Guidance for tutors

Outcome	P5	Student can consistently:	Use the "AND" and "OR" rules for probability.
How the topic is examined	<td colspan="3"> - Examined through test paper questions. - This topic is equally likely to appear on calculator and non-calculator papers. - Although this has been tested on GCSE papers in the past it has now been explicitly stated in the specifications. - Students will tend to use the AND /OR rules in other questions on probability (e.g. space diagrams or tree diagrams) </td>		
Prior knowledge	<td colspan="3"> - Students should be confident with: - Basic probability - Four rules with fractions (NF1) - In addition questions involving this topic can have links to: - All other probability sections (P1 – P7) </td>		
Suggested tuition approaches	<td colspan="3"> - Two events are independent if the occurrence of one does not change the probability of the other occurring. - An example would be rolling a 5 on a die and getting a head on a coin. Rolling the 5 does not affect the probability of flipping the head. - If events are independent, then the probability of them both occurring is the product of the probabilities of each occurring. (i.e. you would multiply the probabilities). - So in the above example the probability of rolling a 5 AND getting a head would be $\frac{1}{6} \times \frac{1}{2} = \frac{1}{12}$. You could have done this using a possibility space diagram. - Sometimes the AND rule is hidden. (e.g. if you are told the probability that a bus is late on a morning is 0.3 and that this probability is independent. What is the probability the bus is late two days in a row? This is the same as asking what is the probability it is late on day 1 AND late on day 2 = $0.3 \times 0.3 = 0.09$ - Two events are mutually exclusive if they cannot occur at the same time. - If two events are mutually exclusive, then the probability of them both occurring at the same time is 0. - If two events are mutually exclusive, then the probability of either occurring is the sum of the probabilities of each occurring. </td>		

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	• (e.g. the probability of getting blue on a spinner is 0.5 and the probability of getting red on the same spinner is 0.16, the probability of getting blue OR red is 0.5 + 0.16 = 0.66).
Common errors and misconceptions	• Students often mix up the rules. • Multiplying and adding fractions and decimals leads to errors. • Trying to use the rules when events are not independent (for the AND rule) and not mutually exclusive.

Suggested resources	• Questions
	    o https://corbettmaths.files.wordpress.com/2013/02/probability-pdf.pdf
	    o https://corbettmaths.files.wordpress.com/2013/02/independent-events-pdf.pdf
	    o https://corbettmaths.files.wordpress.com/2013/02/tree-diagrams-pdf.pdf
	• Past GCSE Questions
	    o https://keshgcsemaths.files.wordpress.com/2013/11/92_tree-diagrams.pdf
	• Video tutorial
	    o http://corbettmaths.com/2013/06/15/the-or-rule/
	    o http://corbettmaths.com/2013/06/16/independent-events/
	    o http://corbettmaths.com/2013/05/07/tree-diagrams/