Examiners' Report

Principal Examiner Feedback

Summer 2019

Pearson Edexcel GCE AS Mathematics

In Mathematics in Context

Paper 1: Comprehension (7MC01_01)

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Introduction

This paper was accessible to candidates at all levels as well as providing effective discrimination for higher achieving candidates. Solutions were generally well-presented and calculations were also generally well executed. However questions that required a written response involving an interpretation or explanation were not well done. Responses were often unclear or contradictory.

The source book was used well with the vast majority of candidates being able to retrieve the required information and apply an appropriate technique to the questions.

There were, surprisingly, many problems caused by questions which required conversion of numbers using thousands and millions with many answers given that clearly did not make sense in context. For example the number of passengers per aircraft movement in 1(a) ranged from 14 to several million and the number of LPs sold in 2007 in 7(ii) was given as 218.

There was evidence that candidates were not well-prepared for topics such as Venn diagrams and PMCC. Most candidates also are still not confident using the formulae for Geometric series. Centres need to ensure coverage of content as well as the problem solving aspects of the course

Report on Individual Questions

Question 1

(a) Generally very well done, virtually all candidates were able to select correct figures required for this calculation from the table. Many candidates were unable to deal correctly with the fact that the number of passengers handled was given in millions and the number of aircraft movements was given in thousands. This lead to some answers that were manifestly absurd in the context of the question. Candidates would be advised to ask themselves, "Is my answer sensible?"

(b) This was less well done. Most candidates were able to attempt to calculate the number of passengers for 2016 with the same errors as were present in part (a). Many then proceeded to calculate the percentage increase, which was not what the question required, and lost the final mark. It is worth noting that, in this question, decimal answers were not penalised in this paper. It is good practice to round appropriately using the context of the question.

Question 2

There were many fully correct responses but a lot of candidates misinterpreted the 0.21%, with multipliers of 1.21 and 1.021 being frequently seen. These candidates were often able to score the 2nd and 3rd marks. Those with the correct multiplier often failed to score the final mark by not stating that their answer was in thousands. The most common method seen was a year-by-year calculation with candidates not being confident enough to use the geometric series formula given in the source booklet. Some of those who did use the formula substituted 5 for n-1, effectively using n=6.

Question 3

(a) Generally well done with majority of candidates gaining at least 2 out of 3 marks. Usually the '7' representing $(L \cup C \cup N)'$ was omitted. Those that did complete the Venn diagram were often able to gain the mark for part (ii). It was disappointing to see that a number of candidates clearly had no concept of what was required in the question.

(b) Very few candidates scored all three marks though many scored at least one. Use of set notation was often very poor and this is an area which centres would be advised to work on. Many candidates gave probabilities or just numbers here.

(c) Most candidates scored at least the M in (i) and many got both marks. Part (ii) was not well attempted with the majority of candidates not understanding conditional probability or the notation used in the question. Some correctly found 22 as the numerator but gave 200 as the denominator.

(d) There were very few fully correct answers to this question. In part (i) many attempted written explanations and scored no marks. Of those who made some progress the vast majority attempted to use $P(L) \times P(C) \neq P(L \cap C)$ but there were many errors in finding the relevant probabilities. Of those who found the correct probabilities, many failed to conclude that the events were not independent. In part (ii) those who scored at least B1 M1 in part (ii) usually gave the correct answer but there were a number who stated that Madeline was incorrect.

Question 4

Those who understood the requirement in part (i) almost always scored both marks. There were very few instances of rounding errors or incorrect rounding. Part (ii) was found to be very challenging by the candidates with only a very small minority scoring any marks at all.

Question 5

(a) Virtually all candidates scored the mark in part (i). In part (ii) again there were many instances of full marks. The correct numbers were almost invariably used although a number of candidates did not work the percentage increase instead calculating the percentage of the 2015 sales compared to the 2007 sales. A number failed to multiply by 100, perhaps put off by the fact that the percentage increase was 950%. A sizeable number divided by the 2015 figure.

(b) In part (i) virtually all candidates used the correct RPI figures and very many were able to score full marks. Rounding was seldom an issue. However, a large number of candidates were unable to apply the formula given in the source booklet correctly twice, often failing to rearrange it to find the 1992 price of a CD. In part (ii) appropriate comments following through candidates' earlier working gained marks. However, candidates need to be encouraged to read over their answers as contradictory statements prevented marks being awarded. Often only one statement was seen but since there were two marks available this should have provided an indication to candidates that two statements were required.

(c) Part (i) was well done with majority of candidates using the correct figures and scoring at least the M mark. There was a variety of valid methods seen. There were many who failed to give an appropriate conclusion who, therefore, lost the C mark. Part (ii) was also generally well done with most candidates gaining both marks. There were a number of candidates who used the same figures as part (i) and, as in part (a), a number who divided by the 2015 figure.

Question 6

In part (i) The graph was usually plotted well with only a small number of candidates omitting to label the axes or plotting a couple of incorrect points, a common error was seen with the values on the x-axis where the scale used was incorrect after 2010. In part (ii) a number of candidates did not use the correct value for n, failing to appreciate that there were only ten values being used in the question paper rather than the fifteen in the source booklet. The formula was not well applied in general and this is an area that centres should focus on. This was a 'show that' question and it was surprising that the number of candidates who did not obtain an appropriate value did not investigate further, particularly when the PMCC value was greater than 1. There were, however,

many fully correct responses. In part (iii) many candidates had difficulty in writing a clear concise explanation to a written question, there were a number of ambiguous statements. Candidates should have an appreciation that the value of the PMCC in this question indicates that there is no linear correlation. There was frequent misunderstanding regarding the PMCC value and confusion between negative and positive correlation.

Question 7

In part (i) many correct answers were seen but a significant number of candidates gave c as 752 000 or substituted t=1 into the equation. In part (ii) most were able to substitute t=7 into an equation with a value for c. A common error was omitting to use the constant value. Many candidates found the correct numerical answer of 218.25 but failed to convert their answer into thousands therefore losing the accuracy mark. Part (iii) was poorly answered and very few candidates were awarded the mark. Many explanations involved interpolation/extrapolation which was not applicable as this is a model.