

Y11 Unit 4 Overview-Data Analysis and Probability:

Target grade for tests:

You will learn about:

- Probability and likelihood.
- Accurately presenting data.
- Choosing the most appropriate average.

You will be able to:

- Understand the probability scale and calculate the probability.
- Compare theoretical and experimental probability.
- Record, describe & analyse the frequency of outcomes of probability experiments using tables & frequency trees.
- Apply the property that the probabilities of an exhaustive set of outcomes sum to one.
- List outcomes systematically using lists, tables, grids, sample space diagrams and Venn diagrams and use these to calculate theoretical probabilities.
- Apply ideas of randomness, fairness and equally likely events to calculate expected outcomes of multiple future experiments.
- Plot and interpret scatter graphs recognising correlation.
- Draw and interpret histograms.
- Calculate and interpret averages and justify your choice of average.



Lesson Overview

UNDERSTANDING RISK (PROBABILITY AND LIKELIHOOD)

- Know that probability is a way of measuring likelihood
- Know and use the vocabulary of probability
- Understand the use of the 0-1 scale to measure probability
- Assess likelihood and place events on a probability scale
- List all the outcomes for an experiment
- Identify equally likely outcomes
- Work out theoretical probabilities for events with equally likely outcomes
- Know how to represent a probability
- Recognise when it is not possible to work out a theoretical probability for an event
- Know and use the fact that the sum of probabilities for all outcomes is 1
- List all elements in a combination of sets using a Venn diagram
- List outcomes of an event systematically
- Use a table to list all outcomes of an event
- List outcomes of an event using a grid (two-way table)
- Use frequency trees to record outcomes of probability experiments
- Make conclusions about probabilities based on frequency trees
- Construct theoretical possibility spaces for combined experiments with equally likely outcomes
- Calculate probabilities using a possibility space
- Use theoretical probability to calculate expected outcomes
- Use experimental probability to calculate expected outcomes

PRESENTATION OF DATA

- Know the meaning of continuous data
- Interpret a grouped frequency table for continuous data
- Construct a grouped frequency table for continuous data
- Construct histograms for grouped data with equal class intervals
- Interpret histograms for grouped data with equal class intervals
- Construct and use the horizontal axis of a histogram correctly
- Plot a scatter diagram of bivariate data
- Understand the meaning of 'correlation'

Key Words

Refer to

<http://studymaths.co.uk/glossary.php>
for definitions of the key words

Probability, Theoretical probability
Event
Outcome
Impossible, Unlikely, Evens chance, Likely,
Certain
Equally likely outcomes
Mutually exclusive
Exhaustive
Possibility space, sample space
Experiment, Combined experiment
Relative frequency
Frequency tree
Set
Venn diagram
Random
Bias, Fairness

Notation

Probabilities are expressed as fractions, decimals or percentage. They should not be expressed as ratios (which represent odds) or as words

$P(A)$ for the probability of event A

Data

Categorical data, Discrete data
Continuous data, Grouped data
Table, Frequency table
Frequency
Histogram
Scale, Graph
Axis, axes

- Interpret a scatter diagram using understanding of correlation
- DATA ANALYSIS**
- Find the modal class of set of grouped data
 - Find the class containing the median of a set of data
 - Find the midpoint of a class
 - Calculate an estimate of the mean from a grouped frequency table
 - Estimate the range from a grouped frequency table
 - Analyse and compare sets of data
 - Appreciate the limitations of different statistics (mean, median, mode, range)
 - Choose appropriate statistics to describe a set of data
 - Justify choice of statistics to describe a set of data

Scatter graph (scatter diagram, scattergram, scatter plot)
 Bivariate data
 (Linear) Correlation
 Positive correlation, Negative correlation

Notation
 Correct use of inequality symbols when labelling groups in a frequency table
 Eg $0 \leq h < 10$

Average
 Spread
 Consistency
 Mean
 Median
 Mode
 Range
 Statistic
 Statistics
 Approximate, Round
 Calculate an estimate
 Grouped frequency
 Midpoint

Research	Note-making	Group work & discussion	Memorisation	Precision & accuracy	Independence	Reflection