

## Y11 Unit 3 Overview-Sequences, Graphs and FDPR:

Target grade for tests:

You will learn about:

- Sequences
- Graphs
- Converting between, and calculating with Fractions, Decimals and Percentages
- Ratio
- Compound units eg speed

You will be able to:

- Generate terms of a sequence
- Find the nth term of a linear sequence.
- Plot graphs of equations that correspond to straight-line graphs
- Identify and interpret gradients and intercepts of linear functions graphically
- Recognise, sketch and interpret graphs of linear functions and simple quadratic functions
- Plot and interpret graphs and graphs of real contexts e.g. involving distance and speed
- Change between terminating decimals and fractions
- Apply ratio to real contexts and problems (such as those involving conversion, comparison, scaling, mixing)
- Use compound units (such as speed, rates of pay, unit pricing)
- Change freely between compound units (e.g. speed, rates of pay, prices) in numerical contexts
- Calculate with fractions and percentages
- Solve problems involving percentage change, including original value problems, and simple interest including in financial mathematics



Lesson Overview	Key Words
<p><u>SEQUENCES</u></p> <ul style="list-style-type: none"><li>• Generate a sequence from a term-to-term rule</li><li>• Understand the meaning of a position-to-term rule</li><li>• Use a position-to-term rule to generate a sequence</li><li>• Find the position-to-term rule for a given sequence</li><li>• Use algebra to describe the position-to-term rule of a linear sequence (the nth term)</li><li>• Use the nth term of a sequence to deduce if a given number is in a sequence</li></ul> <p><u>GRAPHS</u></p> <ul style="list-style-type: none"><li>• Know that graphs of functions of the form <math>y = mx + c</math>, <math>x \pm y = c</math> and <math>ax \pm by = c</math> are linear</li><li>• Plot graphs of functions of the form <math>y = mx + c</math> (<math>x \pm y = c</math>, <math>ax \pm by = c</math>)</li><li>• Understand the concept of the gradient of a straight line</li><li>• Find the gradient of a straight line on a unit grid</li><li>• Find the y-intercept of a straight line</li><li>• Sketch a linear graph</li><li>• Distinguish between a linear and quadratic graph</li><li>• Plot graphs of quadratic functions of the form <math>y = x^2 \pm c</math></li><li>• Sketch a simple quadratic graph</li><li>• Plot and interpret graphs of piece-wise linear functions in real contexts</li><li>• Plot and interpret distance-time graphs (speed-time graphs)</li><li>• Find approximate solutions to kinematic problems involving distance and speed</li></ul> <p><u>EXPLORING FRACTIONS, DECIMALS AND PERCENTAGES</u></p> <ul style="list-style-type: none"><li>• Identify if a fraction is terminating or recurring</li></ul>	<p><b>Refer</b> to <a href="http://studymaths.co.uk/glossary.php">http://studymaths.co.uk/glossary.php</a> for definitions of the key words</p> <p>Sequence Linear Term Difference Term-to-term rule Position-to-term rule Ascending Descending</p> <p><b>Notation</b> <math>T(n)</math> is often used when finding the nth term of sequence</p> <p>Plot Equation (of a graph) Function Formula Linear Coordinate plane Gradient y-intercept Substitute Quadratic Kinematic, Speed, Distance</p> <p><b>Notation</b> <math>y = mx + c</math></p>

- Recall some decimal and fraction equivalents (e.g. tenths, fifths, eighths)
- Write a decimal as a fraction
- Write a fraction in its lowest terms by cancelling common factors
- Identify when a fraction can be scaled to tenths or hundredths
- Convert a fraction to a decimal by scaling (when possible)
- Use a calculator to change any fraction to a decimal
- Write a decimal as a percentage
- Write a fraction as a percentage

**PROPORTIONAL REASONING**

- Identify ratio in a real-life context
- Write a ratio to describe a situation
- Identify proportion in a situation
- Find a relevant multiplier in a situation involving proportion
- Use fractions fluently in situations involving ratio or proportion
- Understand the connections between ratios and fractions
- Understand the meaning of a compound unit
- Know the connection between speed, distance and time
- Solve problems involving speed
- Identify when it is necessary to convert quantities in order to use a sensible unit of measure

**CALCULATING FRACTIONS, DECIMALS AND PERCENTAGES**

- Calculate percentages of amounts with and without a calculator
- Identify the multiplier for a percentage increase or decrease when the percentage is greater than 100%
- Use calculators to increase an amount by a percentage greater than 100%
- Solve problems involving percentage change
- Solve original value problems when working with percentages
- Solve financial problems including simple interest
- Understand the meaning of giving an exact solution
- Solve problems that require exact calculation with fractions

Fraction  
Mixed number  
Improper fraction  
Top-heavy fraction  
Percentage  
Decimal  
Proportion  
Terminating  
Recurring

Ratio  
Proportion  
Proportional  
Multiplier  
Speed  
Unitary method  
Units  
Compound unit

**Notation**

Kilometres per hour is written as km/h or kmh<sup>-1</sup>  
Metres per second is written as m/s or ms<sup>-1</sup>

Simplify, cancel, lowest terms  
Percentage change  
Original amount  
Multiplier  
Simple interest  
Compound interest

**Suggested reading or support/ challenge available**

Support is available from a Maths teacher in 'MORALE' in M1 daily from 1:30pm -1:45pm

**Pixel Maths App**

login: PY2415

username: surname followed by first initial

password: first name

[www.doddlelearn.co.uk](http://www.doddlelearn.co.uk)

login: your name (capitals for initials no spaces) followed by year of entry eg BenSmith13

password: penryn

**Cross curricular**

SMSC:

- 1.1 Exploring, understanding and respecting cultural diversity e.g. exploration of different methods of calculation.
- 3.1 Developing personal qualities and using social skills (regular paired/ group work communication).
- 3.2 Participating, cooperating and resolving conflicts (paired/group activities).
- 4.2 Experiencing fascination, awe and wonder of mathematics.
- 4.4 Using imagination and creativity in learning.

Literacy:

Verbal communication of understanding using key words in the correct context. Development of written communication of methods and strategies to problem solve.

NAC:

[www.corbettmaths.com](http://www.corbettmaths.com)

Perfect for revision.  
Including practice exam  
questions on specific  
topics and the “5-a-day”

**Use your revision guide**

Use the code in the front  
of your guide to access  
your free online revision

[www.justmaths.co.uk/online](http://www.justmaths.co.uk/online)

login: PenrynStudent

password: Penryn

**Science** – Solve problems using intersections or gradients of graphs. Understand and use fraction, decimal and percentage equivalence. Use simple ratio and proportion. Calculate using ratios. Calculate percentages of quantities. Calculate a number as a percentage of another.

**RE** - Calculate percentages of quantities.

**Business** – Use simple ratio and proportion. Calculate percentages of quantities. Calculate a number as a percentage of another.

**Geography** – Understand and use fraction, decimal and percentage equivalence. Use simple ratio and proportion.

**Creative Arts** – Calculate using ratios.

**Technology** – Use simple ratio and proportion. Calculate using ratios. Calculate percentages of quantities.

**Art** – Use simple ratio and proportion.