90	28
40-50	54	90-100	12

Using a graph paper, draw an ogive for the above distribution. Use ogive to estimate the following: estimate the median.

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21. The marks obtained (out of 100) by 400 students in an examination are given below:

Marks	No. of students	Marks	No. of students
0-10	10	50-60	76
10-20	20	60-70	80
20-30	22	70-80	58
30-40	40	80-90	28
40-50	54	90-100	12

Using a graph paper, draw an ogive for the above distribution. Use ogive to estimate the following: estimate the number of students who obtained more than $80\,\%$ marks in the examination.

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22. The marks obtained (out of 100) by 400 students in an examination are given below:

Marks	No. of students	Marks	No. of students
0-10	10	50-60	76
10-20	20	60-70	80
20-30	22	70-80	58
30-40	40	80-90	28
40-50	54	90-100	12

Using a graph paper, draw an ogive for the above distribution. Use ogive to estimate:

the number of students who did not pass if the pass percentage was 35.

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23. If $49 - 5x \leq 27 - x,$ find,

the smallest value of x, when x is a real number.

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24. If $49 - 5x \leq 27 - x,$ find,

the smallest value of x, when x is an integer.

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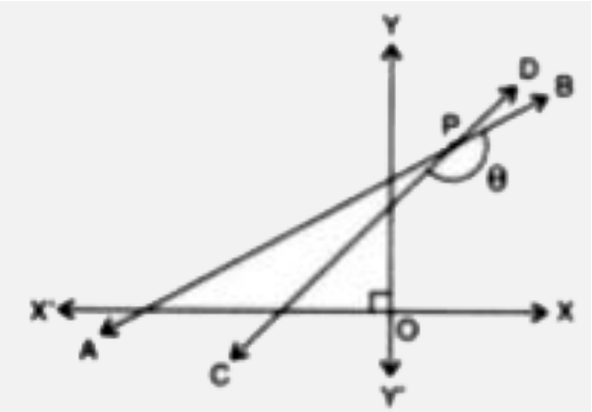
25. The drawn alongiside (not drawn to scale) shows two stragit lines AB and CD. If the equation of line AB is: $x - \sqrt{3}y + 5 = 0$ and the equation of line CD is : $x - y = 2,$ write down the inclinations of lines

AB and CD, also find the angle θ i.e., angle CPB.



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26. If $\cos ec\theta . \cos(\theta + 54^\circ) = 1,$ find the value of θ

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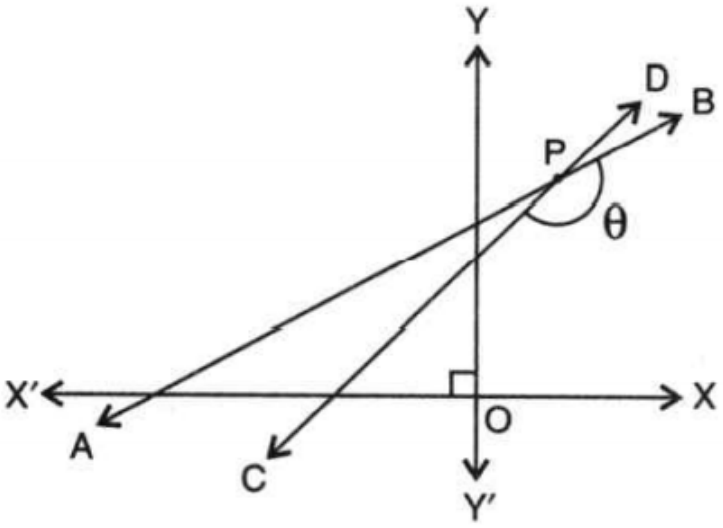
27. (a) the figure drawn alongside shows two straight lines AB and CD . if the equation of the line AB is $x - \sqrt{3}y + 5 = 0$ and the equation of the line CD is $x - y = 2$. write down the inclination of lines AB and CD; also find the angle θ i.e angle CPB

(b) if $\operatorname{cosec}\theta . \cos(\theta + 54^\circ) = 1$.find the value of θ so that θ and $(\theta + 54^\circ)$ are acute angles.



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28. Solve using formula : $6x^2 - 35x + 50 = 0$

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