



Y13 Applied

CH02
2.1,2.2,2.3,2.4,2.5Statistics
Conditional ProbabilityLessons
3

Essential Knowledge Milestones		Teaching Points	
<ul style="list-style-type: none"> understand and be able to use probability formulae using set notation; be able to use tree diagrams, Venn diagrams and two-way tables; $P(A B) = \frac{P(A \cap B)}{P(B)}$ <ul style="list-style-type: none"> understand and be able to use the conditional probability formula. be able to model with probability; be able to critique assumptions made and the likely effect of more realistic assumptions. 		<ul style="list-style-type: none"> Begin by recapping the use of tree diagrams and Venn diagrams, focusing on the use of set notation for probabilities. Introduce the use of two-way tables to find probabilities and use worded questions which are solved most efficiently by forming a two-way table. Students need to be familiar with and be able to use $P(A') = 1 - P(A)$, the addition rule: $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ and the conditional probability formula $P(A \cap B) = P(A)P(B A)$. Use worded questions where students have to form the set notation as well as questions where the information is already given using set notation. Ensure the teaching of this section is combined with questions to recap the properties of mutually exclusive and independent events. Make sure these are now answered using set notation too. Students should know that probability can be used to predict how likely experiments are to have given outcomes. They should be able to determine all of the outcomes of an experiment (and know that these are called the sample space) and be able to determine the probability of each outcome of a given sample space. Students should also have an awareness of wider modelling where outcomes cannot be determined. Students should be able to question and critique any assumptions made in any given scenario. For example, assumptions about independence a reasonable assumption or whether a coin or dice is fair or biased. They should be able to look at the effect of these assumptions and have an awareness of assumptions that may be more realistic. 	
Success Criteria			
<input type="checkbox"/> You can apply the probability formulae using set notation; <input type="checkbox"/> You recognise and can apply when to use the conditional probability formula. <input type="checkbox"/> You can solve conditional probability in tree diagrams, Venn diagrams and two-way tables; <input type="checkbox"/> You are able to model with probability;			
Assumed Prior Knowledge/ Links / Interleaving			
<u>AS Mathematics – Statistics</u> <ul style="list-style-type: none"> Mutually exclusive and independent events 			
Potential Barriers to Access /Misconceptions		Opportunities for Reasoning/Problem Solving/Proofs	
<ul style="list-style-type: none"> Mistakes tend to involve the use of the conditional probability formula. For example, wrongly assuming independence and putting $P(A) \times P(B)$ rather than $P(A \cap B)$ as the numerator or the incorrect probability in the denominator. Students need to pay attention to ensure they know when conditional probability can be applied – spotting the “given” rule <p>Students should be careful not to make assumptions for which there is no basis. For example, assuming two events are independent without having evidence or reasons for such an assumption.</p>		<ul style="list-style-type: none"> With a wider probability section in the A Level content there is more scope for using real-life scenarios for probabilities. Ensure that questions are posed where it is not obvious which formulae need to be used. 	
Key Mathematical Vocabulary		Sample space, exclusive event, complementary event, discrete random variable, continuous random variable, mathematical modelling, independent, mutually exclusive, Venn diagram, tree diagram, set notation, conditional probability, two-way tables, critiquing assumptions.	
Personal Development		Notes	
Pupils are taught that they must be honest and 'truthful' when feeding back opinions and 'respect' the views of others when discussing the math's techniques used.			