# MATHS

## BOOKS - SELINA MATHS (ENGLISH)

## CHAPTERWISE REVISION EXERCISE

Chapterwise Revision Exercise Gst Good Services Tax

**1.** Find the amount of bill for the following intra-state transaction of goods/services. The rate of GST being 12%:

| MRP (in ₹) | 600 | 450 | 900 | 750 |
|---|---|---|---|---|
| Discount% | 40 | 32 | 20 | 30 |

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**2.** Find the amount of bill for the following inter-state transaction of goods/ services. The rate of GST being 5%.

| MRP (in ₹) | 9,600 | 6,000 | 10,800 | 9,000 | 7,200 |
|---|---|---|---|---|---|
| Discount % | 20 | 50 | 40 | 30 | 40 |

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**3.** Find the amount of bill for the following transaction of goods/services from Patna (Bihar) to Ajmer (Rajasthan):

| GST % | 18 | 18 | 12 | 12 |
|---|---|---|---|---|
| MRP (in ₹) | 12,000 | 15,000 | 5,200 | 8,000 |
| Discount % | 30 | 40 | 30 | 40 |

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**4.** Find the amount for the following transation of goods/serives within Gujarat:

| MRP (in ₹)/item | 300 | 600 | 480 |
|---|---|---|---|
| Number of items | 40 | 50 | 70 |
| GST% | 12 | 12 | 18 |

**5.** A dealer in Kanpur (U.P) supplies goods worth Rs 5,000 to a dealer in Meerut (U.P). The dealer in Meerut supplies the same goods/services to a dealer in Delhi at a profit of Rs 2,000. Find the cost of goods/services in Delhi as per GST system. The rate of GST is 18%.

**Chapterwise Revision Exercise Banking**

**1.** Ashok deposits Rs 3,200 per month in a cumulative deposit account for 3 years at the rate of 9% per annum. Find the maturity value of this account.

**2.** Mrs. Karna has a recurring deposit account in Punjab National Bank for 3 years at 8% p.a. If she gets Rs 9,990 as interest at the time of maturity, Find:

**3.** Mrs. Karna has a recurring deposit account in Punjab National Bank for 3 years at 8% p.a. If she gets Rs 9,990 as interest at the time of maturity, Find:

(a) the monthly installment (b) the maturity level

**4.** A man has a 5 year recurring deposit account in a bank and deposits Rs 240 per month. If he receives Rs 17,694 at the time of maturity, find the rate of interest.

**5.** Sheela has a recurring deposit account in a bank of Rs 2,000 per month at the rate of 10% per annum. If she gets Rs 83,100 at the time of maturity, find the total time (in years) for which the account was held.

**6.** A man deposits Rs 900 per month in a recurring account for 2 years. If he gets Rs 1,800 as interest at the time of maturity, find the rate of interest.

**Chapterwise Revision Exercise Shares And Dividend**

**1.** What is the market value of $4\dfrac{1}{2}$ % (Rs 100) share, when an investment of Rs 1,800 produces an income of Rs 72?

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**2.** By investing Rs 10,000 in the shares of a company, a man gets an income of Rs 800, the dividend being 10%. If the face-value of each share is Rs 100, Find:

the market value of each share.

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**3.** By investing Rs 10,000 in the shares of a company, a man gets an income of Rs 800, the dividend being 10%. If the face-value of each share is Rs 100, Find:

the rate percent which the person earns on his investment.

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**4.** A man holds 800 shares of Rs 100 each of a company paying 7.5% dividend semi-annually.

Calculate his annual dividend.

**5.** A man holds 800 shares of rupes 100 each of a company paying 7.5% divided semi - annually.

If he had bought these shares at 40% premium. What percentage return does he get on his investment?

**6.** A man invests Rs 10,560 in a company, paying 9% dividend, at the time when its Rs 100 shares can be bought at a premium of Rs 32. Find:

the number of shares bought by him

**7.** A man invests Rs 10,560 in a company, paying 9% dividend, at the time when its Rs 100 shares can be bought at a premium of Rs 32. Find: his annual income from these shares and

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**8.** A man invests Rs 10,560 in a company, paying 9% dividend, at the time when its Rs 100 shares can be bought at a premium of Rs 32. Find: the rate of return on his investment.
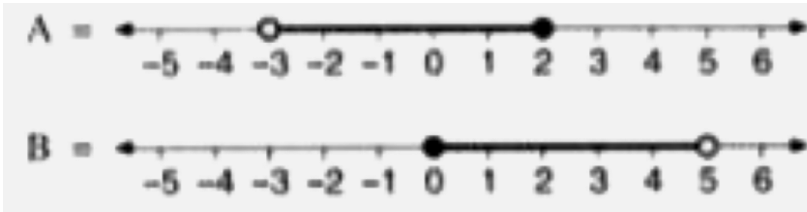
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**9.** Find the market value of 12% Rs 25 shares of a company which pays a dividend of Rs 1,875 on an investment of Rs 20,000
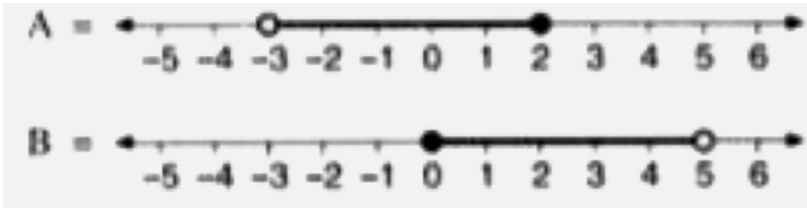
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**1.** The given diagram represents two sets A and B on real number lines.



Write down A and B in set-builder notation.

**2.** The given diagram represents two sets A and B on real number lines.



Represent $A \cup B, A \cap B, A' \cap B, A - B$ and $B - A$ on separate number lines.

**3.** Find the values of x, which satisfy the inequation: $-2 \le \frac{1}{2} - \frac{2x}{3} < 1\frac{5}{6}, x \in N$ Graph the solution set on the real number line.

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**4.** Given $20 - 5x < 5(x+8)$, find the smallest value of x when:

$x \in I$

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**5.** Given $20 - 5x < 5(x+8)$, find the smallest value of x when:

$x \in I$

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**6.** Given $20 - 5x < 5(x + 8)$, find the smallest value of x when:

$x \in I$

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**7.** if $x \in Z$, solve: $2 + 4x < 2x - 5 \leq 3x$. Also, represent its solution on the real number line.

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**Chapterwise Revision Exercise Linear Inequations True Or False**

**1.** If $(x - a)(x - b) < 0$, then $x < a$, and $x > b$.

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**2.** If $a < 0$ and $b < 0$, then $(a + b)^2 > 0$.

**3.** If a and b are any two integers such that $a > b$, then $a^2 > b^2$

**4.** If $p = q + 2$ then $p > q$.

**5.** If a and b are two negative integers such that $a < b$ then $\dfrac{1}{a} > \dfrac{1}{b}$.

## Chapterwise Revision Exercise Quadratic Equation

**1.** Solve: $\dfrac{8}{x + 3} - 2 = \dfrac{3}{2 - x}$

**2. (i)** Solve : $\dfrac{x}{3} + \dfrac{3}{6-x} = \dfrac{2(6+x)}{15}, (x \neq 6)$

(ii) Solve the equation $9x^2 + \dfrac{3x}{4} + 2 = 0$, if possible, for real values of x.

**3.** Find the vlaue of k for which the roots of the following equation are

real and equal $k^2 x^2 - 2(2k-1)x + 4 = 0$

**4.** Solve: $\dfrac{x}{a} - \dfrac{a+b}{x} = \dfrac{b(a-b)}{ax}$, when $x \neq 0$ and $a \neq 0$.

**5.** If $-5$ is a root of the quadratic equation $2x^2 + px - 15 = 0$ and the quadratic equation $p(x^2 + x) + k = 0$ has equal roots, find the value of $k$.

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## Chapterwise Revision Exercise Problems On Quadratic Equations

**1.** x articles are bought at Rs $(x - 8)$ each and $(x - 2)$ some other articles are bought at Rs $(x - 3)$ each. If the total cost of all these articles is Rs 76, how many articles of first kind were bought?

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**2.** In a two digit number, the unit's digit exceeds its ten's digit by 2. The product of the given number and the sum of its digits is equal to 144. Find the number.

**3.** The time taken by a person to cover 150km was 2.5 hours more than the time taken in return journey. If he returned at a speed of 10 km/hour more than the speed of going, what was the speed per hour in each direction?

**4.** A takes 9 days more than B to do a certain piece of work. Together they can do the work in 6 days. How many days will A alone take to do the work?

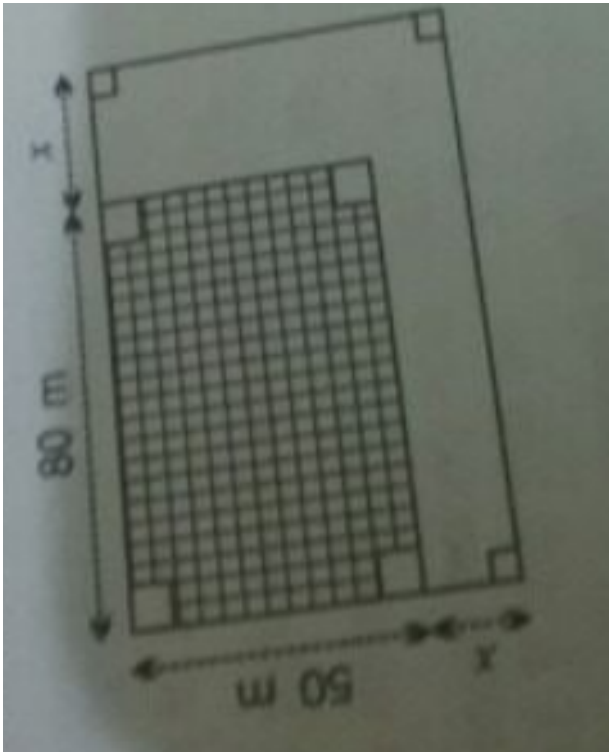**5.** A man bought a certain number of chairs for Rs 10,000. He kept one for his own use and sold the rest at the rate Rs 50 more than he gave for one

chair. Besides getting his own chair for nothing, he made a profit of Rs 450. How many chairs did he buy ?

**6.** In the given figure, the area of unshaded portion is 75% of the area of the shaded portion. Find the value of x.

**1.** Solve for $x$ : $\dfrac{\sqrt{a+x} + \sqrt{a-x}}{\sqrt{a+x} - \sqrt{a-x}} = b$

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**2.** If $a:b = 2:3$, $b:c = 4:5$ and $c:d = 6:7$, find $: a:b:c:d$.

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**3.** 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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**4.** Find the compounded ratio of:

$(a - b):(a + b)$ and $\left(b^2 + ab\right):\left(a^2 - ab\right)$

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**5.** Find the compounded ratio of:

$(x + y) : (x - y), \ (x^2 + y^2) : (x + y)^2 \ \text{and} \ (x^2 - y^2)^2 : (x^4 - y^4)$

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**6.** Find the compounded ratio of:

$(x^2 - 25) : (x^2 + 3x - 10), \ (x^2 - 4) : (x^2 + 3x + 2) \ \text{and} \ (x + 1) : (x^2 + 2$

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**7.** The ratio of the prices of two fans was $16 : 23$. Two years later, when the price of the first fan had risen by 10% and that of the second by Rs 477, the ratio of their prices became $11 : 20$. Find the original prices of the two fans.

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**1.** Given that $x + 2$ and $x - 3$ are factors of $x^3 + ax + b$. Calculate the values of a and b. Also, find the remaining factor.

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**2.** Use the remainder theorem to factorise the expression $2x^3 + x^2 + 7x - 6$. Hence, solve the equation $2x^3 + 9x^2 + 7x - 6 = 0$

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**3.** When $2x^3 + 5x^2 - 2x + 8$ is divided by $(x - a)$ the remainder is $2a^3 + 5a^2$. Find the value of a.

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**4.** What number should be added to $x^3 - 9x^2 - 2x + 3$ so that the remainder may be 5 when divided by $(x - 2)$ ?

**5.** Let $R_1$ and $R_2$ are the remainders when the polynomials $x^3 + 2x^2 - 5ax - 7$ and $x^3 + ax^2 - 12x + 6$ are divided by $x + 1$ and $x - 2$ respecti-vely. If $2R_1 + R_2 = 6$, find the value of $a$.

**Chapterwise Revision Exercise Matrices**

**1.** Find matrix B, if matrix $A = \begin{bmatrix} 1 & 5 \\ 1 & 2 \end{bmatrix}$, matrix $C = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$ and $AB = 3C$

**2.** 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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**3.** If $A = \begin{bmatrix} 3 & 1 \\ 4 & 0 \end{bmatrix}$, $B = \begin{bmatrix} 1 & -2 \\ 2 & 3 \end{bmatrix}$ and $3A - 5B + 2X = \begin{bmatrix} 4 & 3 \\ 0 & 1 \end{bmatrix}$, find the matrix X.

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**4.** Given $A = \begin{bmatrix} 3 & 4 \\ 4 & -3 \end{bmatrix}$ and $B = \begin{bmatrix} 24 \\ 7 \end{bmatrix}$, find the matrix X such that AX= B.

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**5.** Given $A = \begin{bmatrix} 3 & 6 \\ -2 & -8 \end{bmatrix}$ and $B = [-2 \quad 16]$, find the matrix X such that XA= B

## Chapterwise Revision Exercise Arithmetic Progression A P

**1.** Find the $15^{th}$ term of the A.P with second term 11 and common difference 9.

**2.** How many threedigit numbers are divisible by 7?

**3.** Find the sum of terms of the A.P: 4, 9, 14,...., 89.

**4.** Daya gets pocket money from his father every day. Out of the pocket money, he saves Rs 2.75 on first day, Rs 3.00 on second day, Rs 3.25 on third day and so on. Find:

the amount saved by Daya on $14^{th}$ day

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**5.** Daya gets pocket money from his father every day. Out of the pocket money, he saves Rs 2.75 on first day, Rs 3.00 on second day, Rs 3.25 on third day and so on. Find:

the amount saved by Daya on $30^{th}$ day

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**6.** Daya gets pocket money from his father every day. Out of the pocket money, he saves Rs 2.75 on first day, Rs 3.00 on second day, Rs 3.25 on third day and so on. Find:

the total amount saved by him in 30 days.

**7.** If the sum of first m terms of an A.P is n and sum of first n terms of the same A.P is m, show that sum of first $(m + n)$ terms of it is $-(m + n)$.

## Chapterwise Revision Exercise Geometric Progression G P

**1.** $3^{rd}$ term of a G.P is 27 and its $6^{th}$ term is 729, find the product of its first and $7^{th}$ terms.

**2.** Find 5 geometric means between 1 and 27.

**3.** Find the sum of 10 terms of the series : $96 - 48 + 24. \ldots \ldots \ldots$

**4.** Find the sum of first n terms of:

$4 + 44 + 444 + \text{.......}$

**5.** Find the sum of first n terms of:

$0.7 + 0.77 + 0.777 + \text{.....}$

**6.** Find the value of $0.4\overset{..}{2}\overset{.}{3}$

**1.** Find the values of m and n, in each case, If:

$(4, \ -3)$ on reflection in x-axis gives $( \ -m, n)$.

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**2.** Find the values of m and n, in each case, If:

(m,5) on reflection iny-axis gives $( \ -5, n-2)$

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**3.** Find the values of m and n, in each case, If:

$( \ -6, n+2)$ on reflection in origin gives $(m+3, \ -4)$

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**4.** Points A and B have the co-ordinates $(-2, 4)$ and $(-4, 1)$ respectively. Find:

the co-ordinates of A', the image of A in the line x= 0

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**5.** Points A and B have the co-ordinates $(-2, 4)$ and $(-4, 1)$ respectively. Find:

the co-ordinates of B', the image of B in y-axis.

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**6.** Points A and B have the co-ordinates $(-2, 4)$ and $(-4, 1)$ respectively. Find:

the co-ordinates of A', the image of A in the line x= 0

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**7.** Triangle $OA_1B_1$ is the reflection of triangle OAB in origin, where $A_1(4, -5)$ is the image of A and $B_1(-7, 0)$ is the image of B.

Write down the co-ordinates of A and B and draw a diagram to represent this information.

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**8.** Triangle $OA_1B_1$ is the reflection of triangle OAB in origin, where $A_1(4, -5)$ is the image of A and $B_1(-7, 0)$ is the image of B.

Give a special name to the qudrilateral $ABA_1B_1$. Give reason.

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**9.** Triangle $OA_1B_1$ is the reflection of triangle OAB in origin, where $A_1(4, -5)$ is the image of A and $B_1(-7, 0)$ is the image of B.

Find the co-ordinates of $A_2$, the image of A under reflection in x-axis followed by reflection in y-axis.

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**10.** Triangle $OA_1B_1$ is the reflection of triangle OAB in origin, where $A_1(4, -5)$ is the image of A and $B_1(-7, 0)$ is the image of B.

Find the co-ordinates of $B_2$, the image of B under reflection in y-axis followed by reflection in origin.

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## Chapterwise Revision Exercise Section And Mid Point Formulae

**1.** In what ratio does the point $M(p - 1)$ divide the line segment joining the points $A(1, -3)$ and $B(6, 2)$ ? Hence, find the value of p.

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**2.** $A(-4, 4), B(x, -1)$ and C(6,y) are the vetices of $\triangle ABC$. If the centroid of this triangle ABC is at the origin, find the values of x and y.

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**3.** A (2, 5), B (-1, 2) and C (5, 8) are the co-ordinates of the vertices of the triangle ABC. Points P and Q lie on AB and AC respectively, such that : AP: PB = AQ: QC = 1:2.

Calculate the co-ordinates of P and Q.

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**4.** A (2, 5), B (-1, 2) and C (5, 8) are the co-ordinates of the vertices of the triangle ABC. Points P and Q lie on AB and AC respectively, such that : AP: PB = AQ: QC = 1:2.

Show that : $PQ = \dfrac{1}{3}BC.$

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**5.** Show that the points $(a, b), (a + 3, b + 4), (a - 1, b + 7)$ and $(a - 4, b + 3)$ are the vertices

of a parallelogram.

## Chapterwise Revision Exercise Equations Of Straight Lines

**1.** Given points $A(1, 5), B( - 3, 7)$ and $C(15, 9)$

Find the equation of a line passing through the mid-point of AC and the point B.

**2.** Given points $A(1, 5), B( - 3, 7)$ and $C(15, 9)$

Find the equation of the line through C and parallel to AB.

**3.** Given points $A(1, 5)$, $B(-3, 7)$ and $C(15, 9)$

(i) find the equation of the line passing through the mid point of AC and point B

(ii) find the equation of the line through C and parallel to AB

(iii)The lines obtained in parts (i) and (ii) above, intersect each other at a point P. Find the co-ordinates of the point P.

(iv) assign, giving reason, a special names of the figure PABC

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**4.** Given points $A(1, 5)$, $B(-3, 7)$ and $C(15, 9)$

Find the equation of the line through C and parallel to AB.

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**5.** The line x-4y =6` is the perpendicular bisector of the line segment AB. If B= (1, 3), find the co-ordinates of point A.

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**6.** Find the equation of a line passing through the points $(7, -3)$ and $(2, -2)$. If this line meets x-axis at point P and y-axis at point Q, find the co-ordinates of points P and Q.

**7.** $A(-3, 1)$, $B(4, 4)$ and $C(1, -2)$ are the vertices of a triangle ABC. Find:

the equation of median BD.

**8.** $A(-3, 1)$, $B(4, 4)$ and $C(1, -2)$ are the vertices of a triangle ABC. Find:

the equation of altitude AE.

**9.** Find the equation of prependicular bisector of the line segment joining the points $(4, \ -3)$ and $(3, 1)$.

**10.** If $(p + 1)x + y = 3$ and $3y - (p - 1)x = 4$ are perpendicular to each other, find the vlaue of p.

**11.** If $y + (2p + 1)x + 3 = 0$ and $8y - (2p - 1)x = 5$ are mutually perpendicular, find the value of p.

**12.** The co-ordinates of the vertex A of a square ABCD are (1, 2) and the equation of the diagonal BD is $x + 2y = 10$. Find the equation of the other diagonal and the co-ordinates of the centre of the square.

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**Chapterwise Revision Exercise Similarity**

**1.** M is the mid-point of a line segment AB, AXB and MYB are equilateral triangles on opposite sides of AB, XY cuts AB at Z. Prove that: AZ= 2ZB.

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**2.** In the given figure, if AC=3cm and CB=6cm, find the length of CR.
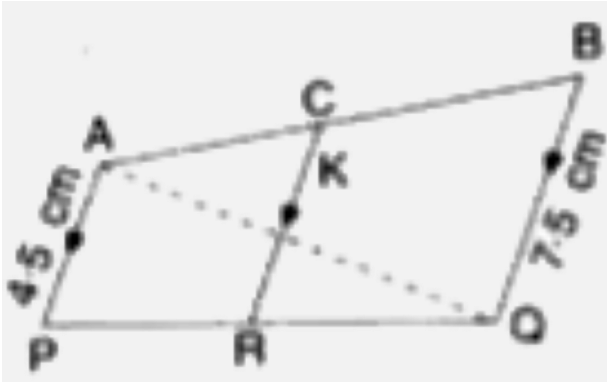
**3.** The given figure shows a trapezium in which AB is parallel to DC and diagonals AC and BD intersect at point O. If $BO:OD = 4:7$, find
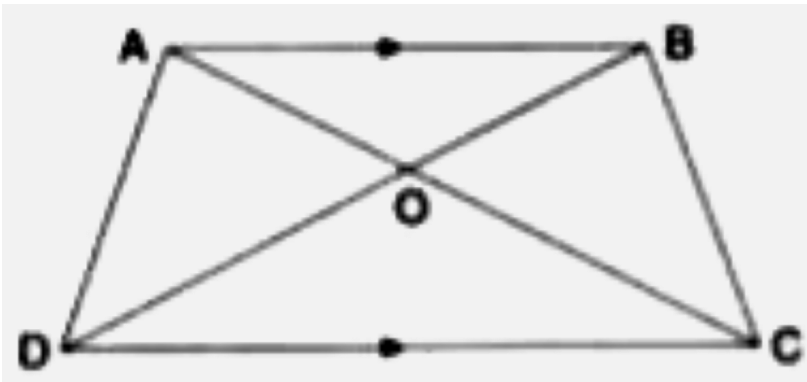


$\Delta AOD:\Delta AOB$

**4.** The given figure shows a trapezium in which AB is parallel to DC and

diagonals AC and BD intersect at point O. If $BO:OD = 4:7$, find
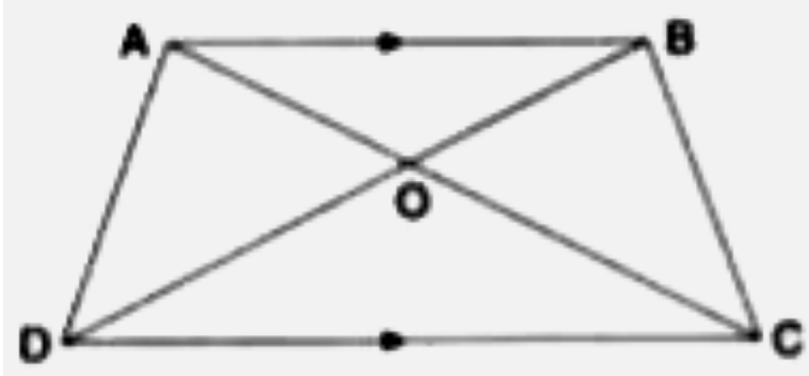


$\triangle AOB : \triangle ACB$

**5.** The given figure shows a trapezium in which AB is parallel to DC and

diagonals AC and BD intersect at point O. If $BO:OD = 4:7$, find
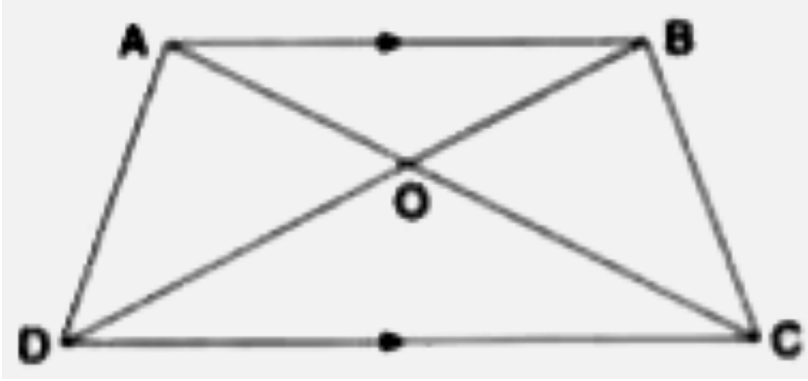
$\triangle DOC : \triangle AOB$

**6.** The given figure shows a trapezium in which AB is parallel to DC and diagonals AC and BD intersect at point O. If $BO : OD = 4 : 7$, find
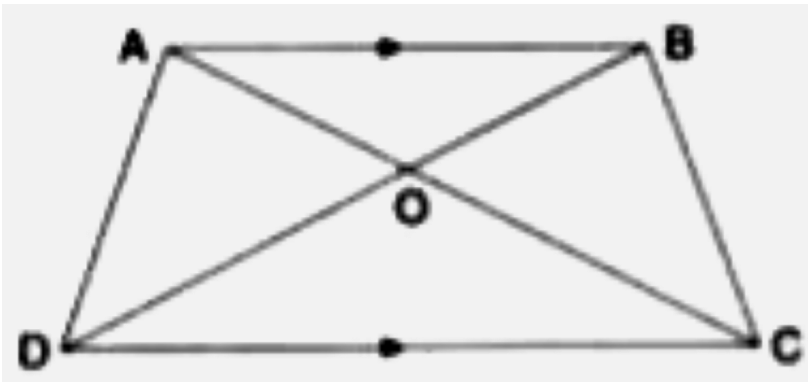


$\triangle ABD : \triangle BOC$

**7.** A model of a ship is made to a scale of $1:160$. Find:

the length of the ship, if the length of its model is 1.2m.

**8.** A model of a ship is made to a scale of $1:160$. Find:

the area of the deck of the ship, if the area of the deck of its model is $1.2m^2$

**9.** A model of a ship is made to a scale of $1:160$. Find:

the volume of the ship, if the volume of its model is $1.2m^3$

**10.** In trapezium ABCD, $AB/DC$ and DC=2 AB. EF, drawn parallel to AB cuts AD in F and BC in E such that 4BE= 3 EC. Diagonal DB intersects FE at point G. Prove that: 7EF= 10AB
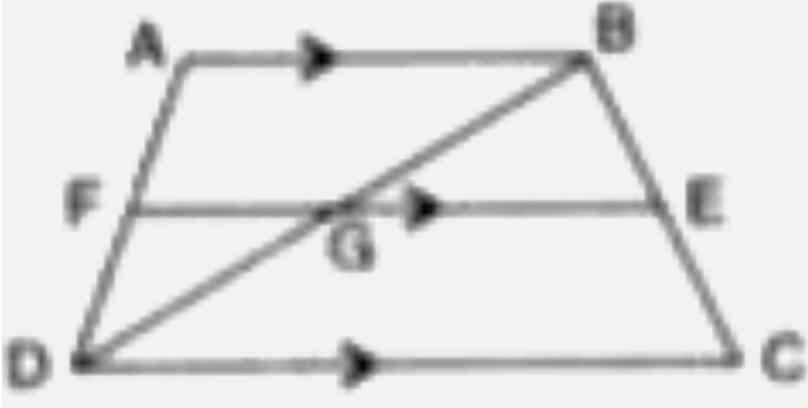
**1.** In triangle ABC, D is mid-point of AB and CD is perpendiicular to AB. Bisector of $\angle ABC$ meets CD at E and AC at F. Prove that:

E is equidistant from A and B

**2.** In triangle ABC, D is mid-point of AB and CD is perpendiicular to AB. Bisector of $\angle ABC$ meets CD at E and AC at F. Prove that:

F is equidistant from AB and BC.

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**3.** Use graph paper for this question. Take 2 cm = 1 unit on both the axes.

Plot th e points A(1, 1), B(5, 3) and C(2, 7).

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**4.** Use graph paper for this question. Take 2cm=1 unit on both the axes.

Construct the locus of points equidistance from A and B.

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**5.** Use graph paper for this question. Take 2cm=1 unit on both the axes.

Construct the locus of points equidistance from A and B.

**6.** Use graph paper for this question. Take 2cm=1 unit on both the axes.

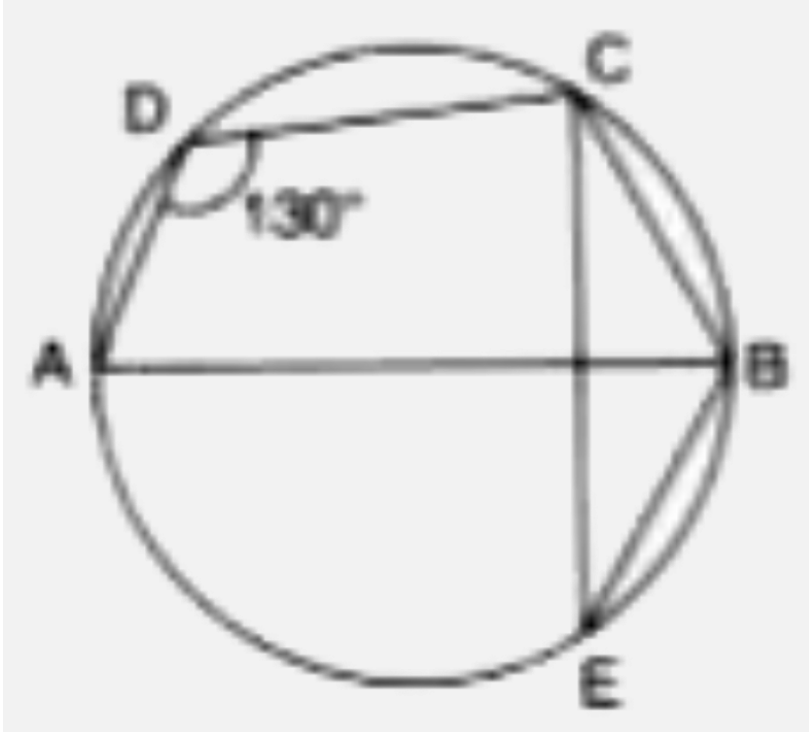Locate the point P such that PA= PB and P is equidistant from AB and AC.

**7.** Use graph paper for this question. Take 2cm=1 unit on both the axes.
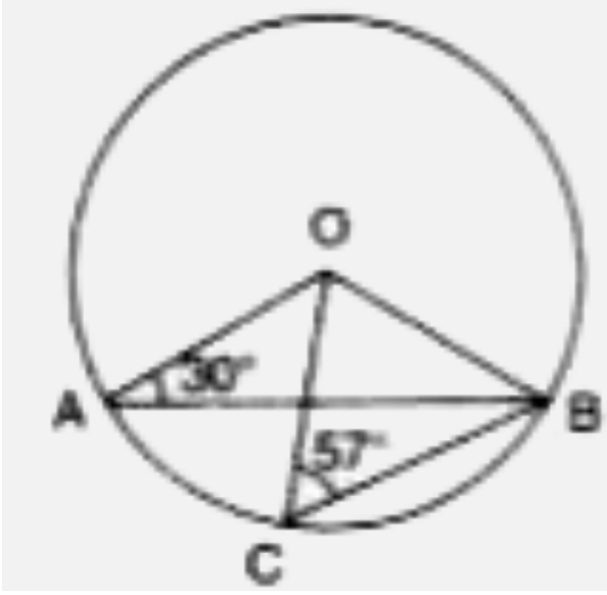
Measure and record the lengh PA in cm.

Chapterwise Revision Exercise Circles

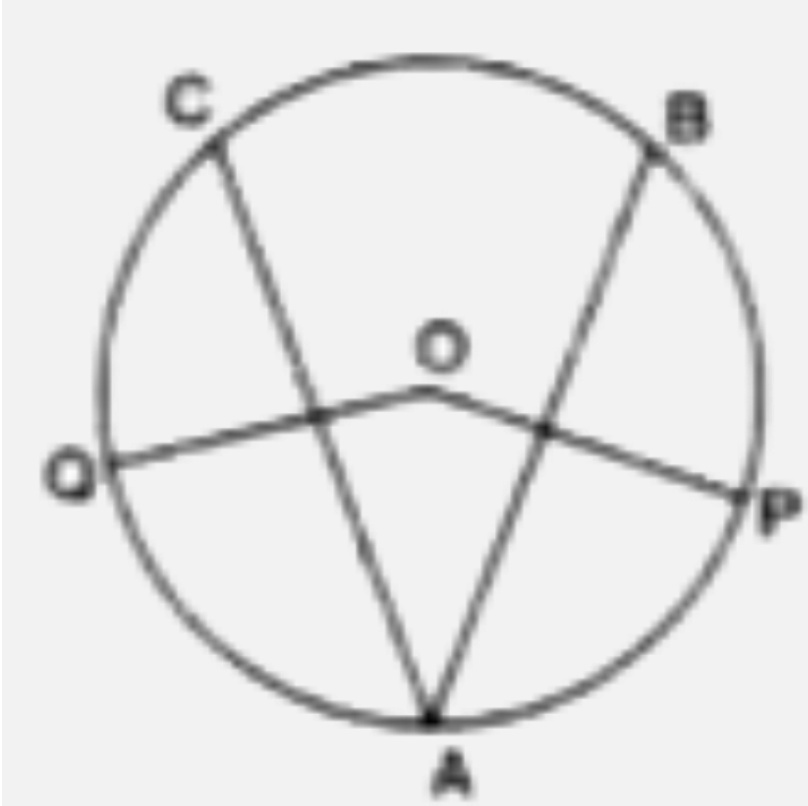**1.** In the given figure, $\angle ADC = 130°$ and BC= BE. Find $\angle CBE$ if $AB \perp CE$



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**2.** In the given figure, $\angle OAB = 30°$ and $\angle OCB = 57°$, find $\angle BOC$ and $\angle AOC$

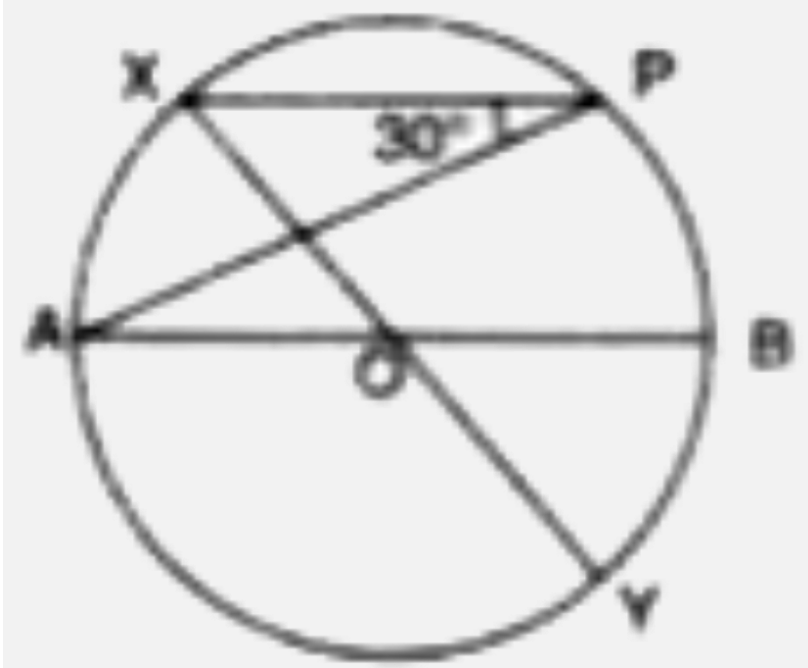**3.** In the given figure, O is the centre of the circle. If chord AB= chord AC,

$OP \perp AB$ and $OQ \perp AC$, show that: PB= QC

**4.** In the given figure, AB and XY are diameters of a circle with centre O. If $\angle APX = 30°$, find:

$\angle AOX$

**5.** In the given figure, AB and XY are diameters of a circle with centre O. If $\angle APX = 30°$, find:
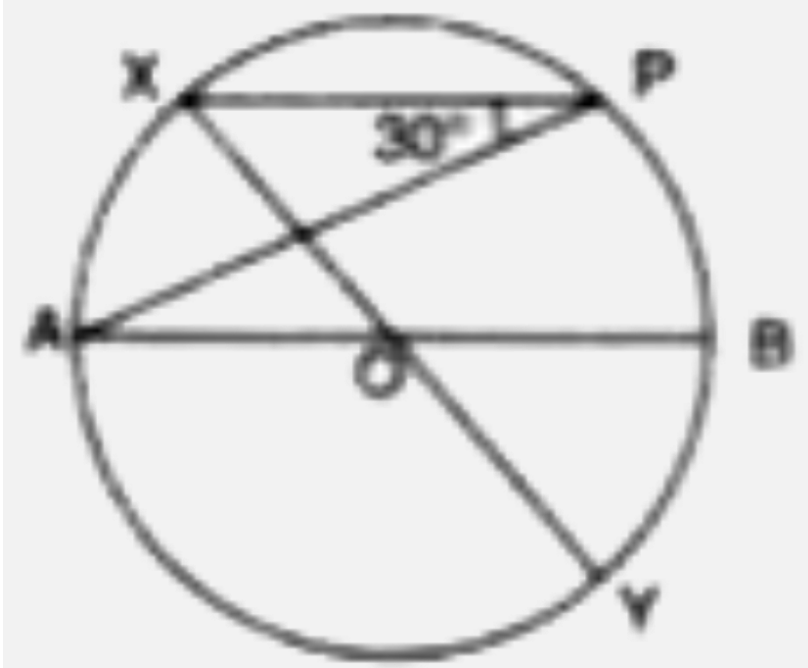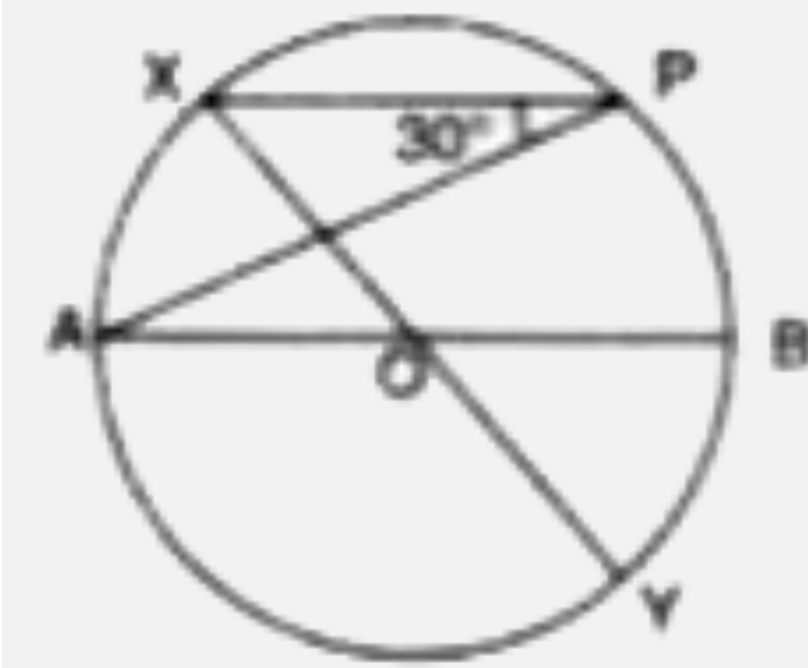
$\angle APY$

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**6.** In the given figure, AB and XY are diameters of a circle with centre O. If $\angle APX = 30°$, find:
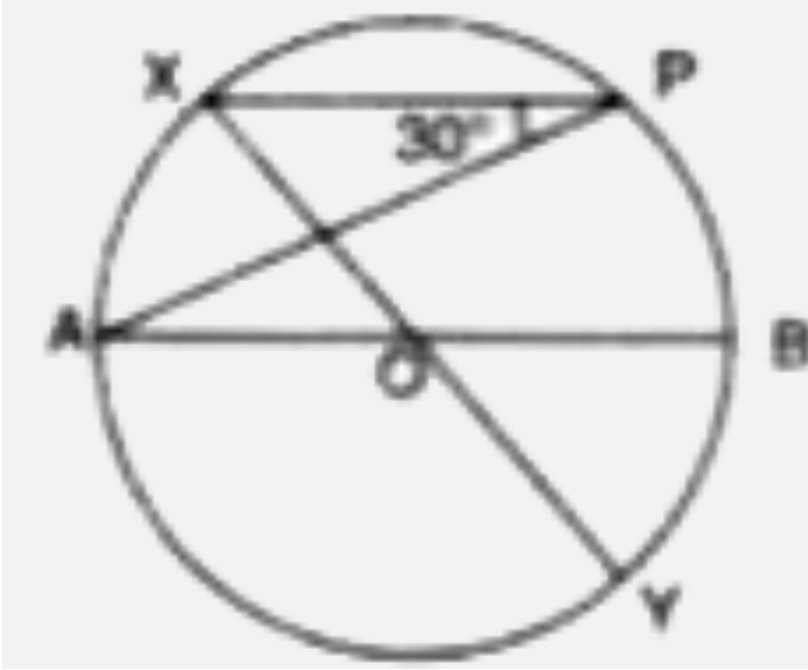
$\angle BPY$

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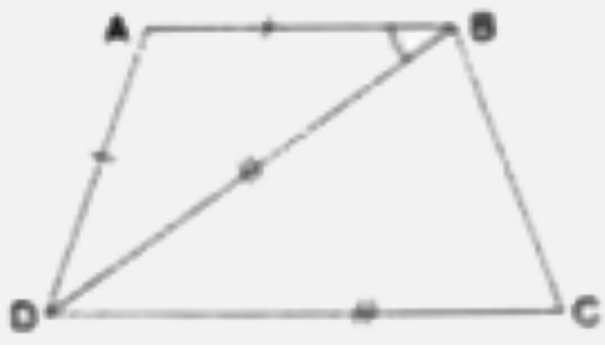**7.** In the given figure, AB and XY are diameters of a circle with centre O. If $\angle APX = 30°$, find:

$\angle OAX$

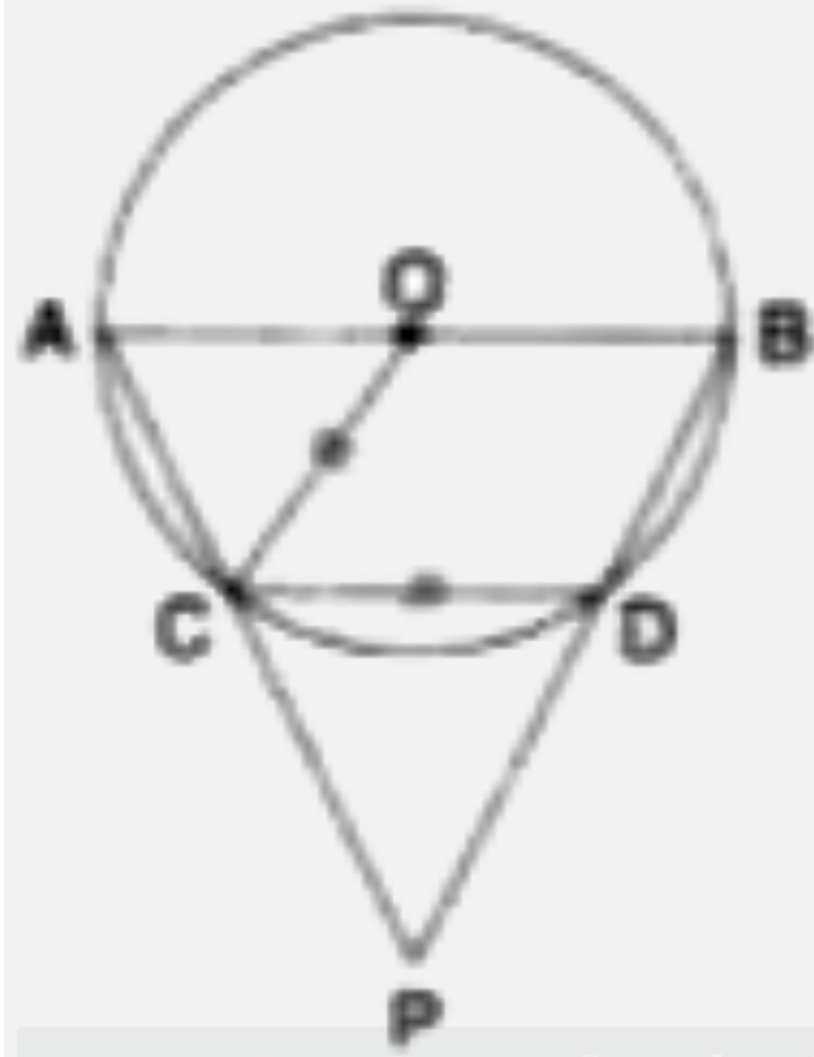**8.** In the adjoining figure, AB= AD, BD= CD and $\angle DBC = 2\angle ABD$

Prove that : ABCD is a cyclic quadrilateral.

**9.** AB is a diameter of a circle with centre O. Chord CD is equal to radius OC. AC and BD produced intersect at P. Prove that : $\angle APB = 60°$

Chapterwise Revision Exercise Tangents And Intersecting Chords

**1.** In the given figure, AC= AB and $\angle ABC = 72°$. OA and OB are two tangents. Determine:
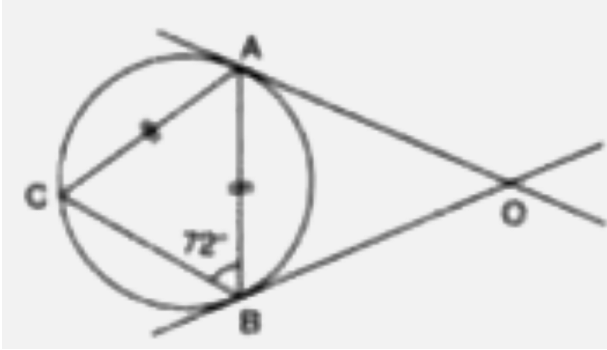


$\angle AOB$

**2.** In the given figure, AC= AB and $\angle ABC = 72°$. OA and OB are two tangents. Determine:
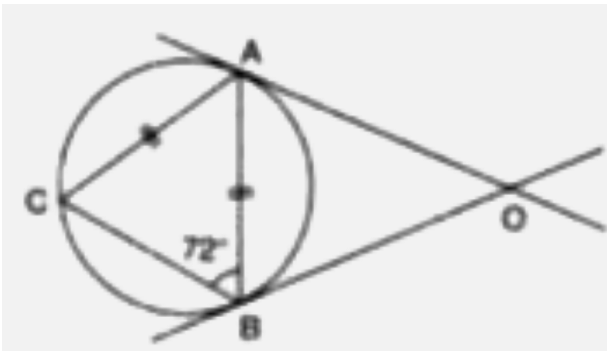


angle subtended by the chord AB at the centre.

**3.** In the given figure, PQ, PR and ST are tangents to the same circle. If $\angle P = 40°$ and $\angle QRT = 75°$, find a, b and c
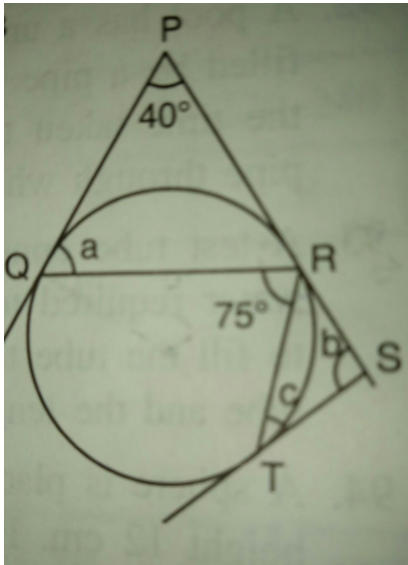
**4.** In the given figure, $\angle ABC = 90°$ and BC is diameter of the given circle. Show that:
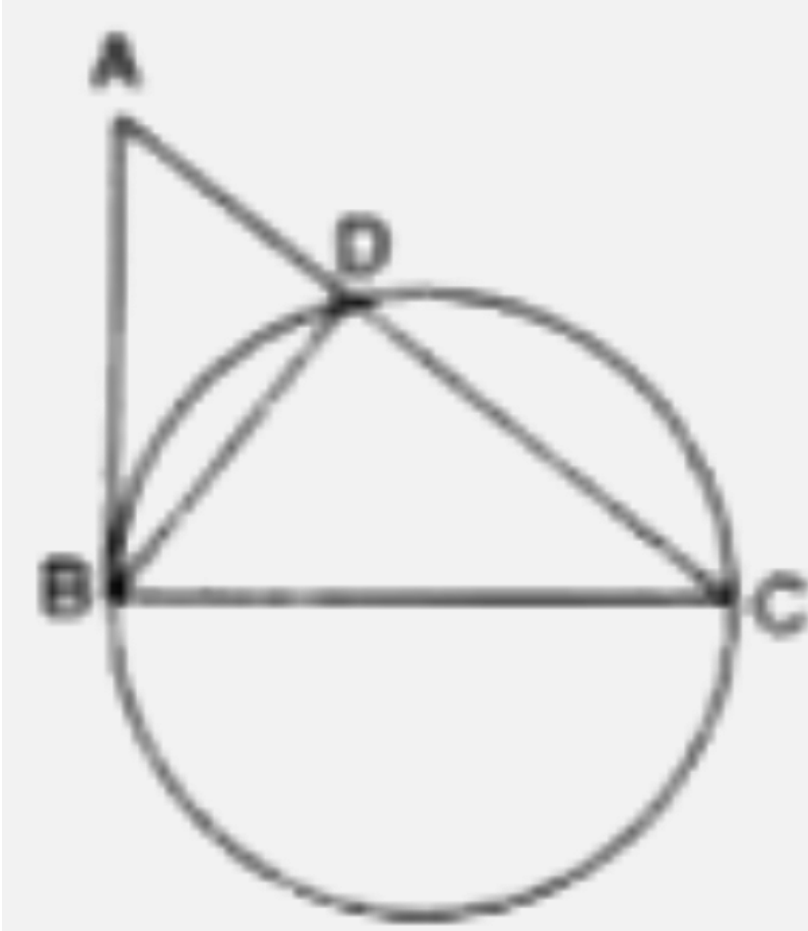
$AC \times AD = AB^2$

**5.** In the given figure, $\angle ABC = 90°$ and BC is diameter of the given circle. Show that:

$AC \times CD = BC^2$

**6.** In the given figure, AB, BC and CA are tangents to the given circle. If AB= 12cm, BC= 8cm and AC= 10cm, find the length of $AD, BE = CF$
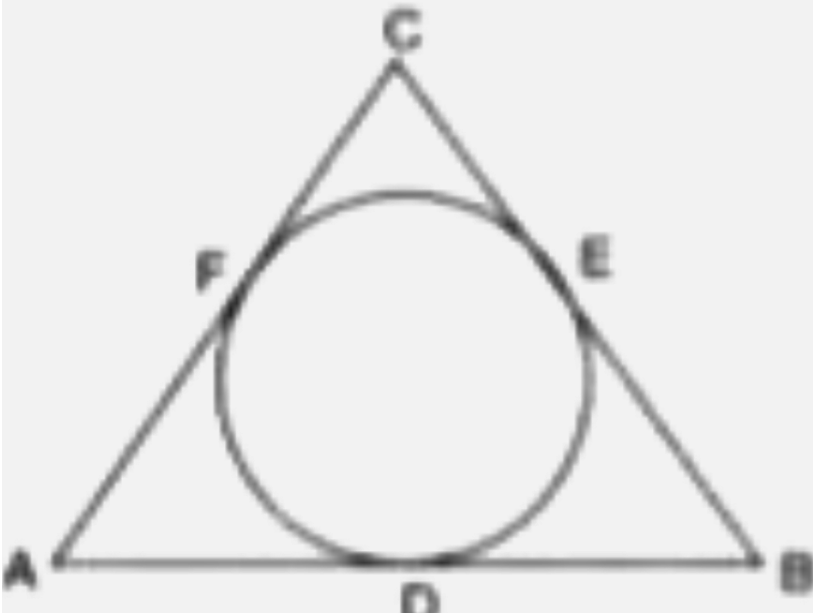
**7.** AB and CD are two chords of a circle intersecting at a point P inside the circle. If

circle. If

AB= 24cm, AP= 4cm and PD = 8cm, determine CP

**8.** AB and CD are two chords of a circle intersecting at a point P inside the

circle. If

AP=3cm, PB= 2.5cm and CD= 6.5 cm, determine CP.

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**9.** AB and CD are two chords of a circle intersecting at a point P outside

the circle. If

PA= 8cm, PC= 5cm and PD= 4cm, determine AB.

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**10.** AB and CD are two chords of a circle intersecting at a point P outside

the circle. If

PC=30cm, CD=14cm and PA=24cm, determine AB.

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**1.** Construct a triangle ABC in which AC=5cm, BC= 7 cm and AB= 6cm.

Mark D, the mid-point of AB

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**2.** Construct a triangle ABC in which AC=5cm, BC= 7 cm and AB= 6cm.

Construct a circle which touches BC at C and passes through D, where D is

the midpoint of AB.

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**3.** Using ruler and compasses only: draw a circle of radius 4cm. Produce

AB, a diameter of this circle, upto point X so that BX= 4cm. Construct a

circle to touch AB at X and to touch the circle, drawn earlier, externally.

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**1.** A cylindrical bucket 28 cm in diameter and 72 cm high is full of water. The water is emptied into a rectangular tank 66 cm long and 28 cm wide. Find the height of the water level in the tank.

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**2.** A tent is of the shape of a right circular cylinder upto height of 3 metres and then becomes a right circular cone with a maximum height of 13.5 metres above the ground. Calculate the cost of painting the inner surface of the tent at Rs 4 per sq. metre, if the radius of the base is 14 metres.

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**3.** A copper wire of diameter 6mm is evenly wrapped on the cylinder of length 18cm and diameter 49cm to cover the whole surface. Find:

the length

**4.** A copper wire of diameter 6mm is evenly wrapped on the cylinder of length 18cm and diameter 49cm to cover the whole surface. Find: the volume of the wire.

**5.** A pool has a uniform circular cross-section of radius 5m and uniform depth 1.4m. It is filled by a pipe which delivers water at the rate of 20 litres per sec. Calculate, in minutes, the time taken to fill the pool. If the pool is emptied in 42min, by another cylindrical pipe through which water flows at 2m per sec, calculate the radius of the pipe in cm.

**6.** A test tube consists of a hemisphere and a cylinder of the same radius. The volume of water required to fill the whole tube is 2849/3 $cm^3$ and 2618/3 $cm^3$ of water is required to fill the tube to a level which is 2cm below the top of the tube. Find the radius of the tube and the length of its cylindrical part.

**7.** A sphere is placed in an inverted hollow conical vessel of base radius 5cm and vertical height 12cm. If the highest point of the sphere is at the level of the base of the cone, find the radius of the sphere. Show that the volume of the sphere and the conical vessel are as 40: 81.

**8.** The difference between the outer and the inner curved surface areas of a hollow cylinder, 14cm long, is 88sq. cm. Find the outer and the inner radii of the cylinder, given that the volume of metal used is 176cu.cm.

## Chapterwise Revision Exercise Trigonometry

**1.** Prove that: $\left(\dfrac{1 + \cos A}{\sin A}\right)^2 = \dfrac{1 + \cos A}{1 - \cos A}$

**2.** Prove that: $\dfrac{1 + \sec A}{\sec A} = \dfrac{\sin^2 A}{1 - \cos A}$

**3.** Prove that :

$\cos A(1 + \cot A) + \sin A(1 + \tan A) = \sec A + \cos ecA$

**4.** Prove that:

$$\sin^2 A \tan A + \cos^2 A \cot A + 2 \sin A \cos A = \tan A + \cot A$$

**5.** If tan A =1 and tan b = $\sqrt{3}$ , evaluate :

cos A cos B - sin A sin B.

**6.** If tan A =1 and tan b = $\sqrt{3}$ , evaluate :

sin A cos B+ cos A sin B.

**7.** As observed from the top of a 100 m high light house from the sea level, the angles of depression of two ships are $30°$ and $45°$ If one ship is

exactly behind the other one on the same side of the light house, find the distance between the two ships.

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**8.** If $(2\cos 2A - 1)(\tan 3A - 1) = 0$, find all possible values of A

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**9.** If $\cos A = \dfrac{9}{41}$, find the value of

$\dfrac{1}{\sin^2 A} - \cot^2 A$

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**10.** From the top of a light house, it is observed that a ship is sailing directly towards it and the angle of depression of the ship changes from $30°$ to $45°$ in 10 minutes. Assuming that the ship is sailing with

uniform speed, calculate in how much more time (in minutes) will the ship reach the light house?

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**1.** Calculate the mean mark in the distribution given below:

| Marks | 1–10 | 11–20 | 21–30 | 31–40 | 41–50 | 51–60 |
|---|---|---|---|---|---|---|
| Frequency | 7 | 9 | 15 | 8 | 6 | 5 |

Also, state the modal class.

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**2.** Calculate the mean, the median and the mode of the following distribution:

| Marks | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|
| Frequency | 3 | 5 | 8 | 7 | 9 | 4 | 3 | 1 |

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**3.** Draw an ogive for the following distribution

| Income in ₹ | 120–140 | 140–160 | 160–180 | 180–200 | 200–220 | 220–240 |
|---|---|---|---|---|---|---|
| No. of employees | 30 | 72 | 90 | 80 | 70 | 28 |

Use the ogive drawn to determine:

the median income,

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**4.** Draw an ogive for the following distribution

| Income in ₹ | 120–140 | 140–160 | 160–180 | 180–200 | 200–220 | 220–240 |
|---|---|---|---|---|---|---|
| No. of employees | 30 | 72 | 90 | 80 | 70 | 28 |

Use the ogive drawn to determine:

the number of employees whose income exceeds Rs 190

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**5.** The result of an examination is tabulated below:

| Marks (less than) | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No. of candidates | 0 | 25 | 42 | 65 | 95 | 120 | 128 | 135 | 148 | 150 |

Draw the ogive for the above data and from it determine:

the number of candidates who got marks less than 45

**6.** The result of an examination is tabulated below:

| Marks (less than) | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No. of candidates | 0 | 25 | 42 | 65 | 95 | 120 | 128 | 135 | 148 | 150 |

Draw the ogive for the above data and from it determine:

the number of candidates who got marks more than 75

## Chapterwise Revision Exercise Probability

**1.** A bag contains a red ball, a blue ball and a yellow ball, all the balls being of the same size. If a ball is drawn from the bag, without looking into it, find the probability that the ball drawn is:

yellow

**2.** A bag contains a red ball, a blue ball and a yellow ball, all the balls being of the same size. If a ball is drawn from the bag, without looking into it, find the probability that the ball drawn is:

red

**3.** A bag contains a red ball, a blue ball and a yellow ball, all the balls being of the same size. If a ball is drawn from the bag, without looking into it, find the probability that the ball drawn is:

blue

**4.** A bag contains 6 red balls 8 blue balls and 10 yellow balls, all the balls being of the same size. If a ball is drawn from the bag, without looking

into it, find the probability that the ball drawn is:

Yellow

**5.** A bag contains 6 red balls 8 blue balls and 10 yellow balls, all the balls being of the same size. If a ball is drawn from the bag, without looking into it, find the probability that the ball drawn is:

red

**6.** A bag contains 6 red balls 8 blue balls and 10 yellow balls, all the balls being of the same size. If a ball is drawn from the bag, without looking into it, find the probability that the ball drawn is:

blue

**7.** A bag contains 6 red balls 8 blue balls and 10 yellow balls, all the balls being of the same size. If a ball is drawn from the bag, without looking into it, find the probability that the ball drawn is:

not yellow

**8.** A bag contains 6 red balls 8 blue balls and 10 yellow balls, all the balls being of the same size. If a ball is drawn from the bag, without looking into it, find the probability that the ball drawn is:

not blue

**9.** Two dice are thrown at the same time. Write down all the possible outcomes. Find the probability of getting the sum of two numbers appearing on the top of the dice as:

13

**10.** Two dice are thrown at the same time. Write down all the possible outcomes. Find the probability of getting the sum of two numbers appearing on the top of the dice as:

less than 13

**11.** Two dice are thrown at the same time. Write down all the possible outcomes. Find the probability of getting the sum of two numbers appearing on the top of the dice as:

10

**12.** Two dice are thrown at the same time. Write down all the possible outcomes. Find the probability of getting the sum of two numbers

appearing on the top of the dice as:

less than 10

**13.** Five cards the ten, jack, queen king and ace of diamonds, are well-shuffled with their face downwards. One card is then picked up at random. What is the probability that the card is the queen?

**14.** Five cards the ten, jack, queen king and ace of diamonds, are well-shuffled with their face downwards. One card is then picked up at random. If the queen is drawn and put a side, what is the probability that the second card picked up is (a) an ace? (b) a queen?

**15.** A lot of 20 bulbs contain 4 defective ones. One bulb is drawn at random from the lot. What is the probability that this bulb is defective?

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**16.** A lot of20 bulbs contain 4 defective ones. One bulb is selected at random from a lot.Suppose the bulb drawn in (i) is not defective and not replaced. Now bulb is drawn at random from the rest. What is the probability that this bulb is not defective?

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