Guidance for tutors

Outcome	SPT2	**Student can consistently:**	Find the length of a missing side in a right-angled triangle using sine, cosine or tangent functions.
How the topic is examined	• Examined through test paper questions. • It is most likely that these questions will appear on calculator papers. • Sometimes students can be asked to find a missing side on a non-calculator paper. In this instance students will be given the value of the specific ratio or they could be one of the ratios that students are expected to know off by heart. • Students are likely to be provided with a diagram, but students may be expected to draw a diagram for a given question. It is important that students meet questions like this.		

Prior knowledge	• Students should be confident
	  ○ Solving basic equations (AEq1)
	  ○ Rearranging simple formulae (AEx8)
	  ○ Using a calculator
	• In addition questions on this topic can have links to:
	  ○ Bearings
	  ○ Pythagoras's Theorem (SPT1)
	  ○ Area and perimeter (SLAV1)		

Suggested tuition approaches	• Students should cover mixed problems involving sine, cosine and tangent as opposed to focussing on one ratio at a time.
	• Ensure you ask questions where students know the hypotenuse and ones where students have to find them. This covers both ways of solving trig problems.
	• Students need to recall the trigonometric ratios, sine, cosine and tangent. Some students like to remember the pneumonic SOH CAH TOA
	• The steps involved in solving simple trigonometry problems should include:
	  ○ Drawing the triangle (where necessary) and labelling the three sides.
	  ○ Selecting the correct trigonometric ratio and substituting the numbers in.
	  ○ Once students have substituted in they should solve the equation.
	• Ensure that students show ALL their steps in their working out.
	• Some students use SOH CAH TOA triangles to help them work out the required side.		

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	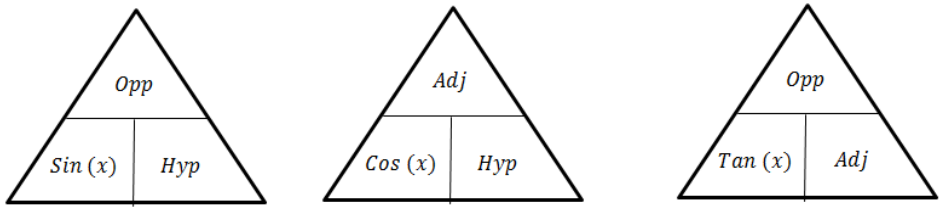
Common errors and misconceptions	• Questions might ask students to find particular sides or angles (e.g. side AB or angle CDE). Some students may struggle to understand which side or angle it is referring to. • Students have a tendency to always multiply to solve problems For example to solve; $\sin 43 = \frac{25}{x}$ Many students will still do $x = \sin(43) \times 25$ To avoid this ask students to check the accuracy of their answer (e.g. if they are finding the longest side, make sure the value they get is longer than the other sides given) • Ask students to double check the calculation they put into their calculator. • On most modern calculators it is important that students close the bracket after the angle – otherwise this will lead to the wrong answer being found. • Check that the calculator is in degrees (deg) mode.
Suggested resources	• Khan Academy Videos for help with explanation ○ https://www.khanacademy.org/math/trigonometry/basic-trigonometry • Worksheets of problems ○ http://www.cimt.org.uk/projects/mepres/allgcse/bka4.pdf (pp 126-134) ○ http://www.cimt.org.uk/projects/mepres/allgcse/pr4-sa.pdf (pp 54-58) ○ https://www.tes.co.uk/teaching-resource/trigonometry-lesson--sohcahtoa-sine-cosine-are-6408994 (you will need a free login to access these resources) • Exam paper problems ○ http://www.mathsmadeeasy.myzen.co.uk/gcse-maths-topic-papers/Trigonometry.pdf (Q6) ○ http://www.castleschool.co.uk/assets/files/Student%20Resources/trigonometry.pdf (questions involving finding sides only)