AQA

GCSE

Mathematics

8300/3H Paper 3 Higher

Report on the Examination

Specification 8300

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General
Most students completed the paper in the time allowed with very few questions having a significant number of non-attempts. The paper discriminated well between students of differing abilities. Presentation was generally good with most students showing clear working.

Topics that were well done included:

- use of decimals
- inequalities
- exterior angles of a decagon
- column vectors
- expressions
- interpretation of a speed-time graph.

Topics which students found difficult included:

- showing that two lines are parallel
- determining whether a point is above, below or on a given line
- properties of a rhombus
- use of Pythagoras' theorem in an algebraic context
- trigonometry in three dimensions
- interpreting a histogram
- equation of a tangent to a circle.

Question 1
This question was very well answered. 0.6 and 0.525 were the common incorrect choices.

Question 2
This question was also very well answered. –2, –1, 0, 1, 2, 3, 4 was the most popular incorrect choice.

Question 3
Again this question was very well answered meaning the first page of the examination proved to be a good settler for most students. 3.27 was the most popular incorrect choice.

Question 4
This question was well answered by a majority of students but 144° was a very popular incorrect choice.

Question 5
This question was quite challenging for many students, although it discriminated very well. Many students mixed multiples and factors. Those using a Venn diagram tended to obtain a correct HCF but an incorrect LCM. The most successful students tended to identify the correct values from lists of factors and multiples.

Question 6
This question was very well answered. The common errors were to give 54° × 1.5 = 81° for the angle or 9 cm × 1.5 = 13.5 cm for w.

Question 7
This question was well answered with almost all students having some success. For investment A some students did not work with 2 years. For investment B many students multiplied by 1.06 for

compound interest. A few students found the difference between the amounts of interest rather than the values of the investments.

Question 8
Part (a) was not well answered but discriminated quite well with many giving partial solutions, often simply stating that the gradients were equal or that the gradients were both $3x$. In part (b) a majority substituted $x = -5$ into the equation to obtain $y = -8$ but approximately equal proportions choose 'above' and 'below' for their decision.

Question 9
This question was quite well answered and showed some improvement on previous series. The common error was to subtract 10% of £19.25 from £19.25.

Question 10
A majority of students gave one correct answer often with one incorrect answer, with 55 being the usual correct choice. Only a minority gave both correct answers.

Question 11
Part (a) was very well answered. In part (b) there was less success although many correct answers were seen. Many students treated the vectors as fractions.

Question 12
Almost all students had some success with this question usually giving 12.5, but many gave incorrect units with common errors being N/m, and m^2/N

Question 13
This question was the least well answered on the paper, with very few correct answers. The most popular answer was to tick the second and fourth boxes. Very few students included the first box but many included the fourth box.

Question 14
This question was quite well answered with a majority giving a fully correct graph. Of the other students most plotted at least 6 correct points. Fewer students appeared to be joining their points with straight lines than in previous series.

Question 15
This question was very well answered by almost all students. $4x + 3$ was the most popular incorrect answer.

Question 16
Approximately half of the students gave the correct answer. Most popular incorrect choices were (–4, 3) and $(-\frac{4}{3}, 3)$.

Question 17
This question was an excellent discriminator. For method A, many obtained 35 possibilities for the first two digits and 9 for the last two digits but then added to give 44 altogether. For method B, many students used the digit zero obtaining 625 possible codes.

Question 18
This question proved challenging for many students. Many obtained a common denominator for their fractions of $6x^2$ but did not simplify correctly. It was also very common to see $x + 4 – 5 = x – 1$ for the numerator and $3x – 2x = x$ for the denominator.

Question 19
Responses to this question were mixed with the correct answer marginally the most popular choice, followed by (0, 12) and then (12, 0).

Question 20
This question was not well answered. Although it was clear that many knew Pythagoras' theorem, a majority of students did not square the 7 or the 10, hence making no progress.

Question 21
Responses to part (a) were mixed with many not using the 'cube'. Some students correctly worked out the constant of proportionality but did not give the equation. Those who had the correct constant in part (a) usually were successful in part (b).

Question 22
This question was not well answered as many students gave contradictory reasons often containing incorrect information. Many students stated that angle *ACB* was not 56°.

Question 23
Approximately half of the students had some success with this relatively new topic. Significant numbers of students only gave the correct answer for the first value.

Question 24
In part (a) many students obtained at least one correct area but common errors involved incorrect reading of scales. Part (b) was generally well answered by a majority of students with the third box being the most popular incorrect choice.

Question 25
Part (a) was well answered, with the most common errors involving the use of sine or cosine. Part (b) was quite well answered with a majority of students having some success, often when working out the length of *AC.* A majority of those students then went on to give a fully correct solution.

Question 26
On part (a) of this question students generally gave a fully correct method and answer or made no progress. The most successful students counted centimetre squares and compared this with the total numbers of cars. A common incorrect method was to divide 480 by the total class width and then multiply by the class width of the first bar giving $480 \div 35 \times 15 = 205.7$ cars. In part (b) whilst there were a significant number of correct answers, many did not read the scale correctly, assuming the bar was 1 centimetre high.

Question 27
This question was quite well answered with many fully correct solutions seen. A majority of students gave the probability for the second red correctly as $\frac{9}{31}$ but many either added probabilities or gave an incorrect probability for the third red, often $\frac{8}{31}$ or $\frac{8}{34}$.

Question 28

This was quite a challenging question but many students had some success, either calculating the coordinates of *P* or in demonstrating knowledge of perpendicular gradients. Only a small minority gave a fully correct solution.

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.