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**Knowledge Rich Curriculum Plan**

Year 10 Higher – Probability



| **Lesson/Learning Sequence** | **Intended Knowledge:**  *Students will know that…* | **Tiered Vocabulary** | **Prior Knowledge:**  *In order to know this students, need to already know that…* | **Assessment** |
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| **To learn how to complete probability tables and use them to estimate how many times an event will happen** | * Students will know how to find the probability of an event happening using theoretical probability, students will know theoretical to mean what is expected to happen without conducting an experiment. * Students will know that to calculate the probability of an event not occurring you need to subtract the given probabilities from 1. * Students will know how to calculate the probability of an event using relative frequency. Students will know that to calculate this they need to use the formula: The number of times an event occurs ÷ The total number of trials. * Students will know how to find probabilities using the 'OR' rule by adding simple probabilities and know that the sum of the probabilities of all outcomes is 1. Students will know sum to mean the result of an addition. |  | * Express one number as a fraction of another * Fractions of amounts * Subtracting fractions away from 1 * Calculating with decimals |  |
| **To learn how to list all the outcomes for single events systematically and use the product rule for counting** | * Students will know how to list all outcomes for single events systematically * Students will know how to list all of the outcomes for two or more successive or combined events using systematic listing strategies. E.g When a die is rolled and coin is flipped some of the possible outcomes could be 1H, 2H, 3H, 4H, 5H, 6H * Students will know how to use and draw sample space diagrams. * Students will know how to use the product rule for counting. | **Probability** - the extent to which an event is likely to occur, measured by the ratio of the favourable cases to the whole number of cases possible. |  |  |
| **To learn how to draw and use a tree diagram for independent events** | * Students will know how to show given information on a probability tree diagram. * Students will know how to complete probabilities using both decimals and fractions to represent probabilities * Students will know construct a probability tree for multiple events * Students will know how to use a probability tree diagram to represent outcomes of combined independent events (with replacement) * Students will know how to use tree diagrams to calculate the probability of two combined independent events by multiplying across the branches (this can either be fractions or decimals) | **Independent** – not subject to control by anything else  **Independent Events** – Two events are independent if the occurrence of one event does not affect the chances of the occurrence of the other event | * Students will need to know that the probability of all possible outcomes for an event add to 1 * Students will need to know how to multiply decimals * Students will need to know how to multiply fractions |  |
| **To learn how to complete and use a tree diagram for dependent events** | * Students will understand how and why the outcome of one event can impact the outcome of a subsequent event * Students will know how to complete and construct probability trees for dependent events * Students will know how to use probability trees to calculate the probabilities of combined events for dependent events | **Dependent** – determined by  **Conditional/ Dependent Events** – events whose outcomes rely on that of another event | * Students will need to know how to multiply decimals * Students will need to know how to multiply fractions |  |
| **To learn how to draw and use Venn diagrams to calculate probabilities** | * Students will know how to put information into a Venn diagram and use it to determine probabilities * Students will know how to construct appropriate Venn diagrams to sort information * Students will know how to interpret a Venn diagram to find probabilities | **Venn Diagram** - a diagram representing mathematical or logical sets as circles within an enclosing rectangle (the universal set), common elements of the sets being represented by intersections of the circles.  **Universal Set** - a set which contains all objects, including itself  **Intersection** – A point, area or line that is common to two or more things. For a Venn diagram the intersection is the overlap between the two circles | * Students should know how to sort information into a simple Venn diagram |  |
| **To learn how to interpret and use set notation** | * Students will know how to use very simple set notation to describe parts of the Venn diagram e.g. (A), (B), (A'), (B') * Students will know how to use union (A Ս B) and intersection (A ∩ B) notation * Students will know how to find probabilities using union and intersection notation | **Union** - The set made by combining the elements of two sets. So the union of sets A and B is the set of elements in A, or B, or both. | Students should know how to sort information into a Venn diagram |  |