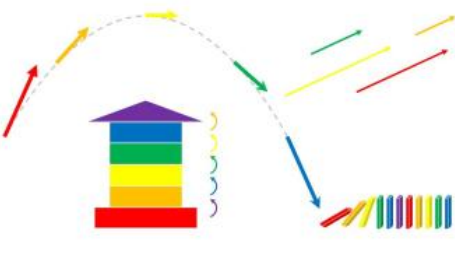


Mathematics Extension 1 Year 12: In Depth Part I - Proof and Vectors

Presented by Steve Howard



A comprehensive guide to the knowledge and techniques needed to teach Proof and Vectors from the new Mathematics Extension 1 Year 12 syllabus.

Format: 2. Online

Audience: Mathematics teachers who are preparing to teach the new Extension 1 syllabus. This course is suitable for teachers with any level of previous experience.

Description

I created this course to provide teachers with a comprehensive guide to the knowledge and techniques required to teach the new NSW Mathematics Extension I syllabus. The course goes into greater detail than the textbooks, so teachers are more comfortable in their ability to deliver the content. All 101 examples have been recorded, so that you can watch an experienced maths teacher talk through the examples and any important points to note.

Part I covers Proof and Vectors (ME-P1 and ME-V1), two topics that are paired with topics in Extension 2 and so need to be taught early in the Extension 1 course if students are also taking Extension 2.

New and existing content is explored in detail, including interesting and more efficient techniques that experienced teachers may not have seen before. Important points to be covered with students are noted, and the limits of the syllabus are discussed. As more detail on the syllabus is released by NESA any changes required will be made. Also included are related skills that are beyond the syllabus that you can use to extend more capable students.

The course includes 101 recorded examples, with a 226 page course handout including 101 optional practice questions matching the examples from the course, with fully worked solutions. A suggested scope and sequence for Year 12 Advanced, Extension 1 and Extension 2 for combined classes is provided, plus a lesson by lesson breakdown of the Advanced, Extension 1 and Extension 2 courses for Year 11 and 12 to help you create your own scope and sequences.

Additional notes about this format

Teaching Standards

2.1.2 Proficient Level - Content and teaching strategies of the teaching area

6.2.2 Proficient Level - Engage in professional learning and improve practice

Are you in NSW? If so, this is relevant for you

Completing this course will contribute 10 hours of NSW Education Standards Authority (NESA) Registered PD addressing 2.1.2 & 6.2.2 from the Australian Professional Standards for Teachers towards maintaining Proficient Teacher Accreditation in NSW.

TTA (Teacher Training Australia) is endorsed to provide the NSW Education Standards Authority (NESA) Registered Professional Development for teachers accredited at Proficient and Lead Level Teacher.

Occurrences

Start Date	Location	Price
Now	Online	\$269 + GST

Sessions

Introduction

5 minutes

Course Administration

Introduction to the Mathematics Extension 1 In Depth Year 12 Series

Introduction to Part I

Proof

5 minutes

Introduction to Proof

Proof 1 A Background to Proof

1 hour

Lesson 1 Overview
Proof - The Art of Clear and Logical Argument
Writing a Good Proof
The Different Types of Proof

Proof 2 Mathematical Induction I - Theory & Proofs involving series

1 hour

Lesson 2 Overview
The Changes to Induction in Extension 1 and Extension 2
An Introduction to Mathematical Induction
Analogies
Looking at the Two Steps in Depth
Setting Out a Mathematical Induction Proof
Proving Results with Sums

Proof 3 Mathematical Induction II - Proofs involving Divisibility, False Proofs & Inappropriate Situations

1 hour

Lesson 3 Overview
Simple Divisibility Proofs by Induction
Cases where Proof by Induction is not Appropriate
False Proof by Induction

Proof 4 Appendix: Setting out an Induction Proof (Optional)

20 minutes

Lesson 4 Overview
Setting out an Induction Proof

Vectors

10 minutes

Introduction to Vectors

Vectors 1 Scalars and Vectors - Geometric Representation

1 hour

Lesson 1 Overview
Definition and Uses
Notation and Geometric Representation
Special Vectors
Scalar Multiplication and Parallel Vectors
Perpendicular Vectors
Addition and Subtraction of Vectors
Vectors in Terms of other Vectors
Splitting Vectors

Vectors 2 Vectors and the Number Plane

1 hour

Lesson 2 Overview
Vectors on the Cartesian Plane
Unit Vectors
Algebraic Representation of a Vector
Addition and Subtraction of Vectors (algebraically)
Scalar Multiplication
Collinear Points
Splitting Vectors (algebraically)
Magnitude of Vectors
Direction of Vectors
Special Vectors

Vectors 3 Scalar (Dot) Product of Vectors and its applications

1 hour

Lesson 3 Overview
Unit Vectors
Scalar (Dot) Product of Vectors
Angle Between Two Vectors
Projection of One Vector onto Another

Vectors 4 Problem Solving and Geometric Proofs

1 hour

Lesson 4 Overview
Problems involving Displacement, Force and Velocity
Geometric Proofs

Vectors 5: Projectile Motion - Definitions, Equations of Motion & Horizontal and Vertical Components of Velocity

1 hour

Lesson 5 Overview
Projectile Motion
Projectile Motion and Vectors
Equations of Horizontal Motion
Equations of Vertical Motion
Use of Vector Notation

Vectors 6 Projectile Motion - Harder Examples

1 hour

Lesson 6 Overview
HSC Standard Questions and the Role of Formula
Time of Flight, Maximum Range and Greatest Height
Cartesian Equation of Motion (Moved to Extension 2)

Conclusion

1 minute

Conclusion to Part I

About the presenter



Steve Howard

Creator

Steve is a Mathematics Teacher at Cowra High School, a medium sized rural high school in Central West NSW, where he has taught for 25 years. He has also taught gifted and talented students online through xsel and Aurora College. He has a particular love and passion for Mathematics Extension 2, writing his own textbook and study resources for the old syllabus, to be updated for the new syllabus. He also creates study resources for Mathematics and Extension 1. He loves finding more efficient techniques for solving mathematical questions, by trawling through other teachers' solutions or making up his own approaches when there must be a better way. Steve did 4 Unit Mathematics as a student, gaining a mark of 198/200 and training as an actuary. Working in an office in the city wasn't for him, so he went back to uni to retrain as a teacher then headed to the country, where he lives in an owner built mud house, with chickens, goats and rescued native birds (which you will sometimes hear in his recordings)!!



Enrol now to secure your spot

Limited spots are available. Please enrol online or fax your enrolment to 1300 667 691 to secure your spot.

Please note, by submitting this enrolment form you are confirming that you have been given financial approval by your employer to attend this course. Cancellation advice should be given in writing 7 days before the commencement of this course.

Product: Mathematics Extension 1 Year 12: In Depth Part I - Proof and Vectors

Occurrence Date:

Your Name:

Your email address:

Employer name:

Employer phone:

Enrol online at <http://tta.edu.au>