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Report on the Examination

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General

The majority of candidates attempted all questions, indicating the paper was of suitable length and adequate time was available.

There was evidence that some students did not have the necessary equipment as lines were often drawn freehand and more difficult calculations were incomplete (eg square root of 173.54 was indicated but not evaluated).

Candidates' handwriting was not always clear: the integers 1, 2 and 7 were sometimes indistinguishable as were the integers 4 and 9.

It was encouraging to see most candidates showing their methods which often enabled them to gain part marks when the final answer was incorrect. A significant number of candidates did not appear to read the questions carefully as there were several examples of answers being given which did not relate to the question.

Topics that were done well included:

- area
- circle properties (except tangent)
- number sequences
- problems involving money
- simple equations.

Topics which candidates found difficult included:

- simplifying algebraic expressions
- straight line graphs
- area of a circle
- reflections
- Pythagoras' theorem.

Question 1

There were many correct answers but the common error was placing the 1 and the 4 in the wrong positions. Some candidates sketched a three-dimensional cube to help them to reach a conclusion.

Question 2

Part (a) was done well. In part (b) some candidates failed to read the question carefully and thought this was a continuation of part (a) so another L-shape was drawn using 8 squares. Most candidates drew a 4 x 2 rectangle with very few 8 x 1 rectangles being seen. Some responses had a perimeter of 8 cm rather than an area of 8 cm². In part (c), most candidates were given credit for showing evidence of counting squares (using dots, etc.) Some found the area of a rectangle drawn around the outside of the shape but were often unable to subtract an accurate number of squares to reach an acceptable total.

Question 3

There were many fully correct answers, but it was common not to link 8 with 25% of 32 as many candidates thought 8 was a factor of 42. Some candidates lost marks for showing one of the integers linked to more than one of the descriptions.

Question 4

The diameter was usually drawn correctly although a number of candidates drew the radius. Many candidates either failed to attempt the tangent or drew an incorrect line. The mid-point of the chord was indicated correctly by most candidates and they usually identified the angle between OM and PQ as 90º.

Question 5

Part (a) was usually answered correctly, although a few candidates thought that the missing values required were the ones before the start of the sequence and recorded 37, 41 as their answers. In part (b) the rule '–4' was written in a variety of acceptable forms but '+4' and 'subtract –4' were two incorrect rules often recorded. Many candidates realised that the sequence went into negative values after the number 1 but some incorrectly referred to fractions or asserted that all numbers went to infinity.

Question 6

The majority of candidates scored full marks in part (a). Some candidates forgot to include the call-out charge. Other candidates correctly wrote 40 + 27 x 5 but calculated (40 + 27) x 5 or (40 + 5) x 27. Many candidates used the correct method for part (b) but some failed to subtract £40 from £134.50 accurately. This suggested they were not using a calculator as did the use of trial and improvement rather than division by 27. Most using this approach were unsuccessful and only managed to realise the answer was somewhere between 3 and 4 hours. There was a disappointing inability to express an answer of $3\frac{1}{2}$ hours in an acceptable form, with 3.3, 3.30, 3.50 and 3 hours 50 minutes seen frequently.

Question 7

Parts (a) & (b) were completed accurately when candidates followed the pattern shown in the question, but those who attempted to use a calculator usually failed to appreciate that their answer might be expressed in standard form. Many candidates failed to score any marks in part (c) as their calculator was used rather than continuing the pattern. Some candidates who gave the ninth and tenth row answers were unable to explain how the pattern broke down.

Question 8

Most candidates solved the equations in parts (a) and (b) accurately. In part (c) the correct answer was usually given but the incorrect answer $z = 3$ was frequently seen.

Question 9

Many correct solutions were seen; though candidates often failed to recognise that an octagon has eight sides and a pentagon has five. The first step of finding the perimeter of the octagon was often seen but division by 5 did not always follow. A small number of candidates successfully calculated the proportional length of the sides and used the multiplier 1.6 to reach the answer directly.

Question 10

The first three parts of this question were usually done well. Many candidates failed to realise that order of operations was important in part (d) and evaluated (4.8 ÷ 9.24) + 3.55 Candidates were usually able to gain the mark for correctly expressing their answer to one decimal place.

Question 11

Most candidates simplified part (a) correctly. In part (b), $1q$ and/or $4t$ were often seen in the working but all too often these correct values led to answers of $4qt$, $5qt$, $q - 4t$, etc. Many correct answers to part (c) were seen although $t5$ or $5t$ were seen on a few occasions.

Question 12

Very few candidates failed to make any attempt at a justification. Many correct calculations were made with the correct conclusion. Those candidates who attempted a 'build-up' method often failed to work to the appropriate degree of accuracy and made rounding errors.

Question 13

The vast majority of candidates calculated angle *B* correctly, though 380º was sometimes used as the sum of the angles of a quadrilateral. Despite this focus on angles, many candidates then tried to decide whether *ABCD* was a parallelogram by referring to the sides rather than the angles. They ignored the fact that the diagram was not drawn accurately and stated that sides were parallel or the same length. Those who worked with the angles often did not make it clear whether they were referring to *ABCD* or to the properties of a parallelogram. The neatest explanations were those that stated that *ABCD* was not a parallelogram because it did not have opposite angles equal.

Question 14

Many candidates were unable to complete the table correctly. A very common incorrect answer was to give the two missing values as –2 and 3. Candidates were usually successful in plotting the points from their table but some failed to join the points with a ruled line.

Question 15

Part (a) proved difficult for many candidates with most of them attempting to reflect in the y-axis. Candidates who confused $y = 2$ with $x = 2$ often failed to complete their attempt as the two shapes overlapped. Part (b) was answered well.

Question 16

Many candidates used the correct formula for the area of a circle, but it was disappointing to see a number of them evaluating 5.4^2 as 10.8. Many failed to read this question carefully and omitted the units or gave cm^2 rather than m^2.

Question 17

As in question 16, the values 12.7 and 3.5 were often doubled rather than being squared. Many candidates calculated the value 173.54 but then divided by 2, rather than finding the square root. Some attempted to use trigonometry but, if they obtained one of the angles correctly, they failed to go any further. No marks were given to those candidates who ignored the word 'calculate' and tried to find the length *XZ* by drawing a scale diagram.

Question 18

There were very few totally correct solutions. When a mark was gained it was usually for subtracting 2 from each side of the formula. Candidates who initially attempted to divide by 5 throughout the formula only partially completed this procedure.

Question 19

Many fully correct answers were seen but few candidates attempted to use the given formula: "Volume of prism = area of cross-section × length". The most common approach was to find the volumes of two, three or four separate solids and add these together. Candidates who gained part marks usually found an area of only part of the cross section or failed to take the correct combination of solids.