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GCSE

# Mathematics

8300/2H      Paper 2 Higher  
Report on the Examination

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Specification 8300  
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**General**

Many of the questions in the second half of the paper were not well answered and in many cases no attempt was made. Some students were not able to recall relevant formulae that were needed to answer some questions. Most students appeared to have used a calculator.

**Topics that were well done included:**

- identifying a fraction equivalent to a decimal
- working out the next term in a quadratic sequence
- comparing population densities
- solving a problem involving fractions.

**Topics which students found difficult included:**

- factorising a 3-term quadratic
- area of a parallelogram involving trigonometry
- graphical solution of equations
- using and interpreting a histogram
- using and interpreting a speed-time graph
- bounds problem
- vector problem

**Question 1**

This question was well answered.

**Question 2**

This question was not well answered. The most common incorrect answer was 10%

**Question 3**

This question was not well answered. The most common incorrect answer was  $(-1, -1)$

**Question 4**

This question was quite well answered. The most common incorrect answer was  $\text{kg/m}^2$

**Question 5**

This question was a good discriminator. Many students were able to expand the brackets correctly, with a few also multiplying the right hand side by 4. Rearrangement errors, usually involving signs, were often made. Some gave the answer as  $\frac{10}{3}$  after correctly rearranging to  $10x = 3$

**Question 6**

Part (a) was quite often correct but the common error was  $12 + 12 = 24$ . Part (b) was not well answered. Many different calculations were seen involving 24, 6 and 5 and these were often not relevant steps. A common incorrect answer was 0.8, usually from taking the area of a triangle to be  $\text{base} \times \text{height}$ .

**Question 7**

Fully correct solutions were rarely seen. Many knew that it was an enlargement although some also gave a second transformation which meant they were not describing a single transformation. Others used incorrect transformation words such as reduction or negative enlargement. The scale factor was rarely correct with 3 and  $-3$  being common incorrect answers. The centre was often omitted altogether

**Question 8**

Some students completed the columns in the table correctly but then used a different method in the working lines. Some used the ends of the class intervals instead of the midpoints. Those who did use an estimated total, usually did divide by 120, with only a few dividing by the number of class intervals. A common error was to give one of the class intervals as the answer.

**Question 9**

Some of those who identified tangent as the appropriate ratio were not able to apply it correctly with  $\tan \frac{3}{7}$  and  $\frac{3}{\tan 7}$  being common errors. Many applied Pythagoras' theorem but made no further progress.

**Question 10**

This question was well answered.

**Question 11**

This question was quite well answered. The most common incorrect answer was  $\frac{x^2}{2x^2 + 1}$

**Question 12**

This question was well answered with many correctly applying the given formula twice. The comparison was not as well answered with some subtracting the values, but not directly comparing the population densities of UK and Germany.

**Question 13**

This question was not well answered. The most common incorrect answer was  $(-1, -3)$

**Question 14**

Both parts were well answered.

In part (b) most worked out  $\frac{2}{3} \times 11.25$  in order to make their decision. The most common error was to use 0.6 or 60% instead of  $\frac{2}{3}$ .

**Question 15**

This question was a good discriminator. Quite a few fully correct solutions were seen. A common error was to assume that the interest earned each year was the same. Some who tried to build-up to £7000 often rounded values and lost accuracy.

**Question 16**

Part (a) was quite well answered. Part (b) was not well answered with many not knowing that the product of two brackets was required.

**Question 17**

This question was not well answered. Most students multiplied 16 by 12. Only a few realised that trigonometry was required.

**Question 18**

Neither part was well answered. The most common incorrect answer in part (a) was A. The most common incorrect answer in part (b) was A' U B'

**Question 19**

Many students divided 1620 by 5 but this was often followed by division by 6. A few used algebra and obtained a suitable expression for the area although  $6x$  was a common error. Some of the correct answers were obtained by trial and error.

**Question 20**

There were some good attempts and a significant number completed the question successfully. Some students obtained the value 20 but did not subsequently use the value correctly.

**Question 21**

Part (a) was very poorly answered. Nearly all students ignored the fact that Meera was using a graphical method, with many solving the equation by factorising. There were many non-attempts. Part (b) was answered only slightly better.

**Question 22**

This question was a good discriminator. A significant number of students gave fully correct solutions. Many students used the correct formula for the area of a circle or semicircle. The correct fraction for the sector was obtained quite often.

**Question 23**

Neither part was well answered. In part (a) it was common to see the vertical axis labelled with multiples of 10. Those who knew how to answer part (b) often misread the height of the bar for the class interval  $30 \leq A < 40$ .

**Question 24**

Many worked out  $8 \times 9$  in an attempt to work out part of the area but did not halve the answer. It was common to see  $200 \div 9$  as the only calculation and very few correct attempts were seen.

**Question 25**

Many students completed the question with no consideration of bounds at all; although many students correctly identified one of the bounds for a dimension of the rectangle. A common error was to divide the upper bound of the force by the upper bound of the area.

**Question 26**

A few correct attempts were made to work out vectors but many students made no progress with this question, evidenced by a very high number of non-attempts. Some of those who did have comparable vectors did not make a complete statement, often stating that one pair of opposite sides were parallel but omitting to state that they were also equal.

**Question 27**

A few students obtained  $4(x + 2)$  and/or  $x(x + 2)$  and/or  $8x$  but a correct equation with the denominators eliminated was rarely seen. Those who obtained a quadratic equation usually applied the quadratic formula correctly. Those who completed a correct method occasionally gave solutions in surd form rather than to 2 decimal places.

### **Use of statistics**

Statistics used in this report may be taken from incomplete processing data. However, this data still gives a true account on how students have performed for each question.

### **Mark Ranges and Award of Grades**

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.