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Principal Examiner Feedback

January 2016

Pearson Edexcel Level 2 Award in Number and Measure (ANM20) Paper 2A + 2B

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January 2016
Publications Code EA043331

Contents

Edexcel Award in Number and Measure (ANM20)
Principal Examiner Feedback – Level 2

Introduction

Section A is a calculator paper. It was evident from some work that students were attempting the paper without the aid of a calculator. This is not advisable, since calculation errors will cost marks. It was also the evident that whilst some were able to calculate the angles for the pie chart, lack of equipment meant they were unable to attempt the drawing.
Students need to take particular care with their numbers. Some figures written by students were either ambiguous or illegible. Equally it was not uncommon to see students mis-copying answers from working space onto the answer line.

Generally the standard of work on this paper was encouraging, but there were too many cases where students failed to show their working out. On these occasions an incorrect answer would lead to the loss of all marks for that question.

The design of this paper and the performance of students on this paper were consistent with previous papers so allowing a pass mark of about 66% of the total mark to be considered as showing proficiency in Number and Measure at Level 2.

Report on Individual Questions

Section A

Question 1

A question that was answered well. Students must clearly show their decimal points, some are very faint.

Question 2

A well answered question with most students handling the negative signs very well.

Question 3

In part (a) the division was usually done correctly, but answers were then spoilt either because students failed to round to 2 decimal places (taking account of the fact that this is money) or rounding incorrect (to 34.28 rather than 34.29). In part (b) the only error, seen infrequently, was missing off one or both of the 8s from the answer.

Question 4

Usually completed successfully, except those students who divided by 2, or attempted to work out the surface area.

Question 5

Students who found 7% of 600 in a single step usually gained the mark for the 42 seen. Some unfortunately then added this to 80, or subtracted it from 80. Many students used a staged approach for finding 7%, which was unnecessary on a calculator paper. Frequently this was not successful, since sometimes they found 10%, 5%, but were unable to process the figures correctly to get the 1%, or added these up incorrectly, finding 5% or 6% instead of the required 7%. Addition errors were too frequent. Centres are advised to discourage a staged approach when a calculator is available.

Question 6

The first three parts were usually answered well with just the predictable incorrect answers of 144 in (b) and 60 in (c). In part (c) it was not unusual to see 32 + 9, but the most common incorrect approach was shown as 10 + 9=19

Question 7

A well answered question, with few choosing to multiply rather than to divide.

Question 8

This question was done less well than previously, with far more choosing to attempt the division by a traditional method, rather than (the easier) conversion to decimals and division using their calculator. Whilst it was not uncommon for a correct conversion to improper fractions, further correct processing from this stage was rare.

Question 9

A well answered question, with few choosing to divide rather than multiply.

Question 10

Too many ignored the reference to perimeter and just made a question up. This involved either multiplying the numbers together or adding them before halving.

Question 11

It was encouraging to see many correct pie charts. Some calculated the correct angles to be drawn, but then drew a completely inaccurate pie chart, suggesting they might not have had a protractor with them. Many who did not know how to calculate the angles merely guessed the approximate proportions, which usually failed to attract any credit. Most used labels on their pie chart. Accuracy in calculating the angles was an issue for some. Rather than calculating the angle in one step many worked out the scaling factor first by working out 360÷270, but then rounded this to 1.3 or worse. Students would be better performing the calculations in two steps (eg ÷270, ×360), or using accurate factors.
Some ignored calculation of the angles and just tried drawing with angles of 120 and 94, ignoring the fact that the third angle was then incorrect.

Question 12

Most started by working out 12.60×26 and most also deducted the tax and national insurance (though there were some who added). The failing of many was in dealing with the overtime. A common incorrect approach was to just use 12.60×30, or add on 12.60×4.

Question 13

Students used a variety of methods in working towards the answer. Some incorrectly assumed this was a question about multiples, and merely listed the multiples of each number. Some credit was given to those who drew factors trees, where these led to listing prime factors, since these could then lead to the answer. Unfortunately this was rare, since once the prime factors had been found for each number, students did not know how to use this information to find the highest common factor. By far the most successful method was simply listing the factors, an easy task given they had calculators, which usually led to the correct answer.

Question 14

Predictably many students used the formula for finding the area. Some used an incorrect formula for the circumference, and others, having recalled the correct formula, using 16 as the radius. Those who avoided all these errors arrived at the correct answer for full marks.

Question 15

The majority of students incorrectly applied a compound interest approach to this question, which is surprising since compound interest is not on this specification. There was some confusion in using the 4 and the 2, with working not always clear. But those who calculated the interest for one year then ×4 usually went on to state the correct final answer.

Question 16

Most students understood that it was necessary to divide this shape up in some way, and showed this on the diagram, usually by dividing up the cross-section into a combination of rectangles, and rarely by subtracting two rectangles from a larger rectangle. Unfortunately having done this, students failed then to consider the individual shapes that they then had. Finding the resulting dimensions caused the most problem. In part (b) some went on to recalculate and give a completely correct answer. Others realised this was area of cross-section ×9, but the mark for this was not awarded when it was applied to an incorrect answer in (a) that was not an area.

Question 17

Most students realised they had to work with the number 126, but only a minority understood how to do this to form a percentage.

Question 18

It was encouraging to find that more students than is usually the case remembered the formula for finding the volume of a cylinder. But beyond that, only the best students made any headway. Use of the diameter instead of the radius, failure to square correctly, and misuse of the number 9 were all issues that students frequently demonstrated in their working.

Section B

Question 1

This question was usually well answered.

Question 2

Students who tried multiplication of 15 before a division of 6 found this harder to answer. An alternative method of dividing by 6 multiplying by 9 and then adding on to £5.10 to find 15 was done badly, either because of poor arithmetic or because more or less than 9 were added.

Question 3

Most students were able to write a ratio, usually the mark being given for sight of
420 : 180 It was rare to then see a completely simplified ratio, with many giving answers of 210: 90 or 14 : 21

Question 4

Performance on this question appeared weaker than is usual. In part (a) it was not uncommon to see all the numbers added, though poor work with place value failed many, with the 290 being placed under the 35.64 irrespective of the decimal point. In part (b) most students abandoned a traditional approach involving decomposition in favour of adding numbers on to get to 2137; an acceptable approach as long as arithmetic does not fail them, and they remember to add together all parts of this process. Many grid methods were also seen. Those who obtained the correct answer were usually able to place the decimal point correctly.

Question 5

Finding fractions of quantities is clearly a weakness since many students were unable to process this procedure correctly. Working demonstrated that finding 12 was found no more difficult than finding 14, given the correct process. Only a few failed to give a correct conclusion, though the mark could only be awarded if they showed clearly the two figures they were comparing to get the answer. In part (b) most students were able to write the numbers correctly as a fraction with 17/30 usually seen.

Question 6

Most students were able to round at least two of the numbers ready for calculation, and indeed many then went on to carry out a process of calculation, usually 30 × 40 to get 1200. Few realised that division of 0.5 resulted in doubling; most halved to give 120. Too many students in this question rounded to only 31 and 39, which then resulted in long multiplication methods which were unnecessary in an estimation question.

Question 7

This was a good discriminator in that weaker students merely added across. The majority of students knew they had to use common denominators, and either converted the $\frac{1}{4}$ into $\frac{2}{8}$, or converted both, most commonly to $\frac{12}{32}+\frac{8}{32}$

Part (b) was well answered.

Question 8

The common error was to divide the 168 by 3, and also by 5 to get the two numbers. A significant minority divided by 8 but then did not remember what to do with the result of their division. Far too many students wrote 3 + 5=7, and then used this as an incorrect divisor. But there were many correct answers.

Question 9

Many knew how to work out 20%. The most common method was doubling 10%, though some multiplied by 0.2 or an equivalent method. Division by 20 gained no credit. It was disappointing to find some subtracting the VAT from £450.

Question 10

There were many who gained full marks for the final answer of 30. But typically most wrote $\frac{120}{400}$ but did not know what to do with this expression.

Question 11

Conversion to top heavy fractions made calculation more difficult, equally so when it came back to converting to mixed numbers. It was the process here that caused more problems for students than the arithmetic, since the numbers were small. Those who worked with the fractions frequently forgot to add the whole numbers back into their final answer, usually leaving it as $\frac{11}{20}$; but many also failed to write their final answer in its simplest form, leaving it as $\frac{91}{20}$.

Summary

- Taking care when writing numbers and having the correct equipment for each section
- Showing working out
- Writing money appropriately
- Understanding the difference between finding the circumference of a circle and finding its area
- Understanding simple interest
- Knowing the difference between HCF and LCM
- Calculating with salaries, overtime, national insurance and tax
- Calculating a percentage increase or decrease and writing one number as a fraction or percentage of another
- Calculating percentages in a single step when using a calculator
- Calculating with fractions and decimals without a calculator

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