

Key Vocabulary	
Outcome,	One of the possible results of a probability experiment
Equally likely outcomes	All events have the same chance of occurring
Event	A set of possible outcomes resulting from a particular experiment
Independent event	Events that do not affect or are not affected by or events or event.
Dependent even	Events that affected or are affected by or events or event.
Tree diagrams	A diagram used in probability as a sample space to show all possible outcomes of a series of events
Theoretical probability	Ratio worked out on reasoning Number of wanted outcomes Total number of outcomes
Experimental probability	Using the results of an experiment to calculate probability
Random	A chance pick from a number of outcomes, which all have the same chance of occurring eg names out of a hat
Bias	A systematic error which makes all outcomes wrong

**Key facts / Diagrams**

$$\sum Prob = 1 \quad P(A) = \frac{P(A)}{\sum P(A,B)}$$

$$0 < Prod < 1 \quad P(\tilde{A}) = 1 - A$$

**Common misconceptions**

- When constructing a tree diagram for a given situation, some students may struggle to distinguish between how events, and outcomes of those events, are represented
- Some students may muddle the conditions for adding and multiplying probabilities
- Some students may add the denominators when adding fractions

**Worked examples**

**Experimental probability**

Outcome	Frequency
1	16
2	20
3	22
4	10
5	18
6	14
<b>Total</b>	<b>100</b>

a. Rolling a 3 (use the table)  
 $\frac{22}{100} = 0.22 = 22\%$

b. What is the theoretical probability of rolling a 3?  
 $\frac{1}{6} = 0.166666... \approx 17\%$

c. Rolling a number less than 3 (use the table)  
 (Rolling a 1 or 2)  $\frac{36}{100} = 0.36 = 36\%$

d. Rolling a 3 or a 5 (use the table)  
 $\frac{40}{100} = 0.40 = 40\%$