AQA GCSE MATHS

Focused on fluency, problem-solving and assessment for GCSE maths

For the 2015 specification

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OXFORD
GCSE Maths has changed...

GCSE maths now has a greater focus on problem-solving, fluency and reasoning, as well as some new topics.

**AQA GCSE Maths** is a new course specifically developed to support the 2015 changes and can also be used with MyMaths.

- The only AQA course officially powered by MyMaths – teach the 2015 specification alongside resources you already know
- Problem-solving and reasoning embedded throughout, with a wealth of practice to improve fluency
- Packed full of assessment to prepare your students for the new-style exams
- A spread-per-lesson approach for a clear structure at a glance
- Separate sections for skills and applications help you focus on each assessment objective
- Two differentiated Student Books – Foundation and Higher – stretch students to their full potential
- Topics split and colour-coded by grade range to engage and challenge students of all abilities
- Built-in mathematical literacy helps students communicate and interpret with confidence
- The Student Books, both print and digital, have been approved by AQA.

**AQA GCSE Maths Evaluation Pack**

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**The new 2015 GCSE in a nutshell**

In September 2015 (first exams in 2017), the following changes were made:

- Grading changed from G-A* to a 1-9 system
- Greater breadth and depth of topics
- Increased focus on reasoning and problem-solving
Exercise 21.1S

1. Find the first five terms of these sequences.
   - a) 3n + 1
   - b) 4n + 2
   - c) 2n + 5
   - d) 4n − 1
   - e) 3n − 12
   - f) 0.5n + 5
   - g) 5n − 3
   - h) 2n − 6
   - i) 2.5n − 0.5
   - j) 1.5n + 3

2. Find the first five terms of these sequences.
   - a) −2n + 1
   - b) −15 − n
   - c) 102
   - d) Rule Subtract 5
   - e) Rule Subtract 3
   - f) First term
   - g) First term
   - h) First term
   - i) First term

3. Find the first three terms of the sequence.
   - a) 2n + 3
   - b) Rule Add 5
   - c) Rule Subtract 4

4. Find the points of intersection and the lengths of the sides of the triangle.
   - a) Find the equation of the line that is parallel to the line containing points A and B.
   - b) Find the distance between points A and B.

5. Find the area of the triangle.
   - a) Use the formula for the area of a triangle.
   - b) Check your answer by using the shoelace formula.

6. Find the area of the shaded region.
   - a) Subtract the area of the triangle from the area of the rectangle.
   - b) Check your answer by using the formula for the area of a circle.

7. Find the area of the shaded region.
   - a) Use the formula for the area of a sector.
   - b) Check your answer by using the formula for the area of a triangle.

8. Find the area of the shaded region.
   - a) Subtract the area of the triangle from the area of the rectangle.
   - b) Check your answer by using the formula for the area of a circle.

9. Find the area of the shaded region.
   - a) Use the formula for the area of a sector.
   - b) Check your answer by using the formula for the area of a triangle.

10. Find the area of the shaded region.
    - a) Subtract the area of the triangle from the area of the rectangle.
    - b) Check your answer by using the formula for the area of a circle.

11. Find the area of the shaded region.
    - a) Use the formula for the area of a sector.
    - b) Check your answer by using the formula for the area of a triangle.

12. Find the area of the shaded region.
    - a) Subtract the area of the triangle from the area of the rectangle.
    - b) Check your answer by using the formula for the area of a circle.

13. Find the area of the shaded region.
    - a) Use the formula for the area of a sector.
    - b) Check your answer by using the formula for the area of a triangle.

14. Find the area of the shaded region.
    - a) Subtract the area of the triangle from the area of the rectangle.
    - b) Check your answer by using the formula for the area of a circle.

15. Find the area of the shaded region.
    - a) Use the formula for the area of a sector.
    - b) Check your answer by using the formula for the area of a triangle.

16. Find the area of the shaded region.
    - a) Subtract the area of the triangle from the area of the rectangle.
    - b) Check your answer by using the formula for the area of a circle.

17. Find the area of the shaded region.
    - a) Use the formula for the area of a sector.
    - b) Check your answer by using the formula for the area of a triangle.

18. Find the area of the shaded region.
    - a) Subtract the area of the triangle from the area of the rectangle.
    - b) Check your answer by using the formula for the area of a circle.

19. Find the area of the shaded region.
    - a) Use the formula for the area of a sector.
    - b) Check your answer by using the formula for the area of a triangle.

20. Find the area of the shaded region.
    - a) Subtract the area of the triangle from the area of the rectangle.
    - b) Check your answer by using the formula for the area of a circle.

21. Find the area of the shaded region.
    - a) Use the formula for the area of a sector.
    - b) Check your answer by using the formula for the area of a triangle.

22. Find the area of the shaded region.
    - a) Subtract the area of the triangle from the area of the rectangle.
    - b) Check your answer by using the formula for the area of a circle.

23. Find the area of the shaded region.
    - a) Use the formula for the area of a sector.
    - b) Check your answer by using the formula for the area of a triangle.

24. Find the area of the shaded region.
    - a) Subtract the area of the triangle from the area of the rectangle.
    - b) Check your answer by using the formula for the area of a circle.

25. Find the area of the shaded region.
    - a) Use the formula for the area of a sector.
    - b) Check your answer by using the formula for the area of a triangle.

26. Find the area of the shaded region.
    - a) Subtract the area of the triangle from the area of the rectangle.
    - b) Check your answer by using the formula for the area of a circle.

27. Find the area of the shaded region.
    - a) Use the formula for the area of a sector.
    - b) Check your answer by using the formula for the area of a triangle.

28. Find the area of the shaded region.
    - a) Subtract the area of the triangle from the area of the rectangle.
    - b) Check your answer by using the formula for the area of a circle.

29. Find the area of the shaded region.
    - a) Use the formula for the area of a sector.
    - b) Check your answer by using the formula for the area of a triangle.

30. Find the area of the shaded region.
    - a) Subtract the area of the triangle from the area of the rectangle.
    - b) Check your answer by using the formula for the area of a circle.
22 Units and proportionality

**Introduction**

The full care of a carbon-capture system is to be done under the guidance of the carbon capture engineer. The system will gather carbon dioxide from power stations, industries, and vehicles. The system will be designed to capture carbon dioxide, and then transport it to a storage site, where it will be stored for a long period of time. The system will be designed to capture carbon dioxide, and then transport it to a storage site, where it will be stored for a long period of time.

**Objectives**

By the end of this chapter you will be able to:

- Identify and describe the components of a carbon capture system.
- Understand the process of carbon capture and storage.
- Appreciate the challenges and benefits of carbon capture and storage.

**Starter problem**

Find the first five terms of the sequence using this term-to-term rule.

**Quadratic sequences**

A quadratic sequence is a sequence where the second differences are constant. The general term of a quadratic sequence can be expressed as:

\[ a_n = an^2 + bn + c \]

Where:
- \(a\) is the coefficient of the quadratic term.
- \(b\) is the coefficient of the linear term.
- \(c\) is the constant term.

**Examples**

1. Find the first five terms of the following sequence:
   \[ 2, 6, 12, 20, \ldots \]

2. Find the 10th term of the sequence:
   \[ 1, 3, 7, 13, \ldots \]

3. Find the 50th term of the sequence:
   \[ 1, 2, 3, 4, 5, \ldots \]

**Exercise 21.3S**

1. Use the linear term to find the first three terms of the sequence:
   \[ 1, 3, 7, 13, \ldots \]

2. Find the 10th term of the sequence:
   \[ 2, 6, 12, 20, \ldots \]

3. Find the 50th term of the sequence:
   \[ 1, 3, 7, 13, \ldots \]

**Exercise 21.3A**

1. Describe the nature of the sequence:
   \[ 2, 6, 12, 20, \ldots \]

2. Find the first five terms of the sequence:
   \[ 1, 3, 7, 13, \ldots \]

3. Find the 10th term of the sequence:
   \[ 2, 6, 12, 20, \ldots \]

**Check it**

Check your answers with the correct answers at the end of the chapter.

**Summary**

You can now use the terms of the sequence to describe the term-to-term rule.

**Application**

Use the term-to-term rule to describe the sequence described in the exercises.

**What next?**

Continue to practice and apply the concepts learned in this chapter.

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**Foundation Student Book**

**Review**

1. Calculate the lengths of sides in these shapes using Pythagoras theorem.
   - Right-angled triangle
   - Isosceles triangle
   - Equilateral triangle

2. Calculate the lengths of sides in these shapes using trigonometry.
   - Sine ratio
   - Cosine ratio
   - Tangent ratio

**Language**

**Meaning**

- **Example**
  - Sine ratio
  - Cosine ratio
  - Tangent ratio

**What next?**

Continue to practice and apply the concepts learned in this chapter.

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**Student Books**

**Introduce new topics with clearly stated objectives**

**A lesson-per-spread approach delivers learning in a clear and succinct way**

**Plenty of questions to practice skills and build fluency**

**Higher Student Book**

**Regular vocabulary sections ideal for literacy and revision**

Each spread has direct links to AQA Maths activities

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**Foundation Student Book**

**Tests students’ knowledge of the chapter objectives**

The end of chapter review gives constructive guidance for student self-improvement, and suggests further online resources
Show graphically how this would look with two vectors
resultant vectors.

- Point: vectors represented by parallel lines are multiples
of each other, then they are
- Cancellation: vectors represented by parallel lines are multiples of each other, then they are

### Objectives
- Multiplication of vectors by a scalar, and diagrammatic
- Tracing paper
- Ruler
- Grid paper
- Reference points
- Vectors 1
- InvisiPen 19S03

### Recap any student knowledge of vectors, for
- Compound units (e.g. speed, rates of pay, prices, density, pressure) in numerical and algebraic contexts
- Simplification
- Applications
- Summary

### InvisiPen 19S03
- Digital pen
- Wireless connection
- Writing on any surface
- Erasable ink
- Battery life

### Applications
- Geometry
- Mechanics
- Physics
- Engineering

### Summary
- Vectors
- Scalars
- Magnitude
- Direction
- Resultant vector
- Components

### Homework and revision
- Higher Homework Book
- Higher Homework Book
- Foundation Exam Practice Book
- Use the Exam Practice Book to assess ability and track progress

### Practice questions help students prepare for the new exams
- SKILLS
- REVISION
- Foundation Exam Practice Book
- Higher Homework Book

### Each lesson-plan has a three-part approach, with engaging starter and plenary activities
- Units and proportionality
- Foundation Teacher Companion
- Higher Teacher Companion

### Learning objectives for the whole topic can be found in one place
- Homework and revision
- Teacher Companions

### A suggested lesson plan for every lesson, with customisable word files available online
- Foundation Teacher Companion
- Higher Teacher Companion
Online resources

AQA GCSE Maths is supported by a wealth of online resources*. Present your lessons using the Digital Student Books, or show your students problem-solving examples with InvisiPen videos. On-screen tests which do the marking and feedback for you, along with direct links to MyMaths in every resource, will make delivering the new specification as simple as it can be.

The Digital Student Books have direct links to InvisiPen videos, which can be used to support your maths activities.

On-screen tests are auto-marked with feedback to gauge students' progress and save on marking.

Online resources also include 50 hours' worth of printable assessment, offering essential preparation for the new-style exams.

How does AQA GCSE Maths work with MyMaths?

MyMaths has been fully updated to support the new GCSE curriculum. AQA GCSE Maths links directly to the corresponding MyMaths Lessons and Online Homeworks. Four-digit codes at the bottom of each print book give a seamless link to MyMaths, and the Digital Student Books take you straight there at the click of a button.

Title   Name
Job title
School/College
Address
Postcode
Purchase Order Number
Email address

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AQA GCSE Maths has been developed to support you and your students with the new specification. With a focus on problem-solving, fluency and reasoning, AQA GCSE Maths is a brand new course designed to enable a deep understanding of maths.

From Student Books differentiated for all levels, to an abundance of assessment in the Exam Practice Books and Online Resources, AQA GCSE Maths provides learning which is tailored to each student, and supports them every step of the way.

Evaluate AQA GCSE Maths - free for 90 days!

AQA GCSE Maths Evaluation Pack
978 019 835160 3
The AQA GCSE Maths Evaluation Pack contains:

- Foundation Student Book
- Higher Student Book
- Higher Homework Book
- Higher Exam Practice Book
- Teacher Companion Sample Pages
- Information on the online resources

Sign up for your Evaluation Pack today.