

Changes to GCSE mathematics

The new GCSE

The new secondary mathematics programmes of study place a renewed emphasis on problem solving, functionality and mathematical thinking. GCSE mathematics will change to enable the new elements in the key stage 4 programme of study to be assessed.

The new GCSE will follow the two tiers introduced in 2006: foundation (grade G to C) and higher (grade D to A*). It will be entirely externally assessed. The current assessment objectives (using and applying mathematics; number and algebra; shape, space and measures; and handling data) will change to those in the table below.

GCSE assessment objectives from 2010

Assessment objectives		Weighting (%)
AO1	Recall and use their knowledge of the prescribed content	45–55
AO2	Select and apply mathematical methods in a range of contexts	25–35
AO3	Interpret and analyse problems and generate strategies to solve them	15–25

The first assessment objective requires the same technical competence that is assessed by the current GCSE. The new assessment objectives, AO2 and AO3, place greater emphasis on application and problem solving. The assessment of these objectives has been explored during the QCA mathematics pathways project.

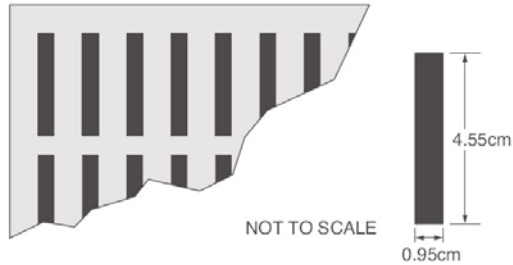
How questions will change

The assessment of application and problem solving means that candidates need to be given the opportunity to decide for themselves how to tackle a question and to choose the mathematics they will use. As a result, some questions will be longer and less structured. Candidates will need to be prepared to tackle every question – if they are having difficulty with one question, it does not necessarily mean that the next one will be too difficult for them.

The examples are taken from the pilot GCSE additional mathematics.

The first part of the question: worth 5 marks

- (a) The diagram shows part of a ventilator cover containing identical holes. Each hole is a rectangle, 4.55 cm long and 0.95 cm wide.

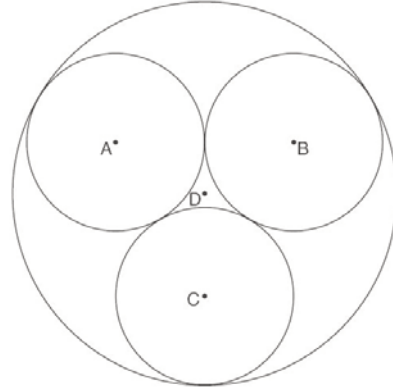


Gas regulations state that the total area of the holes must be at least 100 cm^2 .

Find the minimum number of holes needed.

The final part of the question: worth 5 marks

The diagram represents a cross-section of three cylindrical ventilation ducts, each of radius 5.8 cm, tightly enclosed in a larger cylinder. A, B, C and D are the centres of the four circles.



Calculate the radius of the larger cylinder.

Entering candidates

The entitlement set out in the key stage 4 programme of study gives all learners, up to the age of 16, a rich experience of mathematics. They should have the opportunity to achieve as highly as possible and to be well prepared for progression to further study and employment.

Candidates who take GCSE early and achieve a lower grade than A* are less likely to continue their study of mathematics post-16 than students who achieve their full potential in mathematics at age 16. In other words, for candidates who may achieve lower grades through early entry, it would be better to delay entry and give them a richer experience of mathematics and the opportunity to achieve a higher grade.

Decisions around tier of entry should be made as late as possible during key stage 4, so that students have the opportunity to achieve the highest grade they can.

A new pilot of a linked pair of GCSEs

Alongside the new GCSE, which begins in 2010, a new pilot of a linked pair of GCSEs in mathematics is planned. In this pilot, the two qualifications together will cover the entire programme of study. Each GCSE will be distinctive and will contain some additional content. Specifications for the new pilot GCSEs should be available alongside the specifications for the new single GCSE in December 2009.

Contact information

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