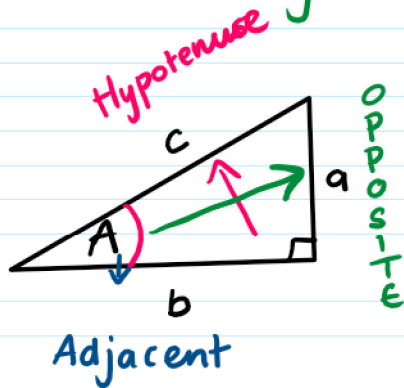


## Ratio = Fractions

LOG TABLES → Pg 16



## Trig Ratios

$$\sin = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\tan = \frac{\text{opposite}}{\text{adjacent}}$$

**S**OH **C**AH **T**OA

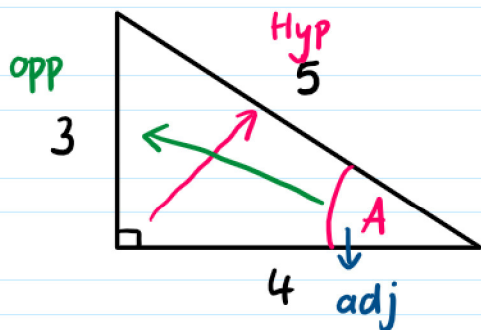
Log tables

$$\sin A = \frac{a}{c}$$

$$\cos A = \frac{b}{c}$$

$$\tan A = \frac{a}{b}$$

Eg 1) Find  $\sin A$ ,  $\cos A$  and  $\tan A$



① Label the sides in relation to the given angle.

② Trig Ratios

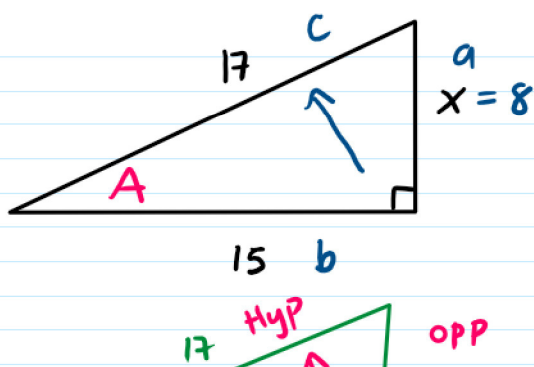
$$\sin = \frac{3}{5} \quad \cos = \frac{4}{5} \quad \tan = \frac{3}{4}$$

$$\sin A = \frac{3}{5}$$

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

$$\tan A = \frac{3}{4}$$

Eg 2) Find  $\sin A$ ,  $\cos A$  and  $\tan A$



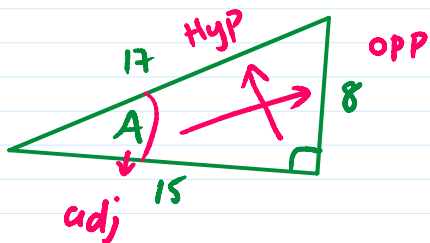
Pythagoras

$$c^2 = a^2 + b^2$$

$$17^2 = x^2 + 15^2$$

$$289 = x^2 + 225$$

$$\begin{array}{r|l} -225 & 64 = x^2 \\ & \sqrt{64} = x \\ & \sim \sim \end{array}$$



$$\sqrt{64} = x$$

$$8 = x$$

$$\sin A = \frac{8}{17}$$

$$\cos A = \frac{15}{17}$$

$$\tan = \frac{8}{15}$$

Pg 434 Q1 part 2+3  
Q2+3



T&Th 22.2  
Sine, Cosin...



T&Th 22.2  
Sine, Cosin...

# Trigonometry

chapter 22

433

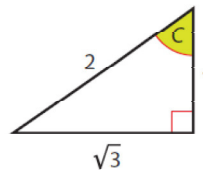
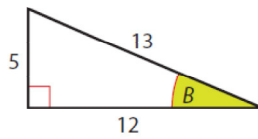
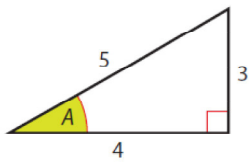
## Section 22.2 Sine, Cosine and Tangent ratios

### Example 1

If  $\tan B = \frac{\sqrt{5}}{2}$ , find the value of  $\sin B$  and  $\cos B$ .

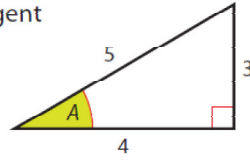
### Exercise 22.2

1. Find the sin, cos and tan of the angle marked with a capital letter in each of the following triangles:



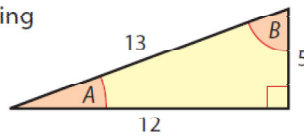
2. In the given triangle, state which of the ratios sine, cosine or tangent

- (i) connects 3, 4 and the angle A
- (ii) connects 4, 5 and the angle A
- (iii) connects 3, 5 and the angle A.



3. Write down what should be inserted into each of the following coloured boxes:

- (i)  $\sin \square = \frac{5}{13}$
- (ii)  $\tan \square = \frac{12}{5}$
- (iii)  $\cos \square = \frac{5}{13}$
- (iv)  $\square A = \frac{12}{13}$
- (v)  $\square B = \frac{5}{13}$
- (vi)  $\square A = \frac{5}{12}$



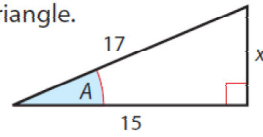
4. Find the length of the side marked  $x$  in the given right-angled triangle.

Hence write down the value of

(i)  $\sin A$

(ii)  $\cos A$

(iii)  $\tan A$ .



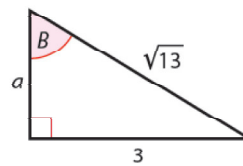
5. Find the value of  $a$  in the given right-angled triangle.

Hence write down the value of

(i)  $\sin B$

(ii)  $\cos B$

(iii)  $\tan B$ .



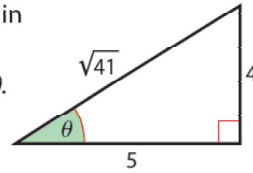
6. The angle  $\theta$  and three sides of a right-angled triangle are shown in the given diagram.

State whether each of these ratios represents  $\sin \theta$ ,  $\cos \theta$  or  $\tan \theta$ .

(i)  $\frac{4}{5}$

(ii)  $\frac{4}{\sqrt{41}}$

(iii)  $\frac{5}{\sqrt{41}}$



7. Given that  $\cos B = \frac{5}{13}$ , draw a rough sketch of a right-angled triangle and use it to write down the ratios  $\sin B$  and  $\tan B$ .

8. (i) If  $\tan A = \frac{1}{2}$ , find  $\sin A$ .

(ii) If  $\cos B = \frac{2}{5}$ , find  $\tan B$ .

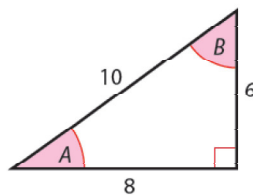
9. If  $\tan C = \frac{1}{\sqrt{3}}$ , find the values of  $\sin C$  and  $\cos C$ .

10. From the given triangle, write down the value of

- (i)  $\sin^2 A + \cos^2 A$  (ii)  $\sin^2 B + \cos^2 B$ .

If you have done your calculations correctly, you will have verified a very important fact about any angle, i.e.,

$$\sin^2 A + \cos^2 A = 1.$$



## Answers

### Exercise 22.2

- $\frac{3}{5}, \frac{4}{5}, \frac{3}{4}, \frac{5}{13}, \frac{12}{13}, \frac{5}{12}, \frac{\sqrt{3}}{2}, \frac{1}{2}, \sqrt{3}$
- (i) Tangent (ii) Cosine (iii) Sine
- (i) A (ii) B (iii) B  
(iv) Cos (v) Cos (vi) Tan
- $x = 8$ ; (i)  $\frac{8}{17}$  (ii)  $\frac{15}{17}$  (iii)  $\frac{8}{15}$
- $a = 2$ ; (i)  $\frac{3}{\sqrt{13}}$  (ii)  $\frac{2}{\sqrt{13}}$  (iii)  $\frac{3}{2}$
- (i) Tan  $\theta$  (ii) Sin  $\theta$  (iii) Cos  $\theta$
- $\frac{12}{13}, \frac{12}{5}$
- (i)  $\frac{1}{\sqrt{5}}$  (ii)  $\frac{\sqrt{21}}{2}$
- $\frac{1}{2}, \frac{\sqrt{3}}{2}$
- (i) 1 (ii) 1