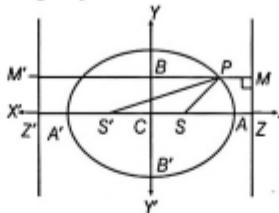
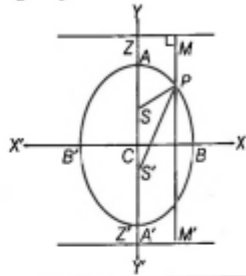


# Important formulas for ellipse: -

<p>Equation and graph of the ellipse →</p> <p>Basic fundamentals ↓</p>	<p><b>Horizontal ellipse</b></p> $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1; a > b$ 	<p><b>Vertical ellipse</b></p> $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1; a < b$ 
Centre	(0, 0)	(0, 0)
Vertices	$(\pm a, 0)$	$(0, \pm b)$
Length of major axis	2a	2b
Length of minor axis	2b	2a
Foci	$(\pm ae, 0)$ or $(\pm \sqrt{a^2 - b^2}, 0)$	$(0, \pm be)$ or $(0, \pm \sqrt{b^2 - a^2})$
Distance between foci	2ae or $2\sqrt{a^2 - b^2}$	2be or $2\sqrt{b^2 - a^2}$
Equation of directrices	$x = \pm \frac{a}{e}$	$y = \pm \frac{b}{e}$
Distance between directrices	$\frac{2a}{e}$	$\frac{2b}{e}$
Relation between a, b and e	$b^2 = a^2 (1 - e^2)$	$a^2 = b^2 (1 - e^2)$
Length of latusrectum	$\frac{2b^2}{a}$ or $2a(1 - e^2)$	$\frac{2a^2}{b}$ or $2b(1 - e^2)$
End points of latusrectum	$(\pm ae, \pm \frac{b^2}{a})$	$(\pm \frac{a^2}{b}, \pm be)$
Focal radii	$SP = a - ex_1, S'P = a + ex_1$ and $SP + S'P = 2a$	$SP = b - ey_1, S'P = b + ey_1$ and $SP + S'P = 2b$
Parametric Coordinates	$(a \cos \theta, b \sin \theta), 0 \leq \theta < 2\pi$	$(a \cos \theta, b \sin \theta), 0 \leq \theta < 2\pi$
Tangents at the vertices	$x = \pm a$	$y = \pm b$