

TRIGONOMETRY – ANSWERS



TASK A

$$\begin{aligned}1. \quad 6^2 + 8^2 &= y^2 \\ 36 + 64 &= 100 \\ y &= \sqrt{100} = 10\end{aligned}$$

$$\begin{aligned}2. \quad 2^2 + 1^2 &= y^2 \\ 4 + 1 &= 5 \\ y &= \sqrt{5} = 2.2 \text{ (1dp)}\end{aligned}$$

$$\begin{aligned}3. \quad y^2 + 5^2 &= 7^2 \\ y^2 + 25 &= 49 \\ y^2 &= 24 \\ y &= \sqrt{24} = 4.9 \text{ (1dp)}\end{aligned}$$

$$\begin{aligned}4. \quad y^2 + 3^2 &= 6^2 \\ y^2 + 9 &= 36 \\ y^2 &= 27 \\ y &= \sqrt{27} = 5.2 \text{ (1dp)}\end{aligned}$$

$$\begin{aligned}5. \quad 2^2 + y^2 &= 12^2 \\ 4 + y^2 &= 144 \\ y^2 &= 140 \\ y &= \sqrt{140} = 11.8 \text{ (1dp)}\end{aligned}$$

$$\begin{aligned}6. \quad 7^2 + y^2 &= 14^2 \\ 49 + y^2 &= 196 \\ y^2 &= 147 \\ y &= \sqrt{147} = 12.1 \text{ (1dp)}\end{aligned}$$

TASK B

$$\begin{aligned}1. \quad \sin(30) &= \frac{BC}{6} \\ 6 \times \sin(30) &= BC = 3\end{aligned}$$

$$\begin{aligned}2. \quad \sin(20) &= \frac{BC}{9} \\ 9 \times \sin(20) &= BC = 3.1 \text{ (1dp)}\end{aligned}$$

$$\begin{aligned}\cos(30) &= \frac{AB}{6} \\ 6 \times \cos(30) &= AB = 5.2 \text{ (1dp)}\end{aligned}$$

$$\begin{aligned}\cos(20) &= \frac{AB}{9} \\ 9 \times \cos(20) &= AB = 8.5 \text{ (1dp)}\end{aligned}$$

$$\begin{aligned}3. \quad \tan(25) &= \frac{AB}{12} \\ 12 \times \tan(25) &= AB = 5.6 \text{ (1dp)}\end{aligned}$$

$$\begin{aligned}4. \quad \tan(40) &= \frac{BC}{10} \\ 10 \times \tan(40) &= AC = 8.4 \text{ (1dp)}\end{aligned}$$

$$\cos(25) = \frac{12}{AC}$$

$$\cos(40) = \frac{10}{AC}$$

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$$\frac{12}{\cos(25)} = AC = 13.2 \text{ (1dp)}$$

$$\frac{10}{\cos(40)} = AC = 13.1 \text{ (1dp)}$$

$$5. \tan(30) = \frac{BC}{2}$$

$$6. \tan(45) = \frac{BC}{3}$$

$$2 \times \tan(30) = BC = 1.2 \text{ (1dp)}$$

$$3 \times \tan(45) = BC = 3 \text{ (1dp)}$$

$$\cos(30) = \frac{2}{AC}$$

$$\cos(45) = \frac{3}{AC}$$

$$\frac{2}{\cos(30)} = AC = 2.3 \text{ (1dp)}$$

$$AC = \frac{3}{\cos(45)} = 4.2 \text{ (1dp)}$$

TASK C

$$1. \tan(x) = \frac{4}{8}$$

$$2. \tan(x) = \frac{2}{1}$$

$$x = \tan^{-1}\left(\frac{4}{8}\right) = 26.6 \text{ (1dp)}$$

$$x = \tan^{-1}\left(\frac{2}{1}\right) = 63.4 \text{ (1dp)}$$

$$3. \sin(x) = \frac{5}{7}$$

$$4. \sin(x) = \frac{3}{6}$$

$$x = \sin^{-1}\left(\frac{5}{7}\right) = 45.6 \text{ (1dp)}$$

$$x = \sin^{-1}\left(\frac{3}{6}\right) = 30$$

$$5. \cos(x) = \frac{2}{12}$$

$$6. \cos(x) = \frac{7}{14}$$

$$x = \cos^{-1}\left(\frac{2}{12}\right) = 80.4 \text{ (1dp)}$$

$$x = \cos^{-1}\left(\frac{7}{14}\right) = 60$$