Chapter 28 Exercise 28.1

Q. 1. (i) $a^2 + b^2 = c^2$

$4^2 + 3^2 = c^2$

$\Rightarrow 25 = c^2$

$\Rightarrow c = \boxed{5}$

(ii) $5^2 + 12^2 = x^2$

$\Rightarrow 169 = x^2$

$\Rightarrow x = \boxed{13}$

(iii) $10^2 + x^2 = 26^2$

$\Rightarrow x^2 = 676 - 100$

$\Rightarrow x^2 = 576$

$\Rightarrow x = \boxed{24}$

(iv) $21^2 + 20^2 = x^2$

$\Rightarrow 841 = x^2$

$\Rightarrow x = \boxed{29}$

(v) $4^2 + x^2 = 5^2$

$\Rightarrow x^2 = 9$

$\Rightarrow x = \boxed{3}$

(vi) $28^2 + x^2 = 100^2$

$\Rightarrow 784 + x^2 = 10{,}000$

$\Rightarrow x^2 = 9216$

$\Rightarrow x = \boxed{96}$

Q. 2. (i) $x^2 = 1^2 + 1^2$

$\Rightarrow x^2 = 2$

$\Rightarrow x = \boxed{\sqrt{2}}$

(ii) $x^2 = 3^2 + 1^2$

$\Rightarrow x^2 = 9 + 1$

$\Rightarrow x^2 = 10$

$\Rightarrow x = \boxed{\sqrt{10}}$

(iii) $x^2 + 5^2 = 6^2$

$\Rightarrow x^2 + 25 = 36$

$\Rightarrow x^2 = 11$

$\Rightarrow x = \boxed{\sqrt{11}}$

(iv) $x^2 = 3^2 + 5^2$

$\Rightarrow x^2 = 9 + 25 = 34$

$\Rightarrow x = \boxed{\sqrt{34}}$

Q. 3. (i) $x^2 + 8^2 = 10^2$

$\Rightarrow x^2 + 64 = 100$

$\Rightarrow x^2 = 36$

$\Rightarrow x = \boxed{6 \text{ m}}$

Q. 4. (i) $x^2 + x^2 = (\sqrt{18})^2$

$\Rightarrow 2x^2 = 18$

$\Rightarrow x^2 = 9$

$\Rightarrow x = \boxed{3}$

(ii) $x^2 + x^2 = (\sqrt{8})^2$

$\Rightarrow 2x^2 = 8$

$\Rightarrow x^2 = 4$

$\Rightarrow x = \boxed{2}$

Q. 5. (i) $x^2 = 8^2 + 6^2 = 64 + 36 = 100$

$\Rightarrow \boxed{x = 10}$

$\Rightarrow 10^2 + y^2 = 26^2$

$\Rightarrow 100 + y^2 = 676$

$\Rightarrow y^2 = 576$

$\Rightarrow \boxed{y = 24}$

(ii) $x^2 + 28^2 = 100^2$

$\Rightarrow x^2 + 784 = 10{,}000$

$\Rightarrow x^2 = 9216$

$\Rightarrow \boxed{x = 96}$

$\Rightarrow y^2 + 28^2 = (\sqrt{800})^2$

$\Rightarrow y^2 + 784 = 800$

$\Rightarrow y^2 = 16$

$\boxed{y = 4}$

(iii) $x^2 = 3^2 + 4^2 = 9 + 16 = 25$

$\Rightarrow \boxed{x = 5}$

$\Rightarrow 5^2 + y^2 = 13^2$

$\Rightarrow 25 + y^2 = 169$

$\Rightarrow y^2 = 144$

$\Rightarrow \boxed{y = 12}$

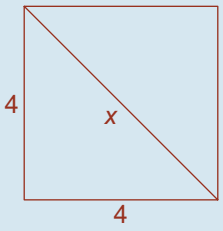
(iv) $x^2 = 144$

$\Rightarrow \boxed{x = 12}$

$\Rightarrow y^2 = 12^2 + 5^2 = 144 + 25 = 169$

$\Rightarrow \boxed{y = 13}$

Q. 6.

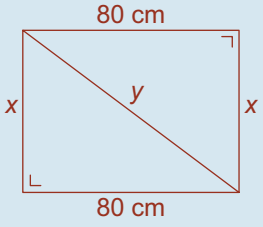


$x^2 = 4^2 + 4^2 = 16 + 16 = 32$

$\Rightarrow x = \sqrt{32}$

$\Rightarrow x =$ 5.66 m

Q. 7.



Perimeter = 280

$\Rightarrow 2(80 + x) = 280$

$\Rightarrow 80 + x = 140$

$\Rightarrow x = 60$ cm

$y^2 = 60^2 + 80^2 = 3600 + 6400 = 10{,}000$

$\Rightarrow y =$ 100 cm

Q. 8. The hypotenuse is the largest side.

$\Rightarrow 77^2 + 36^2 = 5929 + 1296$

$= 7225 = 85^2$

$\Rightarrow$ Right-angled Ans: Yes

Q. 9. $3526^2 + 168^2$

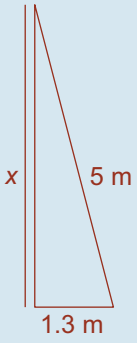
$= 12{,}432{,}676 + 28{,}224$

$= 12{,}460{,}900$

$= 3530^2$

$\Rightarrow$ Right-angled Ans: Yes

Q. 10.



$x^2 + 1.3^2 = 5^2$

$\Rightarrow x^2 + 1.69 = 25$

$\Rightarrow x^2 = 23.31$

$x = \sqrt{23.31}$

$x = 4.83$ m (3 s.f.)

Exercise 28.2

Q. 1.

(i)	$\sin A = \frac{21}{29}$	$\cos A = \frac{20}{29}$	$\tan A = \frac{21}{20}$
(ii)	$\sin A = \frac{5}{13}$	$\cos A = \frac{12}{13}$	$\tan A = \frac{5}{12}$
(iii)	$\sin A = \frac{8}{17}$	$\cos A = \frac{15}{17}$	$\tan A = \frac{8}{15}$

Q. 2.

(i)	$\sin A = \frac{1}{\sqrt{5}}$	$\cos A = \frac{2}{\sqrt{5}}$	$\tan A = \frac{1}{2}$
	$\sin B = \frac{2}{\sqrt{5}}$	$\cos B = \frac{1}{\sqrt{5}}$	$\tan B = 2$
(ii)	$\sin A = \frac{20}{29}$	$\cos A = \frac{21}{29}$	$\tan A = \frac{20}{21}$
	$\sin B = \frac{21}{29}$	$\cos B = \frac{20}{29}$	$\tan B = \frac{21}{20}$
(iii)	$\sin A = \frac{3}{\sqrt{13}}$	$\cos A = \frac{2}{\sqrt{13}}$	$\tan A = \frac{2}{3}$
	$\sin B = \frac{2}{\sqrt{13}}$	$\cos B = \frac{3}{\sqrt{13}}$	$\tan B = \frac{3}{2}$

Q. 3.

(i) 0.9659 (vii) 0.2126
(ii) 0.8660 (viii) 0.5774
(iii) 0.2588 (ix) 5.6713
(iv) 0.2419 (x) 0.3420
(v) 0.6691 (xi) 0.4067
(vi) 0.9962 (xii) 0.9657

Q. 4.

(i) $\sin 10° = \boxed{0.1736} = \cos 80°$
(ii) $\cos 20° = \boxed{0.9397} = \sin 70°$
(iii) $\sin 50° = \boxed{0.7660} = \cos 40°$
(iv) $\sin 60° = \boxed{0.8660} = \cos 30°$
(v) $\cos 75° = \boxed{0.2588} = \sin 15°$

$\sin A = \cos(90° - A)$,
$\cos A = \sin(90° - A)$

The angle of sin and cos sum to 90°.

Q. 5.

(i) $\sin A = \cos(90° - A)$
$\Rightarrow \sin 25° = \cos(90° - 25°) = \boxed{\cos 65°}$
(ii) $\cos 42° = \sin \boxed{48°}$
(iii) $\sin 55° = \cos \boxed{35°}$
(iv) $\cos 82° = \sin \boxed{8°}$
(v) $\cos x° = \sin \boxed{(90° - x°)}$

Exercise 28.3

Q. 1.

(i) $\sin 30° = \frac{x}{16}$
$\Rightarrow x = 16 \sin 30° = \boxed{8}$
(ii) $\sin 25° = \frac{x}{15}$
$\Rightarrow x = 15 \sin 25° = \boxed{6.34}$
(iii) $\sin 35° = \frac{x}{20}$
$\Rightarrow x = 20 \sin 35° = \boxed{11.47}$
(iv) $\sin 51° = \frac{x}{22}$
$\Rightarrow x = 22 \sin 51° = \boxed{17.10}$
(v) $\cos 55° = \frac{x}{18}$
$\Rightarrow x = 18 \cos 55° = \boxed{10.32}$
(vi) $\cos 32° = \frac{x}{29}$
$\Rightarrow x = 29 \cos 32°$
$\Rightarrow x = \boxed{24.59}$
(vii) $\cos 60° = \frac{x}{10}$
$\Rightarrow x = 10 \cos 60° = \boxed{5}$
(viii) $\cos 45° = \frac{x}{40}$
$\Rightarrow x = 40 \cos 45° = \boxed{28.28}$
(ix) $\tan 60° = \frac{x}{5}$
$\Rightarrow x = 5 \tan 60° = \boxed{8.66}$

Q. 2. (a)

(i) $\tan 55° = \frac{y}{6}$
$\Rightarrow y = 6 \tan 55° = \boxed{8.57}$
(ii) $\tan 32° = \frac{y}{8}$
$\Rightarrow y = 8 \tan 32° = \boxed{5.00}$
(iii) $\tan 32° = \frac{y}{7}$
$\Rightarrow y = 7 \tan 32° = \boxed{4.37}$
(iv) $\sin 45° = \frac{y}{40}$
$\Rightarrow y = 40 \sin 45° = \boxed{28.28}$
(v) $\cos 35° = \frac{y}{18}$
$\Rightarrow y = 18 \cos 35° = \boxed{14.74}$
(vi) $\tan 30° = \frac{y}{12}$
$\Rightarrow y = 12 \tan 30° = \boxed{6.93}$
(vii) $\cos 50° = \frac{y}{26}$
$\Rightarrow y = 26 \cos 50° = \boxed{16.71}$
(viii) $\sin 30° = \frac{y}{10}$
$\Rightarrow y = 10 \sin 30° = \boxed{5}$
(ix) $\tan 30° = \frac{y}{10}$
$\Rightarrow y = 10 \tan 30° = \boxed{5.77}$

(b)

(i) $x = \sqrt{6^2 + 8.57^2} = 10.46$
(ii) $x = \sqrt{8^2 + 5^2} = 9.43$
(iii) $x = \sqrt{7^2 + 4.37^2} = 8.25$
(iv) $x = \sqrt{40^2 - 28.28^2} = 28.29$
(v) $x = \sqrt{18^2 - 12.73^2} = 12.73$
(vi) $x = \sqrt{12^2 + 6.93^2} = 13.86$
(vii) $x = \sqrt{26^2 - 16.71^2} = 19.92$
(viii) $x = \sqrt{10^2 - 5^2} = 8.66$
(ix) $x = \sqrt{10^2 + 5.77^2} = 11.55$

Q. 3. $\sin 40° = \frac{x}{100}$

$\Rightarrow x = 100 \sin 40° = 64.2788 \Rightarrow \boxed{64.28}$

$\tan 10° = \frac{y}{64.2788}$

$\Rightarrow y = 64.2788 \tan 10° = \boxed{11.33}$

Q. 4. $\tan 50° = \frac{x}{3}$

$\Rightarrow x = 3 \tan 50° = \boxed{3.58}$

$\cos 50° = \frac{3}{y}$

$\Rightarrow y = \frac{3}{\cos 50°} = 4.667171481 = \boxed{4.67}$

Using Pythagoras:

$13^2 = (4.667171481)^2 + z^2$

$\Rightarrow 169 = 21.78248963 + z^2$

$\Rightarrow z^2 = 147.2175104$

$\Rightarrow \boxed{z = 12.13}$

Exercise 28.4

Q. 1. (i) $\sin x = 0.3452$

$\Rightarrow x = \sin^{-1}(0.3452)$

$\Rightarrow x = \boxed{20°}$

(ii) $\cos x = 0.7659$

$\Rightarrow x = \cos^{-1}(0.7659)$

$\Rightarrow x = \boxed{40°}$

(iii) $\tan x = 0.5467$

$\Rightarrow x = \tan^{-1}(0.5467)$

$\Rightarrow x = \boxed{29°}$

(iv) $\sin x = 0.4521$

$\Rightarrow x = \sin^{-1}(0.4521)$

$\Rightarrow x = \boxed{27°}$

(v) $\cos x = 0.6593$

$\Rightarrow x = \cos^{-1}(0.6593)$

$\Rightarrow x = \boxed{49°}$

(vi) $\tan x = 0.4678$

$\Rightarrow x = \tan^{-1}(0.4678)$

$\Rightarrow x = \boxed{25°}$

(vii) $\boxed{50°}$ (x) $\boxed{9°}$

(viii) $\boxed{33°}$ (xi) $\boxed{70°}$

(ix) $\boxed{42°}$ (xii) $\boxed{24°}$

Q. 2. (i) $\sin x = 0.2543$

$\Rightarrow x = \sin^{-1}(0.2543)$

$\Rightarrow x = \boxed{15°}$

(ii) $\cos x = 0.9567$

$\Rightarrow x = \cos^{-1}(0.9567)$

$\Rightarrow x = \boxed{17°}$

(iii) $\tan x = 0.7645$

$\Rightarrow x = \tan^{-1}(0.7645)$

$\Rightarrow x = \boxed{37°}$

(iv) $\sin x = 0.1254$

$\Rightarrow x = \sin^{-1}(0.1254)$

$\Rightarrow x = \boxed{7°}$

(v) $\cos x = 0.3956$

$\Rightarrow x = \cos^{-1}(0.3956)$

$\Rightarrow x = \boxed{67°}$

(vi) $\tan x = 0.8764$

$\Rightarrow x = \tan^{-1}(0.8764)$

$\Rightarrow x = \boxed{41°}$

(vii) $\boxed{7°}$ (ix) $\boxed{28°}$

(viii) $\boxed{64°}$ (x) $\boxed{40°}$

Q. 3. (a) (i) $\tan A = \frac{4}{3}$

$\Rightarrow A = \tan^{-1}\left(\frac{4}{3}\right)$

$\Rightarrow A = \boxed{53°}$

(ii) $\cos A = \frac{5}{13}$

$\Rightarrow A = \cos^{-1}\left(\frac{5}{13}\right)$

$\Rightarrow A = \boxed{67°}$

(iii) $\sin A = \frac{8}{10} = 0.8$

$\Rightarrow A = \sin^{-1}(0.8)$

$\Rightarrow A = \boxed{53°}$

(b) (i) $\sqrt{4^2 + 3^2} = 5$

(ii) $\sqrt{13^2 - 5^2} = 12$

(iii) $\sqrt{10^2 - 8^2} = 6$

Q.4. (i) $A = \tan^{-1}\left(\frac{8}{5}\right) = 58°$

$B = 90° - 58° = 32°$

(ii) $A = \sin^{-1}\left(\frac{80}{100}\right) = 53°$

$B = 90° - 53° = 37°$

(iii) $A = \cos^{-1}\left(\frac{86}{100}\right) = 31°$

$B = 90° - 31° = 59°$

Q. 5. (a) (i) $\sin A = \frac{2.5}{3} = \frac{5}{6}$

$\Rightarrow A = \sin^{-1}\left(\frac{5}{6}\right)$

$\Rightarrow A = \boxed{56°}$

(ii) $\cos A = \frac{12}{13}$

$\Rightarrow A = \cos^{-1}\left(\frac{12}{13}\right)$

$\Rightarrow A = \boxed{23°}$

(iii) $\sin A = \frac{10}{25} = 0.4$

$\Rightarrow A = \sin^{-1}(0.4)$

$\Rightarrow A = \boxed{24°}$

(b) (i) $\sqrt{3^2 - 2.5^2} = \sqrt{2.75} = 1.66$

(ii) $\sqrt{13^2 - 12^2} = \sqrt{25} = 5$

(iii) $\sqrt{25^2 - 10^2} = \sqrt{525} = 22.91$

Q. 6. (i) $\tan B = \frac{5}{12}$

$\Rightarrow B = \tan^{-1}\left(\frac{5}{12}\right) = \boxed{23°}$

(ii) $\tan B = \frac{10}{24}$

$\Rightarrow B = \tan^{-1}\left(\frac{10}{24}\right) = \boxed{23°}$

(iii) $|\angle B| = |\angle ABC|$ … parallelogram

$\Rightarrow \sin B = \frac{8}{10}$

$\Rightarrow B = \sin^{-1}(0.8) = \boxed{53°}$

Exercise 28.5

Q. 1. Let x = girl's height

$\tan 30° = \frac{x}{2.94}$

$\Rightarrow x = 2.94 \tan 30° = \boxed{1.70 \text{ m}}$ or 170 cm

Q. 2. Let x = height

$\Rightarrow \tan 77° = \frac{x}{10.62}$

$\Rightarrow 10.62 \tan 77° = x$

$\Rightarrow x = \boxed{46 \text{ m}}$

Q. 3. $\tan 60° = \frac{4}{d}$

$\Rightarrow d = \frac{4}{\tan 60°}$

$\Rightarrow d = \boxed{2.31 \text{ m}}$ or 231 cm

Q. 4. (i) $\tan 57° = \frac{d}{11}$

$\Rightarrow d = 11 \tan 57° = \boxed{16.9 \text{ km}}$ [16.9358]

(ii) Speed $= \frac{16.9 \text{ km}}{2 \text{ hrs}} = \boxed{8.5 \text{ km/hr}}$

(iii) $21^2 + 16.9385^2 = |SQ|^2$

$\Rightarrow |SQ|^2 = 441 + 286.9133 = 727.9133$

$\Rightarrow |SQ| = \boxed{27.0 \text{ km}}$

Q. 5. $\tan 10° = \frac{20}{x}$

$\Rightarrow x = \frac{20}{\tan 10°} = \boxed{113.43 \text{ m}}$

Q. 6. Angle from chiff to eye line = 60°

$\Rightarrow \tan 60° = \frac{x}{200}$

$\Rightarrow x = 200 \tan 60° = \boxed{346.41 \text{ m}}$

Q. 7. (i) Let x = Pole height

$\sin 47° = \frac{x}{22}$

$\Rightarrow x = 22 \sin 47° = \boxed{16 \text{ m}}$ [16.0898]

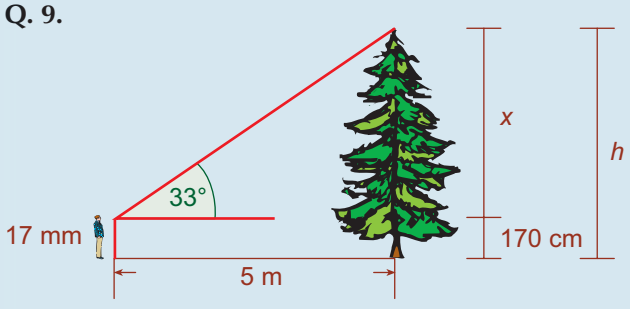
(ii) $\sin 63° = \frac{16.0898}{l}$

$\Rightarrow l = \frac{16.0898}{\sin 63°} = \boxed{18 \text{ m}}$

Q. 8. $\tan 69° = \frac{x}{2024}$

$\Rightarrow x = 2024 \tan 69° = \boxed{527 \text{ m}}$

Q. 9.

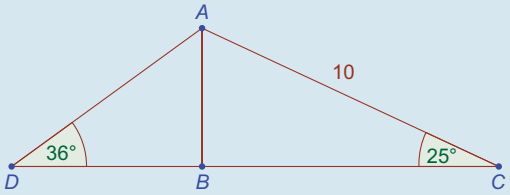


$\tan 33° = 5$

$\Rightarrow 5 \tan 33° = \boxed{3.25 \text{ m}}$

$\Rightarrow h = 1.7 + 3.24 = \boxed{4.95 \text{ m}}$

Q. 10.



$$\sin 25° = \frac{|AB|}{10}$$

$$\Rightarrow 10 \sin 25° = |AB|$$

$$\cos 25° = \frac{|BC|}{10}$$

$$\Rightarrow |BC| = 10 \cos 25° = 9.063$$

$$\frac{10 \sin 25°}{|DB|} = \tan 36°$$

$$\Rightarrow |DB| = \frac{10 \sin 25°}{\tan 36°} = 5.817 = 5.8$$

Q. 11. $|AC|^2 = 120^2 + 90^2$

$\Rightarrow |AC|^2 = 14400 + 8100 = 22500$

$\Rightarrow |AC| = 150$ m

$\Rightarrow$ Distance = $\boxed{300 \text{ m}}$

Revision Exercises

Q. 1. (i) $\sqrt{25^2 - 24^2} = \sqrt{49} = 7$

(ii) $\sqrt{17^2 - 8^2} = \sqrt{225} = 15$

(iii) $\sqrt{35^2 + 12^2} = \sqrt{1369} = 37$

(iv) $\sqrt{65^2 - 60^2} = \sqrt{625^2} = 25$

Q. 2.

(i)	0.8090	(vi)	11.4301
(ii)	0.3746	(vii)	1.000
(iii)	0.2679	(viii)	0.7071
(iv)	0.8660	(ix)	0.7071
(v)	0.9397	(x)	0.9397

Q. 3.

	sin *A*	cos *A*	tan *A*	sin *B*	cos *B*	tan *B*
(i)	$\frac{77}{85}$	$\frac{36}{85}$	$\frac{77}{36}$	$\frac{36}{85}$	$\frac{77}{85}$	$\frac{36}{77}$
(ii)	$\frac{39}{89}$	$\frac{80}{89}$	$\frac{39}{80}$	$\frac{80}{89}$	$\frac{39}{89}$	$\frac{80}{39}$
(iii)	$\frac{48}{73}$	$\frac{55}{73}$	$\frac{48}{55}$	$\frac{55}{73}$	$\frac{48}{73}$	$\frac{55}{48}$
(iv)	$\frac{65}{97}$	$\frac{72}{97}$	$\frac{65}{72}$	$\frac{72}{97}$	$\frac{65}{97}$	$\frac{72}{65}$

Q. 4.

(i)	61.2°	(vi)	18.3°
(ii)	9.7°	(vii)	15.6°
(iii)	22.9°	(viii)	55.6°
(iv)	43.1°	(ix)	70.3°
(v)	59.1°	(x)	58.6°

Q.5. (i) 44°

(ii) $\sin 22° = 0.3746$ (sin *A*)

$\sin 44° = 0.6947$ (sin *B*)

(iii) $2 \sin A = 0.7492 \neq \sin(2A) = 0.6947$

No

(iv) $\sin 2A = \sin 44° = 0.6947$

$\cos A = \cos 22° = 0.9272$

$\sin A = \sin 22° = 0.3746$

$2 \sin A \cos A = 2(0.3746)(0.9272)$

$= 0.6947$

$\therefore \sin(2A) = 2 \sin A \cos A$

Q. 6. (a) $|\angle A| = 180° - (90° + 20°)$ … angles in a Δ

$\Rightarrow |\angle A| = \boxed{70°}$

(b) $x^2 + 15^2 = 17^2$

$\Rightarrow x^2 + 225 = 289$

$\Rightarrow x^2 = 64$

$\Rightarrow x = \boxed{8}$

(c) $\sin A = \frac{O}{M} = \frac{x}{10}$

But sin *A* in given as $\sin A = \frac{3}{5}$

$\Rightarrow \frac{x}{10} = \frac{3}{5}$

$\Rightarrow x = \boxed{6}$

Q. 7. (i) (a) $\boxed{0.78}$ (b) 0.47

(ii) $\tan 28° = \frac{x}{17}$

$\Rightarrow x = 17 \tan 28° = 9.0390$

$x = \boxed{9.04\ 2}$ (2 decimal places)

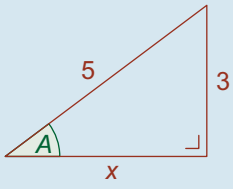
$\sin 51° = \frac{9.040}{y}$

$\Rightarrow y = \frac{9.040}{\sin 51°}$

$\Rightarrow y = \boxed{11.6323}$

$= 11.63$ (2 decimal places)

Q. 8. (i)



$x = 4$

$\Rightarrow \cos A = \boxed{\frac{4}{5}}$

(ii) $\tan 55° = \frac{h}{20}$

$\Rightarrow h = 28.56$ m

Q. 9. (i) $24^2 + x^2 = 26^2$

$\Rightarrow 576 + x^2 = 676$

$\Rightarrow x^2 = 100$

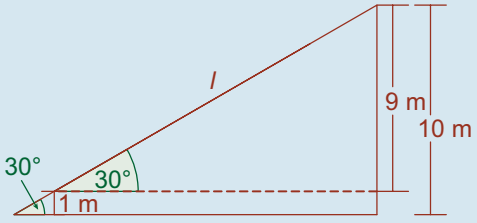
$\Rightarrow x = \boxed{10}$

$\therefore \sin\theta = \frac{10}{26} = \boxed{\frac{5}{13}}$

(ii) $\cos 42° = \frac{|\angle B|}{10}$

$\Rightarrow |\angle B| = 10 \cos 42° = \boxed{7.4}$

Q. 10.



$\sin 30° = \frac{9}{l}$

$\Rightarrow 0.5 = \frac{9}{l}$

$\Rightarrow l = 18$ m

Q. 11. $|OA| = 2 \times 12 = 24$ km

$|OB| = 2 \times 16 = 32$ km

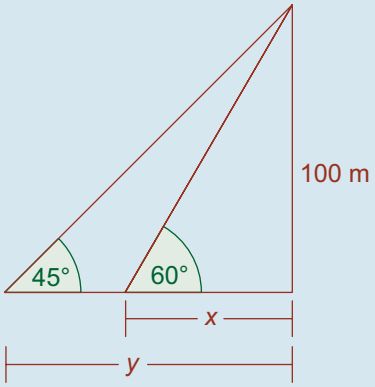
$|\angle AOB| = 90°$, so we can use Pythagoras

$|AB|^2 = 24^2 + 32^2$

$\Rightarrow |AB|^2 = 576 + 1024 = 1600$

$\Rightarrow |AB| = \boxed{40 \text{ km}}$

Q. 12.



$\tan 60° = \frac{100}{x}$

$x = \frac{100}{\tan 60°} = \frac{100}{\sqrt{3}}$

$y = \frac{100}{\tan 45°} = 100$

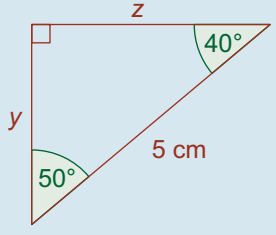
$y - x = 100 - \frac{100}{\sqrt{3}} = \boxed{42.26}$

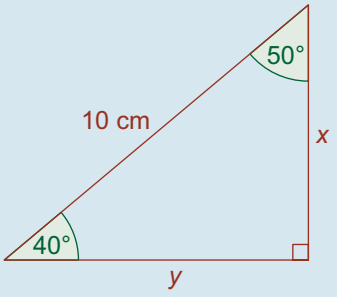
Q. 13. (i) $A = \tan^{-1}\left(\frac{15}{20}\right) = 37°$

$B = 90° - 37° = 53°$

$x = \sqrt{20^2 + 15^2} = 25$

(ii)



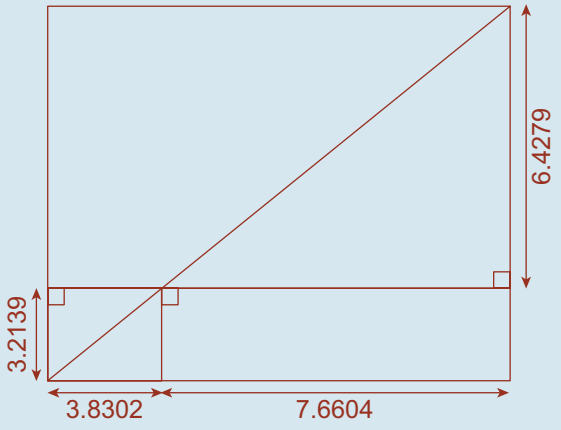


$\cos 50° = \frac{x}{10}$

$10 \cos 50° = x$

$x = 6.4278 \ldots$

$x = 6.4279$ (to 4 d.p.)



Triangles are similar: $\therefore y = \frac{6.4279}{2}$

$= 3.2139$ (to 4 d.p.)

$w = \sqrt{10^2 - 6.4279^2}$

$w = 7.6604$

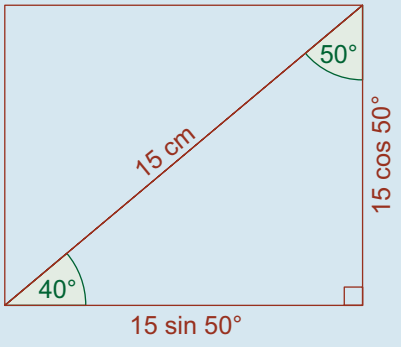
$\therefore z = \frac{7.6604}{2} = 3.8302$

Area $= (3.8302 + 7.6604)$
$(3.2139 + 6.4279)$

$= 110.79 \text{ cm}^2$

or

(ii)



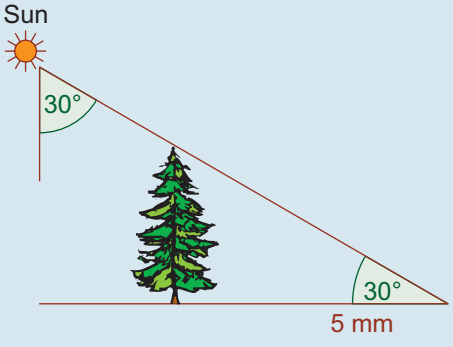
Area $= (15 \sin 50°)\quad (15 \cos 50°)$

$= \frac{225}{2} \cdot 2 \sin 50° \cos 50°$

$= \frac{225}{2} \sin 100°$

$= 110.79 \text{ cm}^2$

Q. 14.



(i) $\frac{h}{5} = \tan 30°$

$h = 5 \tan 30° = \frac{5}{3} =$ 2.89 m

(ii) $\frac{2.89}{l} = \tan 20°$

$l =$ 7.9 m

Q. 15. $\frac{h}{10} = \text{Sin } 60°$

$h = 5\sqrt{3}$

area $= 20 \times 5\sqrt{3} =$ $100\sqrt{3}$

$= 173.21 \text{ m}^2$