Unit 14: Quadratic & Linear Functions π Uned 14: Swyddogaethau Quadratig a Llinol

You should already know…

1. How to create number and shape patterns and explain them in words by generalising them.
2. How to explore equality and inequality of expressions.
3. How to rearrange simple linear equations

Key Words/ Geiriau Allweddol



- Pattern - **Patrwm**
- Sequence - **Dilyniant**
- Linear - **Llinol**
- Straight-Line Graph - **Graff Llinell Syth**
- Curve - **Cromlin**
- Equation - **Hafaliad**
- Gradient - **Graddiant**

In this unit you will revise …

1. How to generalise **numerical** and **spatial** linear sequence and find the **nth term**.
2. How to use the general nth term rule to **find any term** in that sequence
3. How to plot linear equations using the equation of a straight-line $\boldsymbol{y=mx+c}$
4. How to **rearrange** the equation $y=mx+c$ and identify the **gradient** and **y intercept** of the linear equation

In this unit you will learn…

1. How to represent both linear and **nonlinear** sequences **graphically**
2. How to use and explore both **linear** and **nonlinear** sequences graphically

In your future…



- Accountants
- Auditors
- Insurance Underwriters

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Unit 15: Financial Mathematics, Probability and Other Applications of Numeracy π

You should already know...

1. The concept of equivalence between FDP
2. How to calculate simple percentages without a calculator
3. How to calculate simple fractions of an amount without a calculator
4. What probability is

In this unit you will revise ...

1. How to **add** and **subtract** fractions **multiply** and **divide** fractions with **integers** and other fractions
2. How to **convert** and **order** fractions, mixed numbers, decimals and percentages
3. How to calculate fractions and percentage of **amounts**

In this unit you will learn...

1. How to calculate percentage **increase**/**decrease** without a **calculator**
2. How to calculate **percentage change** **without a calculator**
3. **Ratio**
4. Solve **Bills and Banking problems**
5. Solve **tax**, **time** and other **money** problems
6. Solve theoretical and experimental **probability** problems

Key Words/ Geiriau Allweddol

- Equivalence - **Cywerthedd**
- Fraction - **Ffracsiwn**
- Decimal - **Degolyn**
- Percentage - **Canran**
- Ascending - **Esgynnol**
- Descending - **Disgynnol**
- Change **- Gwahaniaeth**



In your future...

- Working in Finance or Accountancy.
- Engineering or Construction.

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Unit 16: Collecting and Analysing Data π Uned 16: Casglu a Dadansoddi Data

You should already know...

1. How to read complex **scales** on graphs
2. What is meant by **frequency**
3. How to represent data in **grouped** frequency tables
4. How to plot **coordinates** in the 4 quadrants
5. How to **compare** different types of data

Key Words/ Geiriau Allweddol



- Frequency - **Amlder**
- Discrete - **Arwahanol**
- Continuous - **Parhaus**
- Qualitative - **Ansoddol**
- Correlation - **Cydberthynas**
- Mean - **Cymedr**
- Mode - **Modd**
- Median - **Canolrif**
- Range - **Amrediad**

In this unit you will revise ...



1. The uses for different types of graphs and charts including, **bar**, **scatter**, and **pictograph**
2. What is difference between **discrete, continuous and qualitative** data
3. What is meant by **correlation**
4. How to calculate **averages** and **range**

In this unit you will learn...

1. How to calculate **averages** from a **frequency table**
2. How to calculate **averages** from a **grouped frequency table**
3. How to draw and interpret **pie charts**
4. What is meant by **cumulative frequency (H)** and how we can use this to calculate the median of a set of data

In your future...

- Data or **Sports Analyst**
- Data **Scientist** or **Businessperson**

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Unit 17: Algebra Techniques π Uned 17: Technegau Algebra

You should already know…

1. How to **simplify**, **expand**, and **solve** simple algebraic expressions
2. How to use **substitution** and **word formulae** to solve problems
3. What index form is

Key Words/ Geiriau Allweddol

- Simplify - **Symleiddiwch**
- Expand - **Ehangu**
- Solve - **Datrys**
- Factorise - **Ffactoriwch**
- Substitute - **Eilydd**
- Formula - **Fformiwla**

In your future…

- Mathematician
- Cryptologist

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In this unit you will revise …

1. How to **simplify**, **expand**, **factorise** and **solve** more complex algebraic expressions and equations
2. How to work with algebraic **indices**
3. How to **form algebraic expressions**

In this unit you will learn…

1. How to solve **simultaneous equations** using the elimination method
2. How to expand quadratics with coefficients of $x^2 \geq 1$

Higher Tier Extension

In this unit you will learn…

1. How to factorise quadratics with coefficients of $x^2 = 1$
2. How to solve simultaneous equations using various methods

Unit 18: 2D and 3D Shapes π Uned 18: Siapiau 2D a 3D

You should already know...

1. The names of 2D and 3D shapes
2. How to calculate the area/perimeter of triangles and most quadrilaterals.
3. How to use the correct units

Key Words/ Geiriau Allweddol

- Dimensions - **Dimensiynau**
- Area - Arwynebedd
- Perimeter - Perimedr
- Volume - Cyfrol
- Surface Area - Arwynebedd
- Units - Unedau
- Cylinder - Silindr



In your future...

- Animator
- Engineer

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In this unit you will revise ...

1. How to calculate the area, perimeter of 2D shapes
2. How to calculate the volume/surface area of cuboids
3. How to convert between metric and imperial units

In this unit you will learn...

1. How to use Pi to calculate the area and circumference of a circle
2. How to calculate the volume of a cylinder
3. How to solve problems using area, perimeter and volume.
4. How to use Pythagoras' Theorem

Higher Tier Extension

In this unit you will learn...

1. How to use Pi to find the volume of Cones and Spheres
2. How to give your answers in terms of Pi.

Unit 19: Shapes and Angles π Uned 19: Siapiau ac Onglau

You should already know...

1. Basic **angle** rules of different **triangles**
2. How many **degrees** are on a straight line and about a point
3. How to **draw**, **measure** and solve problems using angles

Key Words/ Geiriau Allweddol

- Acute - **Aciwt**
- Obtuse - **Aflem**
- Reflex - **Atgyrch**
- Right angle - **Ongl Sgwâr**
- Protractor - **Onglydd**
- Equilateral - **Hafalochrog**
- Scalene - **Anghyfochrog**
- Isosceles - **Isosgeles**
- Quadrilateral - **Pedrochr**
- Parallel - **Cyfochrog**





In this unit you will revise ...

1. How to solve angle problems involving **triangles** and **quadrilaterals**, **straight lines** and **points**
2. How to **measure** and **draw** angles using a **protractor**
3. How to **estimate** angles to check your answers

In this unit you will learn...

1. Angle rules for parallel lines
2. How to calculate **interior and exterior** angles of **regular polygons**
3. How to calculate **interior and exterior** angles of **non-regular** polygons
4. Solve problems in real life using **bearings**

In your future...

- Construction Worker/Builder
- Interior Designer
- Architect
- Pilot

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Unit 20: Maths, Science and Your Scientific Calculator

You should already know...

1. **How to round to an integer and decimal place**
2. How to calculate 10% and 1% without a calculator and use to find other percentages
3. How to +-x÷ fractions and mixed numbers
4. How to use a basic calculator

Financial Literacy Skills

- Utility Bills
- Tax
- Investing
- Mortgages
- Profit/Loss
- Exchange rates
- AER and APR [Set 1]



In this unit you will revise ...

1. How to **convert** percentages to decimals
2. **Ratio**



In this unit you will learn...

1. How to round to **significant figures**
2. How to use **non-calculator techniques** to **estimate**
3. **Fraction skills** - using a fraction as a divide and cancelling
4. How to find **percentages of an amount** using a multiplier
5. How to **increase/decrease percentages** using a multiplier and use this in **compound interest and depreciation**.
6. How to calculate **percentage change**
7. How to calculate **reverse percentage**
8. How to convert numbers to and from **standard form**
9. How to +-x÷ in standard form **with a scientific calculator**
10. Limits of accuracy / bounds ["**to the nearest**"]
11. Inputting into unfamiliar **formulas** and equations
12. How to transfer these skills to **Science** questions