Guidance for tutors

Outcome	SLAV3	**Student can consistently:**	Find the area of compound shapes, including ones involving circles and part circles.

How the topic is examined	• Examined through test paper questions. • Questions are equally likely to appear on calculator and non-calculator papers. • If a question appears on a non-calculator paper students may be expected to leave their answer in terms of π if it has circular parts. • Increasingly examination questions are asking students to use the area of a shape to solve a real life problem. • Questions could have integer, fractional, decimal and surd valued sides.

Prior knowledge	• Students should be confident:
	  ○ Multiplying and dividing without a calculator.
	  ○ Finding the area of basic shapes (SLAV1)
	  ○ Finding the circumference and area of a circle (SLAV2)
	• In addition questions involving this topic can have links to:
	  ○ Volume of a cylinder (SLAV4)

Suggested tuition approaches	• A compound shape is one that is made up of basic shapes (e.g. rectangle, square, triangle, circle etc.…)
	• The steps involved in finding the area of some of these shapes is:
	  ○ Split the shape into a series of more basic shapes (show the lines on the shape)
	  ○ Label each shape with a letter (to help the examiner)
	  ○ Find the area of each of these shapes.
	  ○ Add the areas together and you get the area of the compound shape.
	• It can be easier sometimes to find the area of more than what you are asked to and then do a subtraction. Either way you will get the answer.
	• If the shape appears to have a ‘hole in’ and you are required to find a shaded region it is usually necessary to subtract one area from the other.
	• Some examples of compound shapes:

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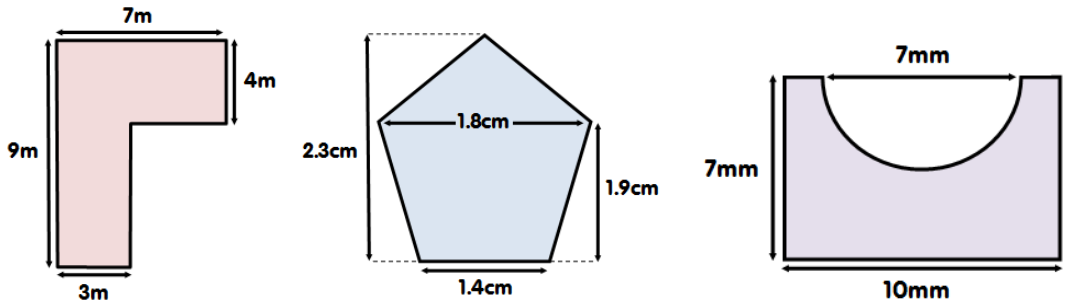

- In the last shape you would find the area of the rectangle (10 x 7) and then subtract the area of the semi-circle.
- Sometimes students think of a trapezium as a compound shape and use this method above. It is more efficient if they can use the formula for the area of a trapezium.
- Increasingly students have to use the area and/or perimeter or a compound shape to solve a further problem. (e.g. Mike is tiling his floor. Tiles are 12cm x 12cm and are sold in packs of 20. How many packs does he need to tile his floor?)

Common errors and misconceptions

- Students forget to put units – particularly when answers are given in terms of π
- If units are not the same, students need to convert one to the other.
- Errors are made when working out the area of shapes without a calculator.
- One mark is given for 'stating the units' of an answer – many students lose the mark because they forget to or state the wrong units.
- The units of perimeter are length (e.g. mm, cm, metres etc…)
- Students often split up the shape into too many parts making it more likely they will make some simple calculation errors.
- When splitting a shape up students struggle to work out the lengths of missing sides that they might need to use.
- Students forget to add up all their areas at the end.

Suggested resources

- Questions
  - http://www.cimt.org.uk/projects/mepres/allgcse/pr7-sa.pdf (pp 13 - 25)
  - https://corbettmaths.files.wordpress.com/2013/02/area-of-compound-shapes-pdf.pdf

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	• Past GCSE Questions
	  ○ https://keshgcsemaths.files.wordpress.com/2013/11/37_area-of-compound-shapes2.pdf
	• Video tutorial
	  ○ http://corbettmaths.com/2012/08/02/area-of-compound-shapes/