WICKERSLEY PARTNERSHIP TRUST

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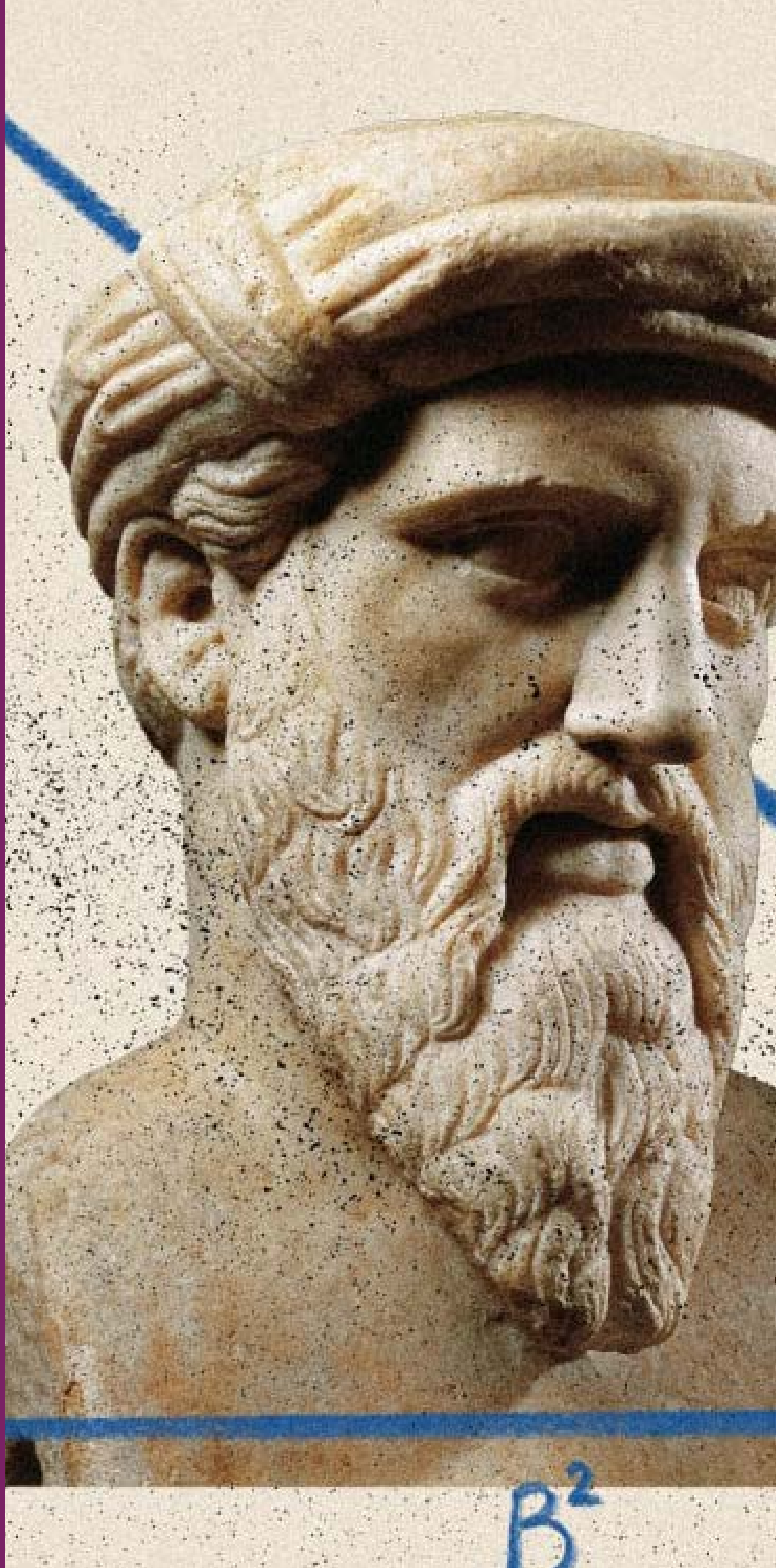
MATHEMATICS

YEAR 12 Curriculum Newsletter



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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 12 Curriculum

In Y12, the course is split into Pure Mathematics, Statistics and Mechanics.

Pure Mathematics is made up of 10 main topics:

- Proof - proof by deduction and exhaustion
- Algebra and Functions - indices, surds, quadratic functions, simultaneous equations and inequalities
- Coordinate Geometry in the (x,y) plane - the equation of a straight line and the equation of a circle
- Sequences and Series - pascal's triangle and the binomial expansion
- Trigonometry - the area of a triangle, trigonometric identities and solving simple trigonometric equations
- Exponentials and Logarithms - exponential functions and exponential graphs, the natural logarithm, the laws of logarithms, solving equations involving exponentials and logarithms and exponential growth and decay
- Differentiation - the first and second derivatives of f(x), applying differentiation to find gradients, tangents and normals and finding stationary points of graphs
- Integration – fundamental theorem of calculus to integrate and find the area under the curve
- Numerical Methods – find roots and solve problems
- Vectors – vectors in two dimensions, magnitude and direction of a vector, add and multiply vectors, position vectors and solve problems using vectors

Statistics is made up of 5 main topics:

- Statistical Sampling – understand and use sampling methods
- Data Presentation and Interpretation – standard deviation, interpret diagrams and understand correlation and regression
- Probability – mutually exclusive and independent events
- Statistical Distributions – binomial distribution
- Statistical Hypothesis Testing – understand and use hypotheses and hypothesis testing

Mechanics is made up of 3 main topics:

- Quantities and Units in Mechanics – the S.I. System and derived quantities and units
- Kinematics – graphs in kinematics, formulae for constant acceleration and calculus in kinematics for motion in a straight line
- Forces and Newton's Law – understand the concept of a force and use Newton's first, second and third law in addition to weight and motion in a line under gravity

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 Y12 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.

Blaise Pascal

Pascal's triangle, which at first may just look like a neatly arranged stack of numbers, is actually a mathematical treasure trove. But what about it has so intrigued mathematicians the world over? Click on the image to find out!

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.

In Year 12 career lessons, they 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.

UNIVERSITY OF CAMBRIDGE

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.

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.