

# Topic Tests

## Summer 2022

Pearson Edexcel GCE Mathematics (9MA0)

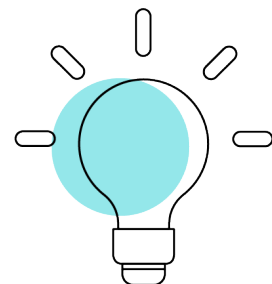
**Paper 1, Paper 2, Paper 31 and 32**

## Topic lists

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# General guidance to Topic Tests

## Context

- Topic Tests have come from past papers both [published](#) (those materials available publicly) and unpublished (those currently under padlock to our centres) presented in a different format to allow teachers to adapt them for use with candidates.

## Purpose

- The purpose of this resource is to provide qualification-specific sets/groups of questions covering the knowledge, skills and understanding relevant to this Pearson qualification.
- This document should be used in conjunction with the advance information for the subject as well as general marking guidance for the qualification (available in published mark schemes).

# Content lists

The questions in these topic tests have been taken from past papers, and have been selected as they cover the topic(s) most closely aligned to the [A level](#) advance information for summer 2022:

## Paper 1 and Paper 2: Pure Mathematics

- Topic 1: Proof
  - o Formal proof
- Topic 2: Algebra and functions
  - o The factor theorem
  - o Understand and use graphs of functions
  - o Use intersection points of graphs to solve equations
  - o Transformations of a curve
  - o Use of functions in modelling
  - o The modulus of a linear function
  - o Understand and use function notation
- Topic 3: Coordinate geometry in the (x,y) plane
  - o The coordinate geometry of the circle
- Topic 4: Sequences and Series
  - o Arithmetic sequences and series
  - o The binomial expansion
  - o Sequence generated by an iterative formula
  - o Geometric sequences and series; trigonometric identities
- Topic 5: Trigonometry
  - o Trigonometric identities and equations
  - o Trigonometric functions and identities: area under a curve
  - o Use of a trigonometric function
- Topic 6: Exponentials and logarithms
  - o Formal proof Exponentials: Solving equations, rate of change
  - o The function  $a^x$  and its graph
- Topic 7: Differentiation
  - o Formal proof Differentiation: stationary points, minima. Radian measure
  - o Differentiation; roots of equations
  - o Differentiation from first principles
  - o Find maximum and minimum points; Newton- Raphson method
  - o Differentiation of curves defined parametrically
- Topic 8: Integration
  - o Formal proof Integration as a limit
  - o Methods of integration
  - o Area under a curve
  - o Solution of a first order differential equation; partial fractions
- Topic 9: Numerical methods
  - o Formal proof Maximum point; iteration
  - o The trapezium rule

- Topic 10: Vectors
  - o Use vectors to solve a problem in pure mathematics

### **Paper 31: Statistics**

- Topic 1: Regression lines (change of variable); hypothesis test for correlation
- Topic 2: Measures of central tendency and variation
- Topic 3: Discrete probability distributions; normal approximation
- Topic 4: Discrete probability distributions; normal approximation
- Topic 5: Normal distribution AND Hypothesis testing
  - o Normal distribution
  - o Hypothesis testing

### **Paper 32: Mechanics**

- Topic 1: Kinematics - Constant acceleration and Quantities and units in mechanics
  - o Constant acceleration in 2-D
- Topic 2: Kinematics - Variable acceleration and Quantities and units in mechanics
  - o Variable acceleration, language of kinematics
- Topic 3: Kinematics - Projectiles and Quantities and units in mechanics
  - o Projectiles, constant acceleration
- Topic 4: Forces and Newton's laws and Quantities and units in mechanics
  - o Newton's 2nd law in 2-D using vectors
  - o Dynamics, resolving forces, friction, equilibrium
- Topic 5: Moments and Quantities and units in mechanics
  - o Statics, moments, resolving forces, friction