Y10 Unit 3 Overview-Sequences, Graphs and FDPR:

Test Date:

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
SEQUENCES - 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 **GRAPHS** - 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	**Refer to** **http://studymaths.co.uk/glossary.php for definitions of the key words** Sequence Linear Term Difference Term-to-term rule Position-to-term rule Ascending Descending **Notation** T(n) is often used when finding the nth term of sequence Plot Equation (of a graph) Function Formula Linear Coordinate plane Gradient y-intercept Substitute Quadratic Kinematic, Speed, Distance

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EXPLORING FRACTIONS, DECIMALS AND PERCENTAGES
- Identify if a fraction is terminating or recurring
- 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

Notation

$y = mx + c$

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⁻¹
Metres per second is written as m/s or ms⁻¹

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

Pixl Maths App

login: PY2415

username: surname followed by first initial

password: first name

www.hegartymaths.com
Go to student login at the top… find your school, enter your details and then set up your password…

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.

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NAC:
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.

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