OXFORD
INTERNATIONAL
AQA EXAMINATIONS

INTERNATIONAL GCSE MATHEMATICS

9260 Paper 2E

Report on the examination

November 2020

REPORT ON EXAMINATION: INTERNATIONAL GCSE MATHEMATICS 9260 UNIT 2E NOVEMBER 2020

For the vast majority of students the paper was very accessible, and they attempted all the questions in the allocated time. Working was generally set out in a neat, orderly and coherent fashion, although occasionally numbers were not written very clearly. The questions requiring an explanation or a reason were not particularly well answered.

Topics that were well done included:

- standard form
- setting up and solving an equation
- similar shapes
- rearranging an equation
- reverse percentage
- algebraic fractions
- vectors.

Topics which students found difficult included:

- set notation
- differentiation of a rational expression
- probability in relation to experimental results.

QUESTION 01

The question was well answered but, almost one fifth of students chose the answer 6.

QUESTION 02

Nearly all students circled the correct answer.

QUESTION 03

Just over half of the students identified the correct calculation. Around a third circled the second option.

QUESTION 04

Nearly all students circled the correct answer.

QUESTION 05

This question was not particularly well done. In part (a) a common error was to include 1 or 10 in the list. Some students listed the square numbers as their answer. There was a better attempt at part (b), but some students listed the elements of the intersection of B and C.

QUESTION 06

Part (a) was extremely well answered. A few students gave an answer which was not in standard form, such as 51×10^5. In part (b), the most common error was to give the first part of the ratio as a fraction or decimal rather than in standard form as required.

QUESTION 07

This question was very well answered. Most students were able to set up the correct equation, although a few thought the base angles added up to 120° or 180°. Some thought the question was simply to find x or evaluate one of the base angles and so did not complete the final steps to work out angle *BAC*. A few students began by labelling angle *BAC* as x and formed an incorrect equation by adding all three angles and equating to 180°.

QUESTION 08

The vast majority of students worked with a correct ratio or scale factor and had no difficulties evaluating w and y. A few thought that the values could be found simply by adding 1 to 6 or subtracting 1 from 7.

QUESTION 09

In part (a), answers were mainly split between $\frac{1}{2}$ and $\frac{1}{6}$, with a few giving the answer $\frac{5}{9}$. In part (b), words such as probability, possibility, experimental and theoretical were often used in a confused and sometimes contradictory way. A few students thought this was a question about the number of times the coin was tossed, saying it needed to be tossed more times.

QUESTION 10

This question was extremely well answered. Almost all students gave the correct answer.

QUESTION 11

A few students did not find common denominators to add and subtract the fractions, but the majority were very comfortable with the techniques required to simplify. Occasionally, a common denominator of 72 was used, usually leading to an answer which was not fully simplified.

QUESTION 12

Some students started the question by using Pythagoras' theorem and then went on to work with the surface area of the prism. A few simply divided 960 by 10 × 8. Others confused the volume of a prism with that of a pyramid. Nevertheless, there were many fully correct answers.

QUESTION 13

In part (a) the vast majority of students circled the correct answer. However, in part (b) less than half ticked the correct box and were able to give a correct reason. Although the question in part (b) stated that this was a different polygon, quite a large number of students seemed to think it still had nine sides.

QUESTION 14

Most students were able to show the result in part (a). In part (b), the vast majority of students set up the correct equation and worked out the number of white cars sold, but some then gave that as their answer rather than the relative frequency.

QUESTION 15

Those who knew to collect the x terms on one side of the equals sign and the remaining terms on the other had few difficulties in rearranging the equation. Occasionally there was a mistake with one of the signs when collecting terms. Students should be advised that for this type of question they should write "$x =$ " or " $= x$" on the answer line rather than just an expression.

QUESTION 16

The main error in this question was to divide 1170 by 0.55 rather than 0.45. A few increased 1170 by 55%. However, many fully correct solutions were seen. Many students wrote 1170 ÷ 45% and although this invariably led to the correct answer, students should be aware that this is not acceptable as a written method unless 45% is seen converted to a decimal or equivalent fraction, e.g. 1170 ÷ 0.45.

QUESTION 17

Most students were able to identify the correct set of inequalities.

QUESTION 18

There were many correct cumulative frequency graphs seen in part (a), although a few students started the graph at (0, 0) and some drew histograms. In part (b), a few read the value from their graph but did not subtract from 70. Students would also be advised to indicate a reading from the graph, e.g. by drawing vertical and horizontal lines.

QUESTION 19

This question was very well done, with the vast majority of students able to substitute into the equation to find k and hence the value of y.

QUESTION 20

Around three fifths of students were able to identify the correct matrix. The most common incorrect answer was the third option.

QUESTION 21

This question was not particularly well done. A considerable number of students simplified the given expression but gave this as their answer without going on to differentiate it. A few differentiated each individual term in the expression and then simplified.

QUESTION 22

This question produced a spread of marks. The second statement was the one that was correct most often, and the last statement was the one correct least often, where many thought it was true.

QUESTION 23

There were many correct answers. Some students only found the arc length and some used 3.6 as the diameter instead of 7.2. A few lost the final mark by giving their answer in terms of π, when the question asked for a decimal answer. A few used πr^2.

QUESTION 24

Many students were able to work out the correct coordinate. Some students worked out the gradient of $\frac{1}{3}$ but then tried to use this to work out the equation of UW or use $-\frac{1}{3}$ as the perpendicular gradient. A few students tried a geometrical approach, but none was successful by this method.

QUESTION 25

Most students were able to show the result in part (a). In part (b), some students began by trying to cancel terms in the fraction. A few incorrectly rearranged the equation to get $3x^2 - 9x + 5 = x^2 + x$ and then tried to solve this, while a few thought that $x(x + 1) = 0$ was the equation to solve.

QUESTION 26

Some students thought that angle *ACP* was a right angle or that triangle *ACD* was isosceles, so that although angle *ACD* was correctly identified as 33 this was then subtracted from 90 or 66 subtracted from 180. Those who knew the alternate segment theorem were usually successful. A few students obtained the correct answer but made the question more complicated by drawing in extra lines such as radii and working out all manner of angles.

QUESTION 27

Many students did well on this question. The most common method was to write $x + y = 1$ and then solve simultaneously with the linear equation. Wwhen the equations were solved by substitution the work was occasionally marred by incorrect algebra, e.g. $2x - y = -2$ being rearranged to $x - y = -1$.

QUESTION 28

Nearly all students identified the correct angle to be worked out, but some students incorrectly thought it was $\tan^{-1}\frac{15}{27}$ or $\cos^{-1}\frac{15}{27}$. Some did successfully find the angle using tangent or cosine by using Pythagoras' theorem to work out *AC*. Most correct solutions, however, came from using sine.

QUESTION 29

Having correctly expanded and collected terms to $2n^2 + 2n + 1$, many students thought it was sufficient simply to state that this was odd without explaining why. A few students thought that numerical examples were sufficient to prove the result.

QUESTION 30

Most students were able to identify the correct expression. The most common incorrect answer was the first option.

QUESTION 31

Most students knew how to set out the required working to convert the decimal to a fraction, with the most common method being to work with 8.4… and multiply by 10 or 100. A few obtained a correct fraction, but not in its simplest form.

QUESTION 32

In part (a) the most common errors were to begin by having M directly proportional to d^2 or inversely proportional to d. A few students used $\propto$ in their working and in their final answer instead of the equals sign. However, many were able to find a correct equation, and those who did usually had no problem in finding the value of d in part (b).

QUESTION 33

Most students began by working out the distances *AB* and *AC*, but having done so a few students then thought that triangle *ABC* was right-angled. The majority used the cosine formula correctly, although some forgot to square root their AC^2 to obtain the final answer.

QUESTION 34

Most students knew how to rationalise the surd, and many were well practiced at showing all the steps involved. Some did not show all the required working, e.g. $(21 + \sqrt{7})(3 + \sqrt{7})$ was suddenly stated to be $70 + 24\sqrt{7}$ without any expansion terms seen.

QUESTION 35

There were many good attempts and fully correct answers, mostly obtained by using the method of finding $\overrightarrow{RQ}$ and $\overrightarrow{RX}$. Occasionally, following correct expressions for these vectors the answer was given as 0.4 instead of 2.5.

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