Pearson

Examiners' Report
Principal Examiner Feedback

Summer 2018

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

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Introduction

It was encouraging to find that most candidates attempted nearly every question, in both sections.

Section A is designed to be completed with the aid of a calculator, but the sight of a significant number of non-calculator methods would suggest that not all candidates had a calculator.

There were too many attempts that resembled trial and improvement approaches, but the inclusion of any working out to support answers remains an issue for many. Candidates also 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 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. In particular, questions 6 and 14 in Section A required several different stages of working. Also in Section A some candidates used a number of stages to answer questions 10 and 19. 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.

Reports on Individual Questions

Section A

Question 1

There were many correct answers to this question. The most common error in part (i) was mis-counting the divisions whilst in part (ii) the common error was in ignoring place value, for example by giving the answer as 4.2. In either part it was not uncommon to find candidates counting the wrong way, for example giving answers such as 7.3 or 5.6.

Question 2

This was a well answered question. In part (a) some showed a lack of understanding by multiplying by 3. In part (b) a few multiplied the squared numbers, multiplied by 2 or failed to square root. There was some evidence that candidates failed to understand how to use their calculator or were using a calculator without a square root facility.

Question 3

This was usually a well answered question, the only common incorrect answers being −3 in part (a) and −12 in part (b).

Question 4

In part (a) 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.

Part (b) 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 0.46 rather than 0.47, whilst some wrote their answer incorrectly as 0.46p

Question 5

This was quite well answered. There were a variety of methods shown by which candidates related angle size to quantity, most commonly finding 1 student was 15°. Whilst method was not always shown, finding one correct quantity was taken as implying correct method, and attracted 2 marks.

Question 6

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 32 or 48 hours as normal time, working with just 8 hours of overtime (ignoring the 40 hours of normal pay rate) or mixing up the order of operations.

Question 7

Some listed multiples rather than factors. Some tried to list all the factors of 24 and 60 as lists. The most successful attempts were those who used factor trees, gaining some credit for showing the prime factors. Some then went on to successfully state the HCF, but most using this method did not know how to use their prime factors to arrive at the answer.

Question 8

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 9

Evidence of some understanding was shown by those who added the 5 and the 4 to give 9. Division into 63 usually followed onto the correct answer. A significant minority of weaker candidates merely attempted to divide 63 by 5, and to divide 63 by 4.

Question 10

Candidates who could not work with percentages were unable to make much progress with this question. Sometimes, in trying to work out the percentage, 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 £200. Too many used a partitioning method to find the percentage by finding 10%, 1% and 0.5% rather than a more direct approach, usually leading to greater error.

Question 11

The success rate with this question was higher than for question 8. More were able to recall the correct formula for working out the volume, but $\pi \times r \times h$ was a common misconception. The numbers here were the exact numbers for substitution, so there was less opportunity for error, though some still tried to use 6 for substitution. Without a calculator obtaining the final answer was impossible, and a small number failed to process the figures correctly on their calculator, but usually correct recall of the formula then led to the correct answer being given.

Question 12

It is important that candidates realise that in these types of questions 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 75 was just a multiplication by 0.7 (or equivalent), fewer remembered a process by which 3/4 of 72 could be found.

Question 13

This was not well answered. One error was seen by those who multiplied rather than divided. But it was not uncommon for candidates to divide 72 by 12 in anticipation of this being a length rather than an area, frequently followed by 6^2 (an incorrect method to find the area) or 6×5 (a perimeter). This was a complete misunderstanding of what the question was asking for and got 0 marks.

Question 14

Most candidates showed understanding of rectangular area by showing how to work out an appropriate area, usually 7 × 11. Most also showed understanding that in order to find the area, the shape had to be considered as at least one triangle and one rectangle. Many weaker candidates chose rectangles that were overlapping. Finding the dimensions of the triangle was the greatest problem for the majority of the candidates; but many also forgot to include halving in their calculation of the area of the triangle.

Question 15

The majority of candidates attempted this by a traditional approach, writing these as improper fractions. The weakest candidates tried to do this using only $\frac{3}{4}$ and $\frac{1}{2}$. 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 16

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

Question 17

Most gained some credit for the first step of showing 30 but could not then convert this to a percentage of 25. Some got as far as 0.75 or even 75, but then left this as their answer rather than performing a conversion to give 25%.

Question 18

A well answered question.

Question 19

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 an incorrect division (eg by 4). Of those who started by multiplying the pairs of figures, most then went on to gain the correct answer.

Section B

Question 1

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.

Question 2

In this question the common errors were related to poor arithmetical processing, but there were fewer examples of poor place value than in previous series, for this type of question.

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 683 to 2500, 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 adding 4.65 and 15.93 before subtraction, or similar. The weakest candidates confused place value, for example subtracting 298 from 1779.

Question 3

In part (a) 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 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. In part (b) it was recall of the 6 times table that was the main issue, though some struggled to get the remainders correctly allocated to the next digit ready for further division.

Part (c) was well answered.

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 into pence, or writing 60p as £0.6, conversion which were done well, but too many just wrote 60 as a fraction of 3. 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 $\frac{30}{150}$ or its equivalent, 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 wrote 79 as 100. A common error was in carrying out a division of 40. Some calculations were again spoilt by poor arithmetic.

Question 6

A well answered question. Most candidates realised that a division by 3 was needed, and most then went on to multiply their answer by 8, arriving at the correct answer. There were many other different methods in evidence, such as multiplying by 8 then dividing by 3, or finding the cost of 2 mugs before adding onto 2 × £6.99. Quite inventive.

Question 7

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

Question 8

Those who knew how to work out a percentage usually gained some credit. Many found 10% then halved in finding 5% as part of their method to find 15%, but herein was the greatest error seen: candidates frequently wrote half of 5.50 as 2.25 as part of their process. Some just left their answer as the percentage figure (8.25) and some spoilt their answer by subtracting from 55. Overall a question that proved to be a good discriminator and provided a good range of marks.

Question 9

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

Question 10

A well answered question since no simplification was required. Some gave the answer the wrong way around (48 : 24).

Question 11

The key to this question was of course finding a common denominator. Those who merely showed $7 - 1$ and $8 - 4$ or equivalent gained no marks. But it was encouraging to see many who wrote $\frac{7}{8} - \frac{2}{8}$ or equivalent. 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:

- Candidates need to ensure they arrive to take the examination with all necessary equipment, which includes a calculator for Section A.
- Figures need to be written clearly, and not over-written.
- Working needs to be presented legibly and in an organised way on the page, sufficient that the order of the process of solution is clear.
- Basic numeracy such as addition/subtraction needs practice.
- Times tables need to be learned.
- Candidates need to spend more time ensuring they read the fine detail of the question to avoid giving answers that do not answer the question, and to give answers in the form required, such as simplified if asked for.

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