

### Key Language

1	<b>expand or multiply out</b>	Remove brackets by multiplying, leaving an equivalent expression
2	<b>perfect square</b>	A bracket squared e.g. $(p + 4)^2$
3	<b>product</b>	The result of multiplying e.g. the product of $2a$ and $b$ is $2ab$
4	<b>binomial</b>	Algebraic expression with 2 terms; may be in a bracket
5	<b>equation</b>	A statement involving '=' which is only true for some values of the unknown e.g. $x^2 = 25$ is true for $x = 5$ and $-5$
6	<b>identity</b>	A statement which is true for <u>all</u> values of the unknown, often using $\equiv$ instead of $=$ e.g. $5(x + 2) \equiv 5x + 10$
7	<b>subject</b>	The letter on the left side of a formula
8	<b>in terms of</b>	Refers to the letter(s) on the right side of a formula
9	<b>proof</b>	A detailed set of steps which convincingly show something
10	<b>quadratic</b>	Having positive powers of $x$ , and the highest power is 2
11	<b>cubic</b>	Having positive powers of $x$ , and the highest power is 3
12	<b>hypotenuse</b>	The longest side in a right-angled triangle, opposite the right angle
13	<b>adjacent</b>	Means 'next to'
14	<b>adjacent side</b>	In a right-angled triangle, the one of the shorter sides which is next to the 'special' angle
15	<b>opposite side</b>	In a right-angled triangle, the one of the shorter sides which is opposite the 'special' angle
15	<b>exact</b>	A precise value, such as a root, a fraction, or in terms of $\pi$ (Not a rounded decimal, which has limited accuracy)

### Formulae to Learn

#### The Sine Rule

For missing side:  $\frac{a}{\sin A} = \frac{b}{\sin B}$

For missing angle:  $\frac{\sin A}{a} = \frac{\sin B}{b}$

#### The Cosine Rule

For missing side:  $a^2 = b^2 + c^2 - 2bc \cos A$

For missing angle:  $\cos A = \frac{b^2 + c^2 - a^2}{2bc}$

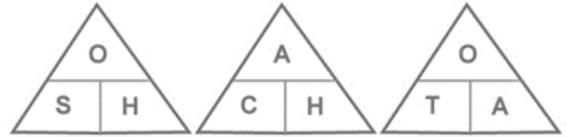
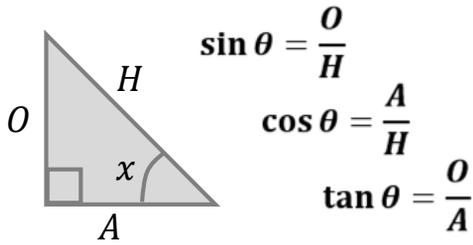
Know




# Basic Trigonometry



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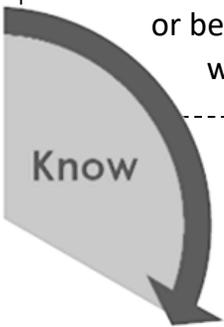


Use **SOHCAHTOA** to help you remember these

## Exact Trig. Values

You need to learn the values of the basic trig. functions for these special angles, or be able to work them out quickly without using a calculator.

	0°	30°	45°	60°	90°
sin	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
tan	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	---



Know

## PRACTICE QUESTIONS

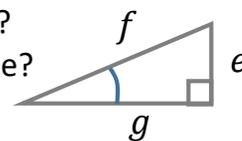
Ten of these questions will be chosen, with very little change, to make the Knowledge Test. If you can confidently answer all of these, you will pass easily. Use pages 1 and 2 to research and *learn* anything that you don't know yet.

- Which of these is a *perfect square*? A:  $x^2 + 9$  B:  $x^2 + 3$  C:  $(x + 3)^2$
- What does the word *product* mean?
- Which of these is an *equation*? A:  $2p + 3q$  B:  $5p + 3 = 10$  C:  $x + 2x = 3x$
- Which of these is an *identity*? A:  $2x + 3x = 5x$  B:  $x = 5$  C:  $4x = 20$
- What is the *subject* of this formula:  $T = 5b - m$  ?
- Which of these formulae is *in terms of b*? A:  $T = 6b$  B:  $b = 6T$
- What is the highest power in a *quadratic* expression?
- What is the highest power in a *cubic* expression?
- Which of these symbols is often used for an *identity*? A:  $\approx$  B:  $\neq$  C:  $\cong$  D:  $\equiv$
- Write down a formula for the *Sine Rule*. (Either version.)
- Write down a formula for the *Cosine Rule* for finding a missing *side*.
- Write down a formula for the *Cosine Rule* for finding a missing *angle*.

Do

## PRACTICE QUESTIONS (continued)

13. In the triangle on the right, what letter is written on the *hypotenuse*?
14. In the triangle on the right, what letter is written on the *opposite* side?
15. In the triangle on the right, what letter is written on the *adjacent* side?
16. Which of these values is not exact? A: 0.151 (3sf) B:  $\frac{4}{19}$  C:  $5\pi$
17. Complete the formula using two of the letters A, H, O:  $\sin \theta =$
18. Complete the formula using two of the letters A, H, O:  $\tan \theta =$
19. Write down an exact value for  $\sin 45^\circ$ .
20. Write down an exact value for  $\cos 90^\circ$ .
21. Write down an exact value for  $\sin 60^\circ$ .
22. Write down an exact value for  $\tan 45^\circ$ .



**Note:** Questions like Q19-22 could involve any of the exact values shown in the table on the previous page.

## ANSWERS

1. C:  $(x + 3)^2$
2. multiply
3. C:  $5x = 20$
4. A:  $2x + 3x = 5x$
5. T
6. A:  $T = 6b$
7. B:  $3 - x^2$
8. A:  $x^3 + 5x$
9. D:  $\equiv$
10.  $\frac{a}{\sin A} = \frac{b}{\sin B}$  or  $\frac{\sin A}{a} = \frac{\sin B}{b}$
11.  $a^2 = b^2 + c^2 - 2bc \cos A$
12.  $\cos A = \frac{b^2 + c^2 - a^2}{2bc}$
13. F
14. e
15. g
16. A: 0.151
17.  $\sin \theta = \frac{O}{H}$
18.  $\tan \theta = \frac{O}{A}$
19.  $\frac{\sqrt{2}}{2}$  or  $\frac{1}{\sqrt{2}}$
20. 0
21.  $\frac{\sqrt{3}}{2}$
22. 1

