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India's Number 1 Education App

MATHS

BOOKS - SELINA MATHS (ENGLISH)

REVISION PAPER -2

Section A

1. In what ratio does the line x - y - 2 = 0 divide the line segment joining the points (3.-1) and

(8,9) ? Also, find the co-ordinates of the point of intersection.

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2. Find the fourth proportional to 2a, 3b and 4c.

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3. Find the mean proportional to x - y and $(x-y)^3$

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4. Find

the third proportional to a + b and $\sqrt{a^2 - b^2}$

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5. Using remainder theorem, factorise : $x^3 + 7x^2 - 21x - 27$ Completely and then solve $x^3 + 7x^2 - 21x - 27 = 0$

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6. Find the 99^{th} term of the series $: 7\frac{3}{4}, 9\frac{1}{2}, 11\frac{1}{4}, \ldots\ldots$

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7. Metallic spheres of diameters 12 cm, 16 cm and 20 cm respectively, are melted to form a single solid sphere. Find the radius of the resulting sphere.

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8. If A = $\begin{bmatrix} 0 & 4 \\ 1 & 0 \end{bmatrix}$, $B = \begin{bmatrix} -2 & 0 \\ 3 & -2 \end{bmatrix}$ and $C = \begin{bmatrix} -1 & -2 \\ 2 & 0 \end{bmatrix}$ show that : (B- C) A = BA - CA

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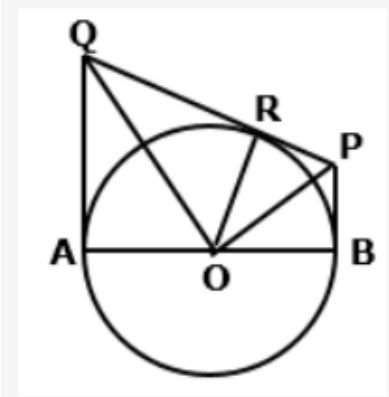
9. In the given figure, AB is diameter of the circle with centre O. AQ, BP and PRQ are tangents. Prove that OP and OQ are

perpendicular to each other.



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10. In the inequation $2 + \frac{3x - 1}{5} \leq \frac{2x - 1}{4} + 3,$ write the greatest value of x, when

x is a natural number

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11. In the inequation $2 + \frac{3x - 1}{5} \leq \frac{2x - 1}{4} + 3$, write the greatest value of x, when

x is a natural number

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12. Find the missing frequencies in the following distribution table. It is given that the mean of these distributions is 56 and their

total is 90 i.e., $\sum f = 90$

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13. Ramesh deposits 2,400 per month in a recurring deposit scheme of a bank for one year. If he gets 1248 as interest at the time of maturity, find the rate of interest Also, find the maturity value of this deposit.

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14. A(-2, 4) and B(-4, 2) are reflected in the y-axis. If A and B' are images of A and B respectively.

Find the co-ordinates of A' and B'

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15. A(-2, 4) and B(-4, 2) are reflected in the y-axis. If A and B' are images of A and B respectively.

Assign a special name to quadrilateral AA' B'B

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16. A(-2, 4) and B(-4, 2) are reflected in the y-axis. If A and B' are images of A and B respectively.

State whether AB' = BA'

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17. A lot consists of 144 ball pens of which 20 are defective. A customer will buy a pen only if it is not defective. The shopkeeper draws one

pen at random and gives it to the customer. What is the probability that:

the customer will buy it?

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18. A lot consists of 144 ball pens of which 20 are defective. A customer will buy a pen only if it is not defective. The shopkeeper draws one pen at random and gives it to the customer. What is the probability that:

the customer will buy it?

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19. Prove that :

$$\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} = \frac{1}{\sec\theta - \tan\theta}$$

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20. The arithmetic mean between a and b is twice the geometric mean between a and b. Prove that : $\frac{a}{b} = 7 + 4\sqrt{3}$ or $7 - 4\sqrt{3}$

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21. A dealer from Banaras supplies goods/services, worth 1,00,000 to a dealer in Banglore at 30% discount. If the rate of GST is 5%, find the amount of bill in Banglore.

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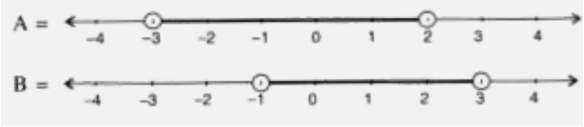
22. The diagrams, given below, represent two inequations A and B on real number line.



(i) Write down A and B in set builder notations.

(ii) Represent $A \cap B$ and $A' \cap B$ on two different numbers lines.

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23. Solve for matrics A and B , where

$$2A + B = \begin{bmatrix} 3 & -4 \\ 2 & 7 \end{bmatrix} \text{ and } A - 2B = \begin{bmatrix} 4 & 3 \\ 1 & 1 \end{bmatrix}$$

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24. Solve the equation 3x2 - X - 7 = 0 and give your answer correct to two decimal places.

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25. Two identical solid cones each of base radius 3 cm with vertical height 5 cm and one more solid cone of base radius 2 cm with vertical height 4.5 cm are jointly melted and recast into a solid sphere. Find : (i) the radius, (ii) curved surface area of the sphere.

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26. The angle of elevation of a cloud from a point h metres above the surface of a lake is θ and the angle of depression of its reflection in the lake is ϕ. Prove that the the height of the cloud above the lake surface is $: h\left(\frac{\tan\phi + \tan\theta}{\tan\phi - \tan\theta}\right)$

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27. A man desires to have an annual income of 36,000 from 18% at a premium of 20%. How

much should he invest?

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28. As shown in the given figure, from an external point P, a tangent PT and a line segment PAB are drawn to a circle with centre O. ON is perpendicular on the chord AB, Prove that

$PA.PB = PN^2 - AN^2$

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29. As shown in the given figure, from an external point P, a tangent PT and a line segment PAB are drawn to a circle with centre O. ON is perpendicular on the chord AB, Prove that

$$PN^2 - AN^2 = OP^2 - OT^2$$

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30. If $x = \dfrac{\sqrt{2a+1} + \sqrt{2a-1}}{\sqrt{2a+1} - \sqrt{2a-1}}$, prove that $x^2 - 4ax + 1 = 0$

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31. Find the co-ordinates of the point Q on x-axis which lies on the perpendicular bisector of the line segment joining the points A(-5.-2) and B(4.-2). Name the type of the triangle QAB.

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32. Two pipes running together can fill a tank in $11\frac{1}{9}$ minutes. If one pipe takes 5 minutes

more than the other to fill the tank separately, find the time in which each pipe would fill the tank separately.

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33. A person bought a certain number of pens for 800. If he had bought 4 pens more for the same money, he would have paid 10 less for each pen. How many pens did he buy?

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34. Using ruler and compasses only, construct a triangle ABC in which angle ABC = 45°, AB = 8.6 cm and BC = 9.8 cm

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35. Using ruler and compasses only, construct construct a circle of radius 2.5 cm which touches the arms of the angle BAC of ΔABC.

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36. The marks obtained by 120 students in a Mathematics test are given below:

Marks	No. of students	Marks	No. of students
0-10	5	50-60	18
10-20	9	60-70	11
20-30	16	70-80	6
30-40	22	80-90	4
40-50	26	90-100	3

Using the informations, given above, draw an ogive on a graph sheet. Take a suitable scale for your ogive. Use the ogive drawn to estimate :

(i) the median.

(ii) the number of students who obtained more than 75% marks in the test.

(iii) the number of students who did not pass in the test if the pass percentage was 40.

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37. Find the coordinates of the circumcentre of the triangle whose vertices are $(3,\ 0),\ (-1,\ -6)$ and $(4,\ -1)$. Also, find its circumradius.

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38. ABC is a right-angled triangle with the right angle at vertex B. BD is the altitude through B.

Given BD = 12 cm and AD = 9 cm.

Calculate AB .

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39. ABC is a right-angled triangle with the right angle at vertex B. BD is the altitude through B.given BD=12cm and AD=9cm.

Name the triangles which are similar to triangle ADB (Proof not required).

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40. ABC is a right-angled triangle with the right angle at vertex B. BD is the altitude through B. Given BD = 12 cm and AD = 9 cm.

Find AC.

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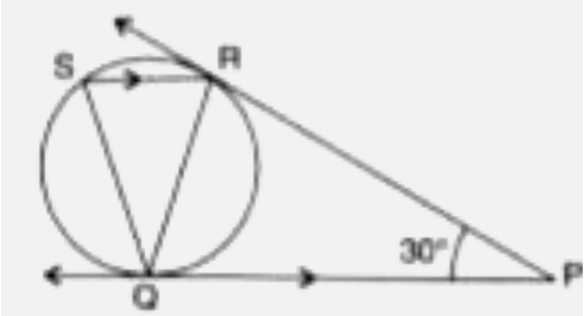
Section B

1. In the given figure, tangents PQ and PR are drawn to a circle such that angle RPQ = 30°. A chord RS is drawn parallel to the tangent PQ.

Find the angle RQS.



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