edexcel
advancing learning, changing lives

Examiners' Report/ Principal Examiner Feedback

November 2010

IGCSE

IGCSE Mathematics (4400)
Paper 2F Foundation Tier

Edexcel Limited. Registered in England and Wales No. 4496750
Registered Office: One90 High Holborn, London WC1V 7BH

A PEARSON COMPANY

If you have any subject specific questions about the content of this Examiners' Report that require the help of a subject specialist, you may find our Ask The Expert email service helpful.

Ask The Expert can be accessed online at the following link:

http://www.edexcel.com/Aboutus/contact-us/

November 2010

IGCSE Mathematics
Specification 4400
Paper 2F

For November 2010 the total IGCSE Mathematics entry was approximately 2000 candidates, a figure broadly in line with the two previous November sessions. There was a significant drop in the number of Foundation candidates from last year (from 600 to 300) and a corresponding increase of around 300 in the number of Higher level candidates.

Most of the 352 Foundation tier and 1812 Higher tier candidates took the opportunity the papers gave them to show what they knew.

Papers are marked online and it was pleasing to note, that with very few exceptions, most candidates kept their written responses within the areas designated for both working and answers, and did not stray outside these boundaries. Candidates should continue to use a pen with black ink, or HB pencil (or darker) for diagrams.

Introduction

With one exception, the questions on this paper made appropriate demands of candidates. The exception was Q23 (circle geometry), on which the majority of candidates made little, if any, headway. The remaining questions were accessible and broadly had the success rates anticipated. Average candidates scored well on the first half of the paper but, as intended, only abler candidates gained full marks on some of the later questions, Q21 (scale) and Q22 (inequalities), for example. In general, methods were well explained and working presented clearly and neatly.

Report on individual questions

Question 1

This question was intended as a straightforward start to the papers and most candidates scored well. Part (d)(ii) proved the most demanding with many wrong, albeit usually sensible, answers, especially 4712, 7142 and 7214.

Question 2

In the first four parts, few candidates made errors in using the pictogram. In part (e), most candidates correctly gave the simplest form of 40 : 60 as 2 : 3 although a minority either left their answer as 40 : 60 or simplified it incorrectly. 1 : 1.5 scored 1 mark out of 2 but related fractions received no credit.

Question 3

In the first part, which was well answered, the most frequent wrong unit was ‘metres’ for the height of the man in part (ii) and ‘grams’ appeared regularly for the weight of the laptop computer in part (i). A range of answers was accepted in the second part, although the majority of successful attempts were lengths between 6 cm and 8 cm. The most popular wrong unit was cm^2 but cm^3 also appeared regularly.

Question 4

Many candidates gained full marks, the only error which appeared with any regularity being in part (c) where the appropriate inverse operations were sometimes reversed [(48 ÷ 2) − 6] which resulted in an answer of 18.

Question 5

Parts (b), (c) and (e) had high success rates but the other two parts, although still well answered, proved more difficult, especially part (a), where 'hundredths' and 300 appeared regularly. Ordering the decimals in part (d) was not a trivial task. There was no particular pattern to the errors, although candidates who made errors often either failed to recognise 0.06 as the smallest number or 0.65 as the biggest.

Question 6

Parts (a) and (b) were well answered, although a few candidates lost marks with incompletely simplified expressions such as $7k - k$ in part (a) or, in part (b), expressions such as $7p \times q$, which still included a multiplication sign.

Part (c), though, proved much more difficult, incorrect expressions, especially y^8 and $4y^8$, appearing regularly.

Question 7

In the first part, line symmetry was well understood but order of rotational symmetry significantly less so. In part (i), few failed to realise at least that badge C had no lines of symmetry while, in part (ii), many appreciated that badge G and badge J had rotational symmetry but thought that it was of order 2.

In the second part, a substantial number of candidates scored full marks with answers such as "3 lines of symmetry and rotational symmetry of order 3" but it was not unusual to see only the first of these. Common errors were giving 1 as the number of lines of symmetry and 2 or 4 as the order of rotational symmetry.

Question 8

There was a high success rate for all parts of this question. 5 was occasionally given as the answer to part (a) but overall it was pleasing to see most candidates demonstrate a clear understanding of both median and probability.

Question 9

In part (iii) the cube was occasionally found, instead of the cube root, but, otherwise, errors were rare.

Question 10

The majority of candidates applied "volume of a cuboid = length × width × height" but were unable to cope with the mixed units. Some took no account of this and found 3 × 4 × 8. Others tried to convert 8 mm to centimetres but did it incorrectly, leading to 3 × 4 × 80, for example. Attempts to convert all dimensions to millimetres were rarely successful. 2 marks out of 3 were awarded to candidates who expressed the product entirely in centimetres (3 × 4 × 0.8) or entirely in millimetres (30 × 40 × 8); the former gave the correct answer directly but few were able to clear the further hurdle of converting mm^3 to cm^3 in the latter case.

Question 11

Many candidates were able to draw the line $y = x$ but the line $y = 2x$ proved much more demanding, incorrect lines appearing more often than the correct one. The most popular of these were $x = 2$, $y = 2$, $y = x - 2$ and $y = \frac{1}{2}x$. Some candidates were unable to attempt the question, while others just plotted two points, often (0, 0) and (2, 0).

Question 12

Many candidates scored full marks and, of those who did not, some gained 1 mark for finding the fourth interior angle of the quadrilateral. The only regular geometrical misconception was that $x°$ and 84° were alternate angles and thus equal. Answers of 22° [180 − (101 + 57)] appeared occasionally.

Question 13

The majority of candidates evaluated the expression accurately and many also rounded it correctly. When a rounding error occurred, it usually led to answers of 3.4 or 3.40.

Question 14

A fair number of candidates scored full marks, either by converting 1 hour 15 minutes to 1.25 hours and evaluating 248 × 1.25 or by finding the sum of $\frac{1}{4}$ of 248 and 248. Some gained 1 mark for expressions like 248 × 1.15 and 248 × 75, which demonstrated some understanding of the relationship "distance = average speed × time". Others made the mistake of using "$\text{distance} = \frac{\text{average speed}}{\text{time}}$".

Question 15

Most candidates successfully found the midpoint in part (a) but incorrect coordinates in part (b) were numerous and varied. It appeared that many candidates were unable to interpret graphically the geometric information.

Question 16

The most frequent answer to the first part was the correct one, 275 euros, using 198 ÷ 0.72, but 142.56 from 198 × 0.72 was also popular. Although two operations were needed in the second part, it was answered at least as well as the first, perhaps because both operations were multiplication. Answers of 15 347.22, resulting from 50 ÷ 0.72 × 221 appeared regularly, though.

Question 17

Each part of this probability question had a high success rate. There was no noticeable pattern to the wrong answers, apart from 53 (160 ÷ 3) in part (c), based on the incorrect assumption that each shape was equally likely to be taken.

Question 18

Errors were rare in the first part. Responses to the second part, however, varied widely and it proved to be a good discriminator. Most achieved some success, even if only 1 mark for the subtraction 1350 − 1269 giving the loss, \$81, were scored. $\frac{1269}{1350}$ received 1 mark, although a sizeable minority of those who started with this just converted it to a percentage, 94%, which they then gave as their answer, instead of subtracting it from 100. It is pleasing to report, though, that 1269 seldom appeared as the denominator in candidates' expressions.

Question 19

In the first part, many candidates substituted correctly into the formula and evaluated *V* accurately. 10.14 was the most popular wrong answer, the result of evaluating $\frac{2}{3} \times (2.6 \times 1.5)^2$. The second part had a much lower success rate, although candidates could score 1 mark out of 2 simply by substituting the given values into the formula, that is, $V = \frac{2}{3} \times h \times 2.5^2$. The omission of the first multiplication sign was condoned but not the second. It was apparent from working such as $35 = \frac{2}{3} \times (h \times 2.5)^2$ and answers such as 30.84 $\left(35 - \frac{2}{3} \times 2.5^2\right)$ that the formula was sometimes misinterpreted.

Question 20

Many candidates applied both transformations correctly and few achieved no success. In between, the correct shape in the wrong position appeared frequently in both parts. In the first part, such answers, often with the right-angled corner at (3, 4), scored 2 marks out of 3 and, in the second part, 1 mark out of 2.

Question 21

Only a minority obtained the correct distance. The majority scored 1 mark out of 3 for 19.6 × 50 000 = 980 000 cm, then either giving this value as their final answer or making an unsuccessful attempt to convert 980 000 cm to kilometres. Division of 980 000 by 1000 was often used, leading to 980 as a popular wrong answer.

Question 22

Only a small minority gave three correct inequalities. A much larger number scored 2 marks for $x \geq 1$ and $y \geq 2$ but many were unable to make a meaningful attempt.

Question 23

Completely correct solutions were rare. It was necessary to join *OC* (or *BC*) in order to make any headway and very few did this. Consequently, this question was not accessible to most candidates.

Statistics

Overall Subject Grade Boundaries – Foundation Tier

Grade	Max. Mark	C	D	E	F	G	U
Overall subject grade boundaries	100	70	55	40	26	12	0

Paper 1F – Foundation Tier

Grade	Max. Mark	C	D	E	F	G	U
Paper 1F grade boundaries	100	72	56	41	26	11	0

Paper 2F – Foundation Tier

Grade	Max. Mark	C	D	E	F	G	U
Paper 2F grade boundaries	100	68	53	39	25	11	0

Further copies of this publication are available from
International Regional Offices at www.edexcel.com/international

For more information on Edexcel qualifications, please visit www.edexcel.com
Alternatively, you can contact Customer Services at www.edexcel.com/ask or on + 44 1204 770 696

Edexcel Limited. Registered in England and Wales no.4496750
Registered Office: One90 High Holborn, London, WC1V 7BH