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| **Topic/Skill**  | **Definition/Tips** | **Example****Topic: Basic Probability**  |
| 1. Probability | The **likelihood/chance** of something happening.Is expressed as a number **between 0 (impossible) and 1 (certain)**.Can be expressed as a fraction, decimal, percentage or in words (likely, unlikely, even chance etc.) | Image result for math definition probability |
| 2. Probability Notation | **P(A)** refers to the **probability that event A will occur**. | P(Red Queen) refers to the probability of picking a Red Queen from a pack of cards. |
| 3. Theoretical Probability | $$\frac{Number of Favourable Outcomes}{Total Number of Possible Outcomes}$$ | Probability of rolling a 4 on a fair 6-sided die = $\frac{1}{6}$. |
| 4. Relative Frequency | $$\frac{Number of Successful Trials}{Total Number of Trials}$$ | A coin is flipped 50 times and lands on Tails 29 times. The relative frequency of getting Tails = $\frac{29}{50}$. |
| 5. Expected Outcomes | To find the number of expected outcomes, **multiply** the **probability** by the **number of trials**. | The probability that a football team wins is 0.2 How many games would you expect them to win out of 40?$$0.2 × 40 = 8 games$$ |
| 6. Exhaustive | Outcomes are **exhaustive** if they **cover the entire range of possible outcomes**.The **probabilities** of an **exhaustive** set of outcomes **adds up to 1**. | When rolling a six-sided die, the outcomes 1, 2, 3, 4, 5 and 6 are exhaustive, because they cover all the possible outcomes. |
| 7. Mutually Exclusive | Events are mutually exclusive if they **cannot happen at the same time**.The **probabilities** of an exhaustive set of **mutually exclusive** events **adds up to 1**. | Examples of mutually exclusive events:- Turning left and right- Heads and Tails on a coinExamples of non mutually exclusive events:- King and Hearts from a deck of cards, because you can pick the King of Hearts |
| 8. Frequency Tree | A diagram showing how information is categorised into various categories.The **numbers** at the ends of branches tells us how often something happened (**frequency**).The **lines** connected the numbers are called **branches**. |  |
| 9. Sample Space | The **set of all possible outcomes** of an experiment. | Image result for sample space |
| 10. Sample | A **sample** is a small selection of items from a population.A sample is **biased** if individuals or groups from the population are not represented in the sample. | A sample could be selecting 10 students from a year group at school. |
| 11. Sample Size | The larger a sample size, the closer those probabilities will be to the true probability. | A sample size of 100 gives a more reliable result than a sample size of 10. |

**Knowledge Organiser**