Pearson

Examiners' Report
Principal Examiner Feedback

January 2018

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

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Introduction

Candidates need to be reminded about how they write their numbers. There are an increasing number of occasions when numbers are written ambiguously (eg 1s and 7s, 2s and 5s) or numbers are over-written, leaving them illegible.

There were too many attempts that resembled trial and improvement approaches.

The inclusion of a pie chart question on this occasion made it clear that many candidates did not have the appropriate equipment (eg a protractor & ruler) for completion of such questions. Completion of some questions in section A by non-calculator methods (eg Q10 and Q13) would also suggest the absence of a calculator.

There were too many instances in this paper where working out was set out in such a disorganised way that it was almost impossible to identify a chosen route of solution by the candidate, in order to award method marks. This was particularly the case in Q5 and Q13 in Section A. There were also cases where several methods were shown; unless made clear by the candidate which is to be accepted for marking, no marks can be given. The inclusion of working out to support answers remains an issue for many; but not only does working out need to be shown, it needs to be shown legibly, demonstrating the processes of calculation that are used.

Reports on Individual Questions

Section A

Question 1

There were many correct answers to this question.

The most common error in part (a) was mis-counting the divisions, whilst in part (b) the common error was in ignoring place value for example by giving the answer as 3.3

Question 2

This was a well answered question.

In (a) some showed a lack of understanding by multiplying by 3.

In (b) a few multiplied the squared numbers, or failed to square root. There was some evidence that candidates failed to know how to use their calculator, or were using a calculator without a square root facility.

Question 3

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 90 ÷ 360, but then failed to sue the scaling factor correctly. Candidates would be better performing the calculations in one step.

Question 4

Part (a) was poorly answered. Rounding was the main issue, with many rounding to the nearest 10p, the nearest pound, or to one decimal place irrespective of the fact that this was money. Some rounded to 0.79 rather than 0.80

In part (b) candidates need to understand that whenever calculations are required in this section, they must be worked out accurately. With a calculator this was a relatively easy question, yet some candidates spoilt their answer by truncating or rounding unnecessarily.

Question 5

Although this was a long question it was usually very well done, with evidence of sound arithmetic in most cases. A minority showed evidence of transcription errors in working. Common errors included using 22 hours as normal time, working with just 8 hours of overtime (ignoring the 30 hours of normal pay rate) or mixing up the order of operations.

Question 6

A minority incorrectly chose to reverse the operations with the given numbers. Others just performed one operation with either the 5 or the 8

Question 7

There was the usual confusion of candidates over whether to use 12 or 6 in any circle formula, and of course a minority of candidates who tried to use the formula for working out the area of a circle.

Question 8

There were many attempts using factors, which gained no marks. The most successful attempts were those who listed multiples, frequently arriving at the correct answer. Those who used factor trees gained some credit for showing the prime factors, but most using this method did not know how to use their prime factors to arrive at the answer.

Question 9

A well answered question. The only error worthy of note was those who spoilt their calculation by assuming that cm^2 meant 9^2

Question 10

Candidates who could not work with percentages were unable to make much progress with this question. Sometimes the division by 100 was not done. Fewer candidates than in previous series attempted this question using compound interest methods, but there remained some confusion as to whether to give their interest as the final answer, or whether to add their answer back onto the £400

Question 11

A small number of candidates were confused with the notion of perimeter and attempted to add up the lengths of the edges. A greater minority, in calculating the triangular cross-section, forgot to divide by half. Too many assumed that they just had to multiply the three numbers.

Question 12

The majority of candidates attempted this by a traditional approach, writing these as improper fractions. The weakest candidates tried to do this using only $\frac{1}{4}$ and $\frac{4}{5}$

There was no requirement to simplify fractions after processing. Of those candidates who changed the fractions into decimals to use a calculator, most then went on to give the correct answer.

Question 13

Most candidates showed understanding of rectangular area by showing how to work out an appropriate area, usually 12 × 20. Most also showed understanding that in order to find the area of the shaded border, that subtraction of two rectangular areas was needed. Finding the dimensions of the inner rectangle was the greatest problem for the majority of the candidates. Whilst many assumed incorrectly that subtraction of 2 was needed (to give 18 by 10) others thought the dimensions were derived by using 2 only (to give 2 by 2, 2 by 4 or 4 by 4). There was no evidence that candidates attempted to find the area by dividing the shaded region up into 4 (or more) rectangles.

Question 14

A minority incorrectly chose to multiply rather than divide, but having chosen to divide, then most of the candidates went on to give the correct answer.

Question 15

Evidence of some understanding was shown by those who added the 3 and the 2 to give 5. Division into 120 usually then led to a correct answer. A significant minority of weaker candidates merely attempted to divide 120 by 3, and to divide 120 by 2

Question 16

It is important that candidates realise that in these types of question their final answer needs to be supported by working. Credit was sometimes given for an incorrect conclusion linked to their two answers given, as long as a correct method was shown for at least one of these two answers. Whilst many candidates realised that 70% of 70 was just a multiplication by 0.7 (or equivalent), fewer remembered a process by which $\frac{2}{3}$ of 72 could be found.

Question 17

Although there were many correct answers, there were an equal number of failed attempts, usually linked to a failure to understand the necessary method of solution. Common wrong methods were usually associated with summing the score column, or the frequency column, sometimes also linked to a division (eg by 6). Of those who started by multiplying the pairs of figures, most then went on to gain the correct answer.

Question 18

Most gained some credit for the first step of showing 5, but could not then convert this to a percentage of 25. Some got as far as 1.2, but then left this as their answer rather than performing a conversion to give 20%

Section B

Question 1

In this question the common errors were related to poor arithmetical processing.

In part (a) many candidates knew that some form of decomposition was needed, but for many this was only done partially, perhaps by just using 1 rather than 9. A minority of candidates attempted to find addition sums to get from 1274 to 3000, but again were let down by poor addition skills.

In part (b) it was disappointing to see a significant number of candidates using operations incorrectly. For example, by just adding all four numbers, by just adding the first three numbers, or similar. The weakest candidates confused place value, for example adding 726 to 3557. If the first three numbers were first added, subtraction of the 5.61 then became an issue for some.

Question 2

A well answered question.

Question 3

There were many different methods shown, including Napier's bones, grid methods and partitioning methods, even though this was multiplication by just a single digit. Place value was again an issue here, particularly with grid or partitioning methods, but so was poor recall of time tables. Those who ignored the decimal point during processing either forgot to put it back, or did so in the incorrect place.

Question 4

This was not well answered.

In part (a) candidates had first to start using the same units, usually by attempting to convert 3 hours into minutes, unfortunately badly. A common error was to write 3 hours as 300 minutes. Of those who did give an appropriate fraction, many then failed to realise that their fraction had to be simplified, or only did this process partially.

In part (b) credit was sometimes gained for showing the fraction $\frac{32}{80}$, but few then realised how to write this as a percentage.

Question 5

Candidates who attempted to work this out accurately gained no marks; the question asked for an estimate, and there must therefore be evidence of estimation before any marks are awarded. Those who chose appropriate numbers to use as estimates gained some credit, though this did not include those who just truncated to 7.9 to 10

A common error was in assuming division of 0.5 was performed by halving the numerator. Some calculations were again spoilt by poor arithmetic.

Question 6

A well answered question. Most candidates realised that a division by was needed, and most then went on to multiply their answer by 3, arriving at the correct answer.

Question 7

When errors were made in this question, these errors were normally associated with the choice of the wrong sign, though times table errors again caused problems for some in (c) and (d).

The worst answered was part (b), where the difference, rather than the addition of the numbers was performed, or association of the answer with the wrong sign.

Question 8

Those who knew how to work out a percentage usually gained some credit. Many found 10% then doubled as part of this method; few realised that 20% was just $\frac{1}{5}$

Some just left their answer as the percentage figure (550) and some spoil their answer by adding to 2750. Overall a well answered question.

Question 9

A well answered question. Only a few spoilt their process by trying to give the two fractions with a common denominator.

Question 10

Most showed 20 : 32 in working to gain the first mark. Some then failed to simplify correctly. Some gave the answer the wrong way around (8 : 5)

Question 11

The key to this question was of course finding a common denominator. Those who merely showed 3−1 and 4−3 or equivalent gained no marks. But it was encouraging to see many who wrote $\frac{9}{12}-\frac{4}{12}$.

Some decided to write their fractions as improper fractions, which could still lead to the correct answer, but then involved more work and larger numbers to deal with.

Some ignored the whole numbers completely. It was disappointing to see a significant minority failing to write their answers as a mixed number as requested, which meant they lost the final mark.

Summary

Based on their performance on this paper, students are offered the following advice:

- Write figures out clearly and do not overwrite them.
- Ensure that they have brought all necessary equipment with them in order to take the examination. This includes a protractor, a ruler and calculator.
- Present working in a legible and organised way on the page, sufficient that the order of the process of solution is clear.
- Spend more time ensuring that the fine detail of the question has been read to avoid giving answers that do not answer the question, and to give answers in the form required, such as simplified if asked for.
- Practice basic numeracy such as addition and subtraction.
- Learn times tables.

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