

Y11 Unit 3 Overview-Sequences, Graphs and Probability:



Target grade for tests:

You will learn about:

- Sequences
- Graphs
- Probability



You will be able to:

- Recognise and use Fibonacci type sequences and quadratic sequences.
- Use the form $y = mx + c$ to identify parallel lines, and interpret gradients and intercepts of linear functions .
- Find the equation of the line through two given points, or through one point with a given gradient.
- Interpret the gradient of a straight line graph as a rate of change.
- Recognise, sketch, plot and interpret graphs of quadratic functions, simple cubic functions and the reciprocal function $y = 1/x$ with $x \neq 0$.
- Plot and interpret graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration.
- Calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions.
- Enumerate sets and combinations of sets systematically, using tree diagrams.
- Understand that relative frequency (experimental probability) tends towards theoretical probability as sample size increases.

Lesson Overview

SEQUENCES

- Recognise Fibonacci numbers
- Recognise the Fibonacci sequence
- Generate Fibonacci type sequences
- Find the next three terms in any Fibonacci type sequence
- Substitute numbers into formulae including terms in x^2
- Generate terms of a quadratic sequence from a written rule
- Generate terms of a quadratic sequence from its nth term
- Identify quadratic sequences
- Establish the first and second differences of a quadratic sequence
- Find the next three terms in any quadratic sequence

GRAPHS

- Use the form $y = mx + c$ to identify parallel lines
- Rearrange an equation into the form $y = mx + c$
- Find the equation of a line through one point with a given gradient
- Find the equation of a line through two given points
- Interpret the gradient of a straight line graph as a rate of change
- Plot graphs of quadratic (cubic, reciprocal) functions
- Recognise and interpret the graphs of quadratic (cubic, reciprocal) functions
- Sketch graphs of quadratic (cubic, reciprocal) functions
- Plot and interpret graphs of non-standard functions in real contexts
- Find approximate solutions to kinematic problems involving distance, speed and acceleration

UNDERSTANDING RISK (PROBABILITY AND LIKELIHOOD)

Key Words

Refer to

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

Term

Term-to-term rule

Position-to-term rule

nth term

Generate

Linear

Quadratic

First (second) difference

Fibonacci number

Fibonacci sequence

Notation

$T(n)$ is often used to indicate the 'nth term'

Function, equation

Linear, non-linear

Quadratic, cubic, reciprocal

Parabola, Asymptote

Gradient, y-intercept, x-intercept, root

Rate of change

Sketch, plot

Kinematic

Speed, distance, time

Acceleration, deceleration

Notation

$y = mx + c$

Outcome, equally likely outcomes

Event, independent event, dependent event

<ul style="list-style-type: none"> • List outcomes of combined events using a tree diagram • Label a tree diagram with probabilities • Label a tree diagram with probabilities when events are dependent • Know when to add two or more probabilities • Know when to multiply two or more probabilities • Use a tree diagram to calculate probabilities of independent combined events • Use a tree diagram to calculate probabilities of dependent combined events • Understand that relative frequency tends towards theoretical probability as sample size increases 					<p>Tree diagrams Theoretical probability Experimental probability Random Bias, unbiased, fair Relative frequency Enumerate Set</p> <p>Notation $P(A)$ for the probability of event A Probabilities are expressed as fractions, decimals or percentage. They should not be expressed as ratios (which represent odds) or as words</p>	
Research	Note-making	Group work & discussion	Memorisation	Precision & accuracy	Independence	Reflection