




Edition 9  
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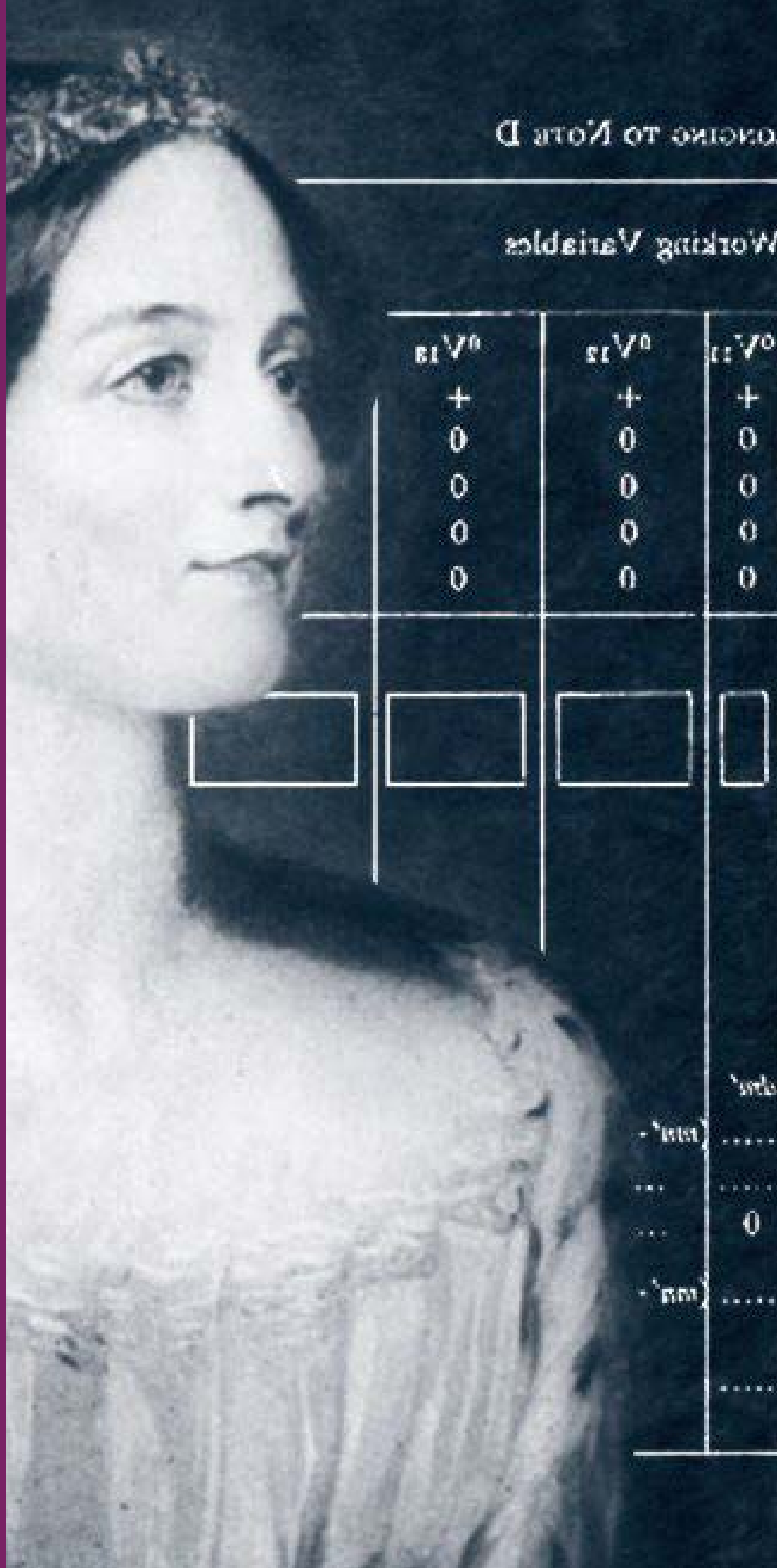
# MATHEMATICS

Curriculum Newsletter

## YEAR 13

### Contact

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# Curriculum Intent

It is our intention that every student leaves school confident and competent to deal with any mathematical problem they may face in their lives and future careers.

This is achieved through promoting students to; be resilient in their approach, take risks to deepen their knowledge, forge valuable working relationships and take responsibility for and enjoy their learning. We aim to push students to be the best mathematicians by building up their skills base and maximising their attainment and understanding in mathematics at whichever stage that may be.

We ensure a coherent mathematics scheme of work that challenges all students and promotes teaching and learning; this provides students with the knowledge and skills to achieve well academically, and be successful once their education with us ends.

## Year 13 Curriculum

In Y13, students build on the knowledge and skills acquired in Y12 on the three main areas - Pure, Statistics and Mechanics.

Pure Mathematics is made up of 9 main topics:

- Proof - proof by contradiction
- Algebra and Functions - partial fractions, algebraic division and transformations
- Coordinate Geometry in the (x,y) plane - converting between Cartesian and parametric forms and modelling with parametric equations
- Sequences and Series - arithmetic and geometric sequences
- Trigonometry - radians, trigonometric identities and solving simple trigonometric equations
- Differentiation - the second derivatives of  $f(x)$ , the chain, product and quotient rules and differentiating trigonometric functions and exponentials and logarithms
- Integration - integrating functions, integration by substitution and by parts and the trapezium rule
- Numerical Methods - find roots, solve equations using iterative methods and the Newton-Raphson method
- Vectors - 3D vectors and coordinates

Statistics is made up of 4 main topics:

- Data Presentation and Interpretation - understand correlation and regression
- Conditional Probability - Venn diagrams and tree diagrams
- Statistical Distributions - the normal distribution
- Statistical Hypothesis Testing - conduct a Hypothesis Test on PMCC (correlation)

Mechanics is made up of 4 main topics:




- Quantities and Units in Mechanics - understand and use fundamental quantities in the S.I. System: length, time and mass and derived quantities and units: velocity, acceleration, force, weight and moment
- Kinematics - vectors and projectiles
- Forces and Newton's Law - friction, statics and connected particles
- Moments - resultant moments, equilibrium, centres of mass and tilting

## Assessment Points




Students are assessed at the end of each theme, roughly once per half term. Assessments are written and include fluency, reasoning and problem-solving questions.

## Immerse Yourself

### Maths Watch

-  Develop Skills
-  Tests and Topics
-  Maths Revision at home

### STEM A level Maths

-  Get Revising Quicker!
-  Learning Resources
-  Study Support and Revision

Students have access to MathsWatch to support their revision which links to the tracker sheets filled in during lessons.

If they are struggling with topics in lessons or want to enhance their learning in the classroom then these clip numbers are an ideal place to cover content at home.

The MathsWatch website has short video clips as well as having links to interactive questions and further worksheets.

## Test Your Knowledge with Quizlet...

Quizlet's Y13 Maths flashcards are a fantastic way to memorise relevant Maths terms to help you with your studies. Click on the icon below to start!



# Praise and Reward

Our rewards system can be broadly split into four categories: classroom level, subject level, school level and privilege rewards. We'll focus on classroom and subject rewards here - for more information about our rewards schemes, please see our website.

## CLASSROOM LEVEL REWARDS

Awarded for: working hard, taking risks and rising to a challenge, making mistakes and learning from them, helping others, and taking pride in the school community.

Rewarded by: praise postcards, positive phone calls to parents/carers, positive text messages home, and lesson based prizes.

## SUBJECT LEVEL REWARDS

Reward scheme: Star of the Week, Curriculum Awards (Subject/School Way, Participation, Working with Pride, Embracing the Whole Curriculum), High Flyer, Extra Mile, Most Improved.

Rewarded by: names displayed on reward boards, certificates, social media posts.

# Broadening Horizons

Our intent is that all students have a full understanding of how to develop themselves as well rounded citizens, maintain healthy relationships and understand how to keep themselves safe both online and in their day-to-day life.

We want all students to know what options are open to them in the future and understand the routes they have in order to progress on their life journey.

Our curriculum will include:

- Exposing learners to worded problem-solving questions based on real life situations
- Using Maths across the curriculum, such as calculating standard deviation in Biology and kinematics in Physics
- Opportunities throughout the curriculum that expose learners to careers involving mathematical knowledge and skills



## University of Sheffield - School of Mathematics

The School of Mathematics and Statistics explores the length and breadth of pure and applied maths and statistics, and their graduates go on to make an impact across a huge range of rewarding careers. Click on the icon for more information.

## Leonhard Euler

Leonhard Euler invented a new field of mathematics - the Eulerian path. Click on the image to see how a small problem led Euler to discover a whole new field of maths, way ahead of his time.



# Careers

Mathematics is a subject that can lead to many fascinating career paths, including those that involve cryptography and data analysis. Cryptography is the science of creating secure communications and is used extensively in fields such as Banking, Cybersecurity, and National Security.

Year 13 have been discussing the next steps they can take with their Maths qualification. Click on the image below to find out more information on what others have done with theirs, and learn what it's like to study Mathematics at Cambridge University.



## The Maths Way

The Maths way is followed and referred to in all lessons. It supports students to become young mathematicians and develop them into thinking and working like mini-mathematicians.

Firstly, to teach students the vital skills they need to achieve their full potential and gain the very best grades they can. Secondly, to teach students how each subject relates to the wider world, incorporating the life skills they will learn.

**THE MATHS WAY**

**WE LOOK FOR MATHS IN THE REAL WORLD**

We learn from peers **listen to their explanations** & We see mistakes as an opportunity **to learn**

**WE CAN THINK LOGICALLY**

We can search for **patterns in data** We persevere & try **different approaches**

*Analyse, reason, deduce*

We can identify **relevant information** We use our books as a revision guide **We make mental estimations to check our answers are reasonable**

€ use this to solve problems *We show all our working out*

**SUBJECT WAYS**

WICKERSLEY PARTNERSHIP TRUST

Have your say! ✨

At WPT we're always looking for feedback. If you have any thoughts/opinions on this Curriculum Newsletter, its content or the curriculum in general, please click on the title to fill out a short feedback form.