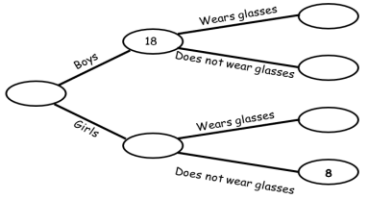
MATHS – YEAR 10 – UNIT 19

1. Tier 3 Vocabulary

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.
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**.
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**.
Independent Events	The outcome of a **previous event does not influence/affect the outcome of a second event**.
Dependent Events	The outcome of a **previous event does influence/affect the outcome of a second event**.
Conditional Probability	The probability of an event A happening, **given that** event B has already happened.
Venn diagram	A Venn diagram shows the relationship between a group of different things and how they overlap.

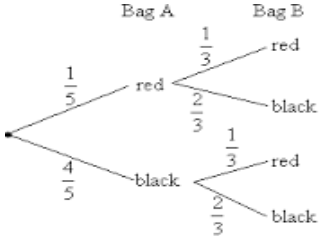
2. Frequency tree

A diagram showing how information is categorised into various groups. The numbers at the end of the branches tell us how often something happened (frequency). The lines connecting the numbers are called branches.



Tree diagrams

Tree diagrams show all the possible outcomes of an event and allow us to calculate their probabilities.



3. Command Words

Estimate the value of (used with a calculation)	Use approximations to work out a value. Unless told otherwise, students should round the given values to 1 significant figure.
Show that…	Give every step of a process that will lead to the required outcome.
Factorise (fully)	Take out any common factors of an expression or convert a quadratic expression into two linear factors. This should always be done fully, even if that word is absent from the instruction. Use of the word 'fully' is a hint that more than one factor can be taken out.
Why	Give a calculation and/or written evidence to support the given statement.
Solve	Find the value(s) that satisfy a given equation or inequality.
Construct	Draw accurately. If told to use compasses, all construction arcs and lines should be shown.

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4. Sample space diagram

The set of all possible outcomes of an experiment.

+	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

5. Compound interest

Interest paid on the original amount and the accumulated interest.

A bank pays 5% compound interest a year. Bob invests £3000. How much will he have after 7 tears?

$$3000 \times 1.05^7 = £4221.30$$

6. OR rule for probability

When two events, A and B are mutually exclusive:

P(A or B) = P(A) + P(B)

7. Theoretical probability

$$\frac{Number\ of\ Favourable\ Outcomes}{Total\ Number\ of\ Possible\ Outcomes}$$

8. Probability notation

P(A) refers to the probability that event A will occur.

P(A') refers to the probability that event A will NOT occur.

P(AUB) refers to the probability that event A or B or both will occur.

AND rule for probability

When two events, A and B are independent:

P(A and B) = P(A) x P(B)

9. Simple interest

The interest calculated as a percentage of the original amount.

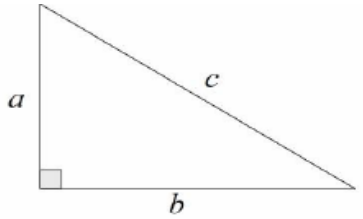
£1000 invested for 3 years at 10% simple interest.
10% of £1000 = £100
Interest = 3 x £100 = £300

10. Pythagoras' Theorem

Enables us to calculate the length of a side in any right-angled triangle.

The longest side is c (the hypotenuse), a and b are the shorted sides.

$$a^2 + b^2 = c^2$$



11. Relative frequency

$$\frac{Number\ of\ Successful\ Trials}{Total\ Number\ of\ Trials}$$