General direction for the students :-Whatever be the notes provided , everything must be copied in the Maths Copy and then do the Home work in the same Copy.
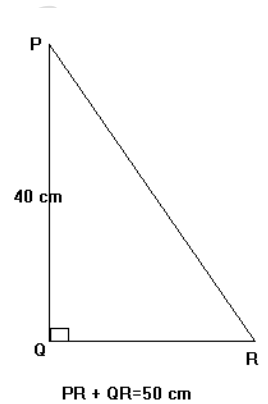
Exercise 17.

6 b. Let $QR = x$, $\Rightarrow PR = 50 - x$

$\Rightarrow (50 - x)^2 = 40^2 + x^2$ $by\ Pythagoras\ theorem$

$\Rightarrow 2500 - 100x = 1600$

$\Rightarrow x = 9$ $\Rightarrow QR = 9$, $PR = 41$

(i) $sinP = \frac{QR}{PR} = \frac{9}{41}$ (ii) $cosP = \frac{PQ}{PR} = \frac{40}{41}$ (iii) $tanR = \frac{PQ}{QR} = \frac{40}{9}$

12. Given $tan\theta = \frac{4}{3} = \frac{Opposite\ Side}{Adjacent\ side}$

$\Rightarrow$ Opposite side $= 4k$, $Adjacent\ side = 3k$ $where\ k\ is\ the\ ratio\ factor$

$\Rightarrow Hypotenuse = 5k$ $by\ Pythagoras\ theorem$

Now $sin\theta + cos\theta = \frac{4k}{5k} + \frac{3k}{5k}$ $\Rightarrow$ =7/5 ans.

20. Given $5cosA - 12sinA = 0$ $\Rightarrow 5cosA = 12sinA$ $\Rightarrow \frac{sinA}{cosA} = \frac{5}{12}$ $\Rightarrow tanA = 5/12$

$\Rightarrow Opposite\ side = 5k$, $Adjacent\ side = 12k$

$\Rightarrow$ Hypotenuse=13k   by Pythagoras theorem

$\Rightarrow$ sinA=5k/13k $\Rightarrow$ =5/13 , cosA=12k/13k $\Rightarrow$ =12/13

Now $\frac{sinA + cosA}{2cosA - SinA} = \frac{\frac{5}{13} + \frac{12}{13}}{2 \times \frac{12}{13} - \frac{5}{13}}$ $\Rightarrow$ = $\frac{17}{19}$ ans

25. Given $sin\theta = cos\theta$

$\Rightarrow \frac{sin\theta}{cos\theta} = 1$ $\Rightarrow$ $tan\theta = 1$

$\Rightarrow Opposite\ side = k$, $Adjacent\ side = k$

$\Rightarrow$ Hypotenuse=$\sqrt{2}$k   by Pythagoras theorem

Now $2tan^2\theta + sin^2\theta - 1$

P

40 cm

Q   R

PR + QR=50 cm

$$2 \times 1 + \left(\frac{1}{\sqrt{2}}\right)^2 - 1 \quad \Rightarrow 3/2 \text{ ans}$$

26. (i) LHS, $cos\theta . tan\theta \Rightarrow cos\theta \times \frac{sin\theta}{cos\theta} \Rightarrow sin\theta$, RHS

(iii) LHS , $\frac{sin^2\theta}{cos\theta} + cos\theta \Rightarrow \frac{1 - cos^2\theta}{cos\theta} + cos\theta \Rightarrow \frac{1}{cos\theta} - cos\theta + cos\theta \Rightarrow \frac{1}{cos\theta}$, RHS

29. Given $cot\alpha = \frac{3}{2} \Rightarrow CD = 3k$, $AD = 2k$, where k is the ratio factor

$$\Rightarrow 15^2 = (3k)^2 + (2k)^2 \quad \Rightarrow 225 = 13k^2 \quad \Rightarrow k = 15/\sqrt{13}$$

Now   Area =AD x CD

= 2k x 3k

$$=6k^2 \quad \Rightarrow = 6 \times \frac{225}{13} = \frac{1350}{13} \; sq.cm$$

Perimeter= 2(2k + 3k)

$$=10k \Rightarrow =150/\sqrt{13} \text{ cm.}$$

32. $\sqrt{\frac{1 - sin^2\theta}{1 - cos^2\theta}} \quad \Rightarrow = \sqrt{\frac{cos^2\theta}{sin^2\theta}} \quad \Rightarrow = \frac{cos\theta}{sin\theta} \Rightarrow cot\theta$

**** For more solutions to the questions from the exercise and explanation watch the video.

Home work : Remaining questions from the exercise do as home work.