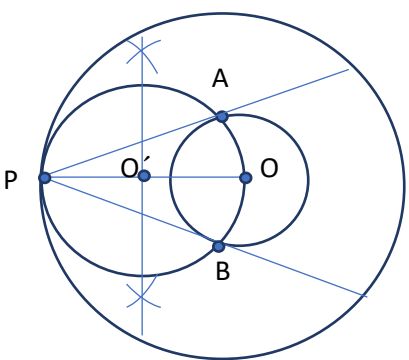
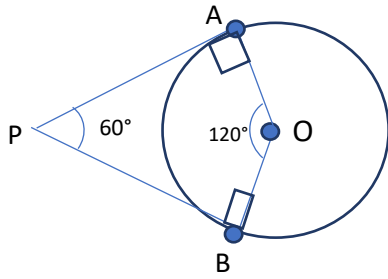


9	<p>PA = PB (Tangent segments drawn to a circle from an external point are equal)</p> <p>\therefore In $\triangle APB$, $\angle PAB = \angle PBA$ Also, $\angle APB = 60^\circ$ In $\triangle APB$, sum of three angles is 180°.</p> <p>Therefore, $\angle PAB + \angle PBA = 180^\circ - \angle APB = 180^\circ - 60^\circ = 120^\circ$. $\therefore \angle PAB = \angle PBA = 60^\circ$ ($\because \angle PAB = \angle PBA$) $\therefore \triangle APB$ is an equilateral triangle. So, $AB = 6\text{cm}$</p>	<p>1</p> <p>1</p> <p>1</p>
10	<p>Let the three consecutive multiples of 5 be $5x$, $5x+5$, $5x+10$. Their squares are $(5x)^2$, $(5x + 5)^2$ and $(5x + 10)^2$. $(5x)^2 + (5x + 5)^2 + (5x + 10)^2 = 725$ $\Rightarrow 25x^2 + 25x^2 + 50x + 25 + 25x^2 + 100x + 100 = 725$ $\Rightarrow 75x^2 + 150x - 600 = 0$ $\Rightarrow x^2 + 2x - 8 = 0$ $\Rightarrow (x + 4)(x - 2) = 0$ $\Rightarrow x = -4, 2$ $\Rightarrow x = 2$ (ignoring -ve value) So the numbers are 10, 15 and 20</p>	<p>1</p> <p>1</p> <p>1</p>
Section-C		

11	 <p>Draw two concentric circles with center O and radii 3cm and 7cm respectively. Join OP and bisect it at O', so $PO' = O'O$ Construct circle with center O' and radius $O'O$ Join PA and PB</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>
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OR



Draw a circle of radius 6cm

Draw OA and Construct $\angle AOB = 120^\circ$

Draw $\angle OAP = \angle OBP = 90^\circ$

PA and PB are required tangents

Join OP and apply $\tan \angle APO = \tan 30^\circ = \frac{6}{PA}$

\Rightarrow Length of tangent = $6\sqrt{3}$ cm

1
1
1
1

12

Converting the cumulative frequency table into exclusive classes, we get:

Age	No of passengers(f_i)	x_i	$f_i x_i$
0-10	14	5	70
10-20	30	15	450
20-30	38	25	950
30-40	52	35	1820
40-50	50	45	2250
50-60	61	55	3355
60-70	42	65	2730
70-80	13	75	975
	$\Sigma f_i = 300$		$\Sigma f_i x_i = 12600$

$$\text{Mean age} = \bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i} = \frac{12600}{300}$$

$$\bar{x} = 42$$

2

1

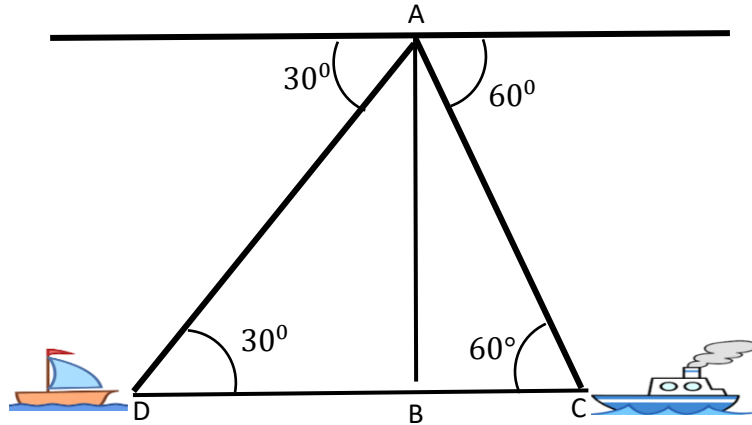
1

13 (i) The ship is nearer to the island than the angle of depression is greater

In ΔACB , $\tan 60^\circ = \frac{AB}{BC}$

$\Rightarrow \sqrt{3} = \frac{40}{BC}$

$\therefore BC = \frac{40}{\sqrt{3}} = \frac{40\sqrt{3}}{3}m$



1

1

(ii) In ΔADB , $\tan 30^\circ = \frac{AB}{BD}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{40}{DB}$

$\therefore DB = 40\sqrt{3}m$

Time taken to cover this distance = $\left(\frac{60}{2000} \times 40\sqrt{3}\right)$ minutes

$= \frac{60\sqrt{3}}{100} = 2.076$ minutes

1

1

14 (i) Let r_1 and r_2 be respectively the radii of apples and oranges

$\therefore 2r_1 : 2r_2 = 2 : 3 \Rightarrow r_1 : r_2 = 2 : 3$

$4\pi r_1^2 : 4\pi r_2^2 = \left(\frac{r_1}{r_2}\right)^2 = \left(\frac{2}{3}\right)^2 = 4 : 9$

1/2

$1\frac{1}{2}$

(ii) Let the height of the drum be h.

Volume of the drum = volume of the cylinder + volume of the sphere

$\pi 3^2 h = (\pi 3^2 \times 8 + \frac{4}{3} \pi 3^3) cm^3$

$\Rightarrow h = (8 + 4)cm$

$\Rightarrow h = 12cm$

1

1

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