



Year 12 Physics Teacher B Learning Journey Map

YEAR 13

Thermal Physics - Maths Skills:

- Identify uncertainties in measurements and use simple techniques to determine uncertainty when data are combined by addition, subtraction, multiplication, division and raising to powers
- Understand that $y = mx + c$ represents a linear relationship
- Determine the slope and intercept of a linear graph

Thermal Physics - Working Scientifically:

- Evaluate results and draw conclusions with reference to measurement uncertainties and errors
- Solve problems set in practical contexts
- Know and understand how to use a wide range of experimental and practical instruments, equipment and techniques

Molecular Kinetic Theory Model

RP 8: Investigation of Boyle's law (constant temperature) and Charles's law (constant pressure) for a gas

Ideal Gases

Thermal Energy Transfer

RP 6: Investigation of the EMF and internal resistance of electric cells and batteries by measuring the variation of the terminal P.D. of the cell with current in it

PPEs

Thermal Physics

Potential Dividers

EMF

Internal Resistance

Resistors in Series and Parallel

AP2

Kirchoff's Laws

RP 5: Determination of the resistivity of a wire using a micrometer, ammeter and voltmeter

Current-Voltage Characteristics

Electricity - Working Scientifically:

- Apply scientific knowledge to practical concepts
- Know and understand how to use a wide range of experimental and practical instruments, equipment and techniques
- Present data in appropriate ways
- Plot and interpret graphs

Electricity - Maths Skills:

- Plot two variables from experimental or other data
- Calculate areas of triangles, circumferences and areas of circles, surface areas and volume of rectangular blocks, cylinders and spheres
- Use ratios, fractions and percentages
- Translate information between graphical, numerical and algebraic forms
- Understand that $y = mx + c$ represents a linear relationship

Resistivity

Refraction at a plane surface

RP 2: Investigation of interference effects to include the Young's slit experiment and interference by a diffraction grating

Electricity

Basics of Electricity

AP1

Induction Assessment

Interference

Superposition and Stationary Wave Formation

Progressive Waves

Diffraction

RP 1: Investigation into the variation of the frequency of stationary waves on a string with length, tension and mass per unit length of the string

Longitudinal and Transverse Waves

Waves

YEAR 12

Waves - Working Scientifically:

- Evaluate results and draw conclusions with reference to measurement uncertainties and errors
- Present data in appropriate ways
- Identify variables including those that must be controlled
- Apply scientific knowledge to practical contexts
- Comment on experimental design and evaluate scientific methods

Waves - Maths Skills:

- Recognise and make use of appropriate units in calculations
- Understand the relationship between radians and degrees and translate between them
- Find arithmetic means
- Plot two variables from experimental or other data
- Determine the slope and intercept of a linear graph
- Calculate rate of change from a graph showing a linear relationship
- Use calculators to handle trigonometric functions (e.g. $\sin(x)$) where x may be expressed in degrees or radians
- Use angles in regular 2D or 3D structures