

Y11 Unit 3 Overview-**Sequences, Graphs and FDP**R:

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

<ul style="list-style-type: none"> 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 <p>PROPORTIONAL REASONING</p> <ul style="list-style-type: none"> 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 <p>CALCULATING FRACTIONS, DECIMALS AND PERCENTAGES</p> <ul style="list-style-type: none"> 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 					<p>Fraction Mixed number Improper fraction Top-heavy fraction Percentage Decimal Proportion Terminating Recurring</p> <p>Ratio Proportion Proportional Multiplier Speed Unitary method Units Compound unit</p> <p>Notation Kilometres per hour is written as km/h or kmh⁻¹ Metres per second is written as m/s or ms⁻¹</p> <p>Simplify, cancel, lowest terms Percentage change Original amount Multiplier Simple interest Compound interest</p>	
Research	Note-making	Group work & discussion	Memorisation	Precision & accuracy	Independence	Reflection