Mark Scheme (Results)

Summer 2021

Pearson Edexcel International GCSE
Mathematics A (4MA1)
Paper 2F

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme.
  Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Types of mark

- M marks: method marks
- A marks: accuracy marks
- B marks: unconditional accuracy marks (independent of M marks)

Abbreviations

- cao – correct answer only
- ft – follow through
- isw – ignore subsequent working
- SC - special case
- oe – or equivalent (and appropriate)
- dep – dependent
- indep – independent
- eeoo – each error or omission

- **No working**
  If no working is shown then correct answers normally score full marks
  If no working is shown then incorrect (even though nearly correct) answers score no marks.
- **With working**
  If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
  If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks.
  If a candidate misreads a number from the question. Eg. Uses 252 instead of 255; method marks may be awarded provided the question has not been simplified. Examiners should send any instance of a suspected misread to review.
  If there is a choice of methods mark the one that leads to the answer on the answer line.
  If there is no answer given then mark the method that gives the lowest mark and award this mark.
  If there is no answer on the answer line then check the working for an obvious answer.
- **Ignoring subsequent work**
  It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: eg. Incorrect cancelling of a fraction that would otherwise be correct.
  It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect eg algebra.
  Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.
- **Parts of questions**
  Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

NOTES

Please note: [height =] 8 + 0.5 × 6 (=11)[metres] means we do not need to see 'height =' or 'metres' and if we see 8 + 0.5 × 6 we can award the method mark – and we can award the method mark if we see 11 without the working.

In the mark scheme, if we see a number written "82.5" (or "82.5") in speech marks it means the number can be a followed through value, gained from correct working but with an inaccurate result from this working. It does not mean that the student can use any value. If a student can use any previous value that has been stated, it will be made clear in the mark scheme.

When a certain degree of accuracy is requested in the question, students will normally be given the mark if they give this accuracy or better eg
Q20 asks for one decimal place which gives 10.4
The mark scheme says accept 10.4 – 10.42
Therefore full marks can be awarded for an unrounded answer such as 10.416
If in the working we saw 10.4 or 10.416 and then 10 on the answer line, we could award full marks.

If we did not see an answer in the range 10.4 – 10.42 and the answer of 10 was given then the student would not be able to gain the accuracy mark – as long as correct working was shown the response could be awarded the method marks. An answer of 10 (with no 10.4 – 10.42) with no working or incorrect working would gain no marks.
In most cases rounding instructions are for guidance only and we will accept the figure or better (more figures than specified). If we are insistent on certain rounding, this will be clearly stated in the mark scheme.

International GCSE Maths				
Apart from questions 8d, 15, 16, 18b, 22, 23 (where the mark scheme states otherwise) the correct answer, unless clearly obtained from an incorrect method, should be taken to imply a correct method.				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)		Pacific	1	B1 Allow P or incorrect spelling so long as meaning is clear Allow 135 663
(b)		Seventeen thousand nine hundred [and] sixty eight	1	B1 Must be all in words – allow incorrect spelling as long as meaning is clear, eg thosand, hunded, hunder, etc
(c)		67 000	1	B1 or '67 thousand'
(d)		181 052	1	B1 cao
				Total 4 marks

Question	**Working**	**Answer**	**Mark**	**Notes**
2 (a)		4	1	B1 or 'four'
(b)(i)		54	1	B1 allow from 52 to 56 (inclusive) including decimals eg 52.5
(b)(ii)		Acute	1	B1 allow incorrect spelling as long as meaning is clear
(c)(i)		[Square based] Pyramid	1	B1 allow rectangular based pyramid or 'pyramid' allow incorrect spelling as long as meaning is clear
(c)(ii)		8	1	B1 or 'eight'
				Total 5 marks

Question	Working	Answer	Mark	Notes
3	[small square =] 2 **or** [large square =] 8		4	B1 may be seen in a square on the pictogram or in working or implied by correct working
	eg 16 × "2" (= 32) **or** 4 × "8" (= 32) **or** 6 × "2" (= 12) **or** 1.5 × "8" (= 12) **or** 3 × "2" (= 6) **or** 0.75 × "8" (= 6) **or** 13 × "2" (= 26) **or** 3.25 × "8" (= 26) **or** for showing a method of adding the number of large squares (eg 2.5 + 4 + 1.5 + 0.75 + 3.25)(=12) *(at least 3 correct – may omit Monday)* **or** for showing a method of adding the number of small squares (10 + 16 + 6 + 3 + 13)(=48) *(at least 3 correct – may omit Monday)*			M1 for method to work out number of parcels for Tuesday or Wednesday or Thursday or Friday (may be written by the side of the pictogram). Allow use of *their* 2 or 8 **or** for a method to count the number of large squares or the number of small squares
	eg 20 + "32" + "12" + "6" + "26" **or** "12" × "8" oe eg "9.5" × "8" + 20 **or** "48" × "2" oe eg "38" × "2" + 20			M1 for a complete method to find the total number of parcels – a sum of 5 numbers with at least 3 correct. Allow use of *their* 2 or 8 **or** multiplying number of large squares by 8 **or** multiplying number of small squares by 2. Allow use of *their* 2 or 8
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	96		A1 cao
				Total 4 marks

Question		Working	Answer	Mark	Notes	
4	(a)		(−2, 3)	1	B1	
	(b)		Isosceles	1	B1	allow incorrect spelling if meaning is clear
	(c)		(×) at (1, −4)	1	B1	clearly indicated by cross or dot - condone missing label as long as unambiguous
	(d)		(1, 2)	2	B2	for (1, 2)
					(B1	for (1, a) where $a \neq 2$ **or** (b, 2) where $b \neq 1$ **or (**(–2 + 4) ÷ 2, a) **or** (b, (3 + 1) ÷ 2) or for the midpoint unambiguously marked)
						Total 5 marks

Question		Working	Answer	Mark	Notes
5	(a)		12 squares shaded	1	B1 can be any 12 squares shaded – use professional judgement as to whether a square is shaded or not
	(b)		$\frac{14}{17}$	1	B1 with no others may be indicated in list
	(c)		30	1	B1
	(d)		$8\frac{5}{9}$	1	B1
	(e)	$40 \div 5 \times 6$ oe eg $\frac{6}{5} \times 40$ oe		2	M1 A fully correct method
		Working not required, so correct answer scores full marks (unless from obvious incorrect working)	48		A1 trial and improvement scores no marks unless fully correct
					Total 6 marks

Question	Working	Answer	Mark	Notes
6	350 × 91 (= 31 850) **or** 28 938 ÷ 91 (= 318)		3	M1 for converting one cost to the other currency
	"31 850" – 28 938 (= 2912) **or** 350 – "318" (= 32)			M1 for finding difference, accept 28 938 – "31 850" (= –2912) **or** "318" – 350 (= –32)
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	2912 rupees **or** £32		A1 must include units
				Total 3 marks

Question	Working	Answer	Mark	Notes
7		FB, FC, FL, FR, PB, PC, PL, PR, SB, SC, SL, SR	2	B2 for all 12 combinations and no extras or repeats If not B2 then B1 for at least 4 correct combinations (ignoring repeats and extras)
				Total 2 marks

Question		Working	Answer	Mark	Notes
8	(a)		w^5	1	B1
	(b)		$15ac$	1	B1 or $a15c$ or $ac15$ or $c15a$ oe (NB: no multiplication signs)
	(c)		$2e + 7f$	2	B2 (B1 for $2e$ **or** $+7f$ or $7f$ but not for $-7f$) Do not isw so if you see $2e + 7f = 9ef$ award B1 only
	(d)	eg $5x - x = 12 + 7$ **or** $-7 - 12 = x - 5x$ **or** $4x - 7 = 12$ **or** $5x = x + 19$ oe		3	M1 for rearrangement with x terms on one side and numerical terms on the other in a correct equation **or** the correct simplification of x terms or numbers on one side in a correct equation
		$4x = 19$ **or** $-4x = -19$			M1 x terms simplified and number terms simplified correctly in an equation
		Working required	4.75		A1 oe, eg $\frac{19}{4}$ or $4\frac{3}{4}$ dep on M1
					Total 7 marks

Question		Working	Answer	Mark	Notes
9	(a)	$7-3$		2	M1 or $3-7$
			4		A1
	(b)		6	1	B1
	(c)	$3\times4+4\times8+5\times10+6\times12+7\times4\ (=194)$ $(12 + 32 + 50 + 72 + 28)$		3	M1 for at least 4 correct products and intention to add. Products may be seen by the side of the table
		"194"$\div(4+8+10+12+4)(=5.105....)$ "194" ÷ "38"			M1 dep on M1
		Working not required, so correct answer scores full marks (unless from obvious incorrect working)	5.1		A1 accept 5.1−5.106
					Total 6 marks

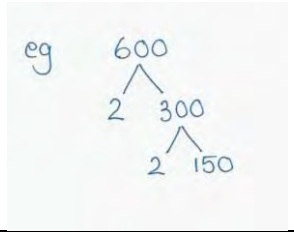
Question	Working	Answer	Mark	Notes
10	Line from B at 65° ± 2° **or** arc from B at 6.2 cm ± 0.2 cm		2	M1
		Correct triangle		A1 SCB1 if no marks scored, award if student has used point A for line **and** arc, rather than point B
				Total 2 marks

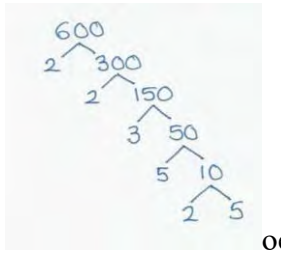
Question	Working	Answer	Mark	Notes
11	$\pi \times 7.5^2$ or 3.14×7.5^2 or $\frac{22}{7} \times 7.5^2$ oe		2	M1 A correct method to find the area of the circle Students may use π or 3.14, 3.142 or $\frac{22}{7}$ oe
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	177		A1 answers in range 176.6 - 177
				Total 2 marks

Question	Working	Answer	Mark	Notes
12 (a)	65 × 14 + 44 oe eg 910 + 44		2	M1
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	954		A1
(b)	750 – 44 (= 706)		4	M1
	"706" ÷ (65 + 12.5) (= 9.109...)			M1 dep or clearly adding at least 5 lots of (65 + 12.5) (77.5, 155, 232.5, 310, 387.5, 465, 542.5, 620, 697.5)
	"706" – "9" × (65 + 12.5) oe eg "706" – 697.5			M1 For the sum of (65 + 12.5) to the value under "706" with no more than one error **and** subtracting from "706"
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	8.5[0]		A1
	Alternative method for (b)			**Total 6 marks**
	750 ÷ (65 + 12.5)(=9.677…) oe		4	M1
	750 – "9" × (65 + 12.5) (= 52.5) oe			M1
	52.5 – 44			M1
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	8.5[0]		A1

Question	Working	Answer	Mark	Notes
13	eg $7 + 5 = 12$ **and** $\frac{6}{13} = \frac{12}{26}$ **or** 26 **or** eg $\frac{7+5}{7+5+x} = \frac{6}{13}$ **and** $13(7+5) = 6(7+5+x)$		3	M1 for method to find the total number of counters
	eg $26 - 12$ **or** eg $6x = 84$			M1 complete method to find the number of yellow counters **or** a correct equation with x terms isolated
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	14		A1 cao
				Total 3 marks

Question		Working	Answer	Mark	Notes
14	(a)	0.39×450 **or** $\frac{39}{100} \times 450$ **or** $\frac{450}{100} \times 39$ oe eg $3 \times 45 + 9 \times 4.5$ oe		2	M1
		Working not required, so correct answer scores full marks (unless from obvious incorrect working)	175.5		A1
	(b)		Brackets around $(8 - 5)$	1	B1 $9 \times (8 - 5) - 2 = 25$ with no incorrect brackets, condone eg $(9 \times (8 - 5)) - 2 = 25$ which has extra brackets that are not incorrect
	(c)		1.1049(21029)	2	B2 for 1.1049(21029) ie 5 sf or better truncated or rounded (B1 for 2.98... **or** 2.7)
					Total 5 marks

<table>
<tr><th>Question</th><th>Working</th><th>Answer</th><th>Mark</th><th colspan="2">Notes</th></tr>
<tr><td>15</td><td>eg $2 \times 2 \times 150$ or $2^2 \times 150$
$3 \times 5 \times 40$ or
$2 \times 3 \times 100$ or
$5 \times 5 \times 24$ or $5^2 \times 24$
 

eg<table><tr><td>2</td><td>600</td></tr><tr><td>2</td><td>300</td></tr><tr><td></td><td>150</td></tr></table></td><td></td><td>3</td><td>M1</td><td>for at least 2 correct stages in prime factorisation which give 2 prime factors – may be in a factor tree or a table or listed eg 2, 2, 150 (see LHS for examples of the amount of work needed for the award of this mark, allow no more than one mistake ft (eg one mistake with 2 prime factors ft: $600 = 200 \times 30 = 2 \times 100 \times 5 \times 6$)</td></tr>
<tr><td></td><td>eg $2 \times 2 \times 2 \times 3 \times 5 \times 5$
 

oe
<table><tr><td>2</td><td>600</td></tr><tr><td>2</td><td>300</td></tr><tr><td>2</td><td>150</td></tr><tr><td>3</td><td>75</td></tr><tr><td>5</td><td>25</td></tr><tr><td>5</td><td>5</td></tr><tr><td></td><td>[1]</td></tr></table>oe</td><td></td><td></td><td>M1</td><td>for 2, 2, 2, 3, 5, 5 (ignore 1s) (may be a fully correct factor tree or ladder)</td></tr>
<tr><td></td><td>Working required. NB: answer must be given as a product of powers of prime factors</td><td>$2^3 \times 3 \times 5^2$</td><td></td><td>A1</td><td>dep on M2
can be any order (allow $2^3 \,.\, 3 \,.\, 5^2$)</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">Total 3 marks</td></tr>
</table>

Question	Working	Answer	Mark	Notes
16	eg $\frac{18}{7}$ **and** $\frac{9}{8}$ oe		3	M1 both fractions expressed as improper fractions, no need for ÷ or × may be equivalent to those given eg $\frac{36}{14}$ or $\frac{27}{24}$ etc. A student could invert $\frac{9}{8}$ and go straight to the 2nd M1, this mark is then implied.
	eg $\frac{18}{7}\times\frac{8}{9}$ oe **or** $\frac{144}{56}\div\frac{63}{56}$ oe			M1 **or** for both fractions expressed as equivalent fractions with denominators that are a common multiple of 7 and 8 eg $\frac{144}{56}\div\frac{63}{56}$
	eg $\frac{18}{7}\times\frac{8}{9}=\frac{144}{63}=\frac{16}{7}=2\frac{2}{7}$ **or** $\frac{18}{7}\times\frac{8}{9}=\frac{144}{63}=2\frac{18}{63}=2\frac{2}{7}$ **or** $\frac{\cancel{18}^{2}}{7}\times\frac{8}{\cancel{9}^{1}}=\frac{16}{7}=2\frac{2}{7}$ **or** $\frac{18}{7}\div\frac{9}{8}=\frac{144}{56}\div\frac{63}{56}=\frac{144}{63}=\frac{16}{7}=2\frac{2}{7}$ **or** correct working to $\frac{16}{7}$ **and** writing $2\frac{2}{7}=\frac{16}{7}$	shown		A1 Dep on M2 for conclusion to $2\frac{2}{7}$ from correct working – either sight of the result of the multiplication or division e.g. $\frac{144}{63}$ must be seen or correct cancelling prior to the multiplication to $\frac{16}{7}$ **or** writing $2\frac{2}{7}=\frac{16}{7}$ (maybe on first line of working) and correct working as far as LHS $=\frac{16}{7}$ **NB: use of decimals scores no marks**
				Total 3 marks

Question	Working	Answer	Mark	Notes
17	180 + 149 **or** 360 − 31			M1
	Working not required, so correct answer scores full marks	329	2	A1
				Total 2 marks

Question		Working	Answer	Mark		Notes
18	(a)(i)	other seen orders of letters: a, b, d, e, i, l, n, r, z b, r, I, a, e, z, l, n, d	b, r, a, z, i, l, e, n, d	1	B1	no repeats, letters can be in any order. Condone capital letters rather than lower case letters. (no need for commas)
	(ii)		b, z	1	B1	No repeats, letters can be in any order. Condone capital letters. (no need for commas)
	(b)		correct explanation that shows they know the meaning of intersection and empty set	1	B1	eg letter ‘a’ is in both sets $B \cap K = \{a\}$ Set *B* and set *K* have an element (or letter) in common. There is a letter that is in set *B* and in set *K* There is an intersection so it isn’t the null set There is a letter in common (do **not** allow ‘letters’ or ‘elements’ (plural) in common) (If students mention the letter that is in common, it must be the correct one (ie a))
						Total 3 marks

Question	Working	Answer	Mark	Notes
19	Angle *EBC* or *ECB* = (180 – 44) ÷ 2 (= 68)		5	M1 Could be seen on diagram
	Angle *GBC* = 180 – "68" (= 112) **or** Angle *GBC* = "68" + 44 (= 112) **or** Angle *BGH* = "68" (same as *EBC*) Angle *ABE* = 180 – "68" (= 112) **and** Angle *BGF* = "112" **or** Angle *ABG* = "68" **and** Angle *BGH* = "68" or Angle *FGJ* = "68" **or** Angle *BGF* = 180 – "68"(=112)			M1 for a method to as far as one step away from working out Angle *JGH* (an angle corresponding or vertically opposite to *JGH* or at the same point on a straight line with *JGH*) Could be seen on diagram. (the award of this mark also implies the previous M1)
	Working not required, so correct angle scores 3 marks (unless from obvious incorrect working)	112		A1 Could be seen in correct place on diagram
	NB: reasons must include the underlined words *Accept ∠ for angle(s) and △ for triangle* **For all angles**: They must be clearly stated as the correct angle or shown on the diagram in the correct position. (eg just seeing 68 in working without a label is not sufficient for the award of a mark for angle *EBC*)			B2 for correct answer with full reasons for their method eg isosceles triangle (or 2 equal sides, 2 equal angles) Angles in a triangle sum to 180° or angles in a triangle Angles on a straight line sum to 180° Angles on a straight line sum to 180° Exterior angle in a triangle is equal to the two opposite interior angles. Vertically opposite angles are equal. Vertically opposite angles are equal. Corresponding angles are equal. Alternate angles are equal Allied angles sum to 180° (or co-interior angles) Angles at a point (or full turn) add up to 360° (or angles at a point) (B1 for one correct reason appropriate to their method, dep on M1)
				Total 5 marks

Question	Working	Answer	Mark	Notes
20	19.35 ÷ (4 + 5) (= 2.15)		4	M1 M2 for $\frac{5}{9}\times 19.35 (= 10.75)$
	"2.15" × 5 (= 10.75)			M1
	$\frac{12-"10.75"}{12}\times 100$ oe **or** $100-\frac{10.75\times 100}{12}$ oe			M1
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	10.4		A1 accept 10.4 – 10.42 SCB1 for $\frac{5}{9}\times 12 (= 6.66...)$ oe
				Total 4 marks

Question	Working	Answer	Mark	Notes
21	$\sin 42 = \frac{6.5}{x}$ **or** $\frac{x}{\sin 90} = \frac{6.5}{\sin 42}$ oe **or** $\cos 48 = \frac{6.5}{x}$ [where 48 = 180 – 90 – 42]		3	M1 **or** use of tan to find the horizontal side **and** then a correct first step in Pythagoras' theorem ie [base =] $\frac{6.5}{\tan 42}$ (= 7.21...) and [x^2 =] 6.5^2 +"7.21…"^{2}
	[x =] $\frac{6.5}{\sin 42}$ **or** $\frac{6.5 \sin 90}{\sin 42}$ **or** [x =] $\frac{6.5}{\cos 48}$ [where 48 = 180 – 90 – 42]			M1 **or** complete method using Pythagoras [x =] $\sqrt{6.5^2 + "7.21..."}$ (If students give this statement with nothing before it they gain M2)
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	9.7		A1 accept 9.7 – 9.72
				Total 3 marks

Question	Working		Answer	Mark	Notes
22	eg $10a + 4c = 20$ $+ \ 2a - 4c = 7$ eg $[c = \frac{10-5a}{2}]$ oe $2a - 4\left(\frac{10-5a}{2}\right) = 7$ oe	eg $10a + 4c = 20$ $- \ 10a - 20c = 35$ eg $[a = \frac{7+4c}{2}]$ oe $5\left(\frac{7+4c}{2}\right) + 2c = 10$ oe		3	M1 multiplication of one or both equation(s) with correct operation selected (allow one arithmetic error) (if + or – is not shown then assume it is the operation that at least 2 of the 3 terms have been calculated for) **or** correct rearrangement of one equation with substitution into second
	eg $5 \times$ "2.25" $+ 2c = 10$ **or** $2 \times$ "2.25" $- 4c = 7$	eg $5a + 2 \times$ "−0.625" $= 10$ **or** $2a - 4 \times$ "−0.625" $= 7$			M1 (dep on previous M1 but not on a correct first value) correct method to find second unknown – this could be a correct substitution into one of the equations given or calculated or starting again with the same style of working as for the first method mark
	Working required		$a = 2.25$ $c = -0.625$		A1 oe eg $a = \frac{9}{4}$, $c = -\frac{5}{8}$ for both solutions dependent on first M1
					Total 3 marks

Question		Working	Answer	Mark	Notes
23	(i)	$(x \pm 6)(x \pm 4)$		2	M1 or $(x + a)(x + b)$ where $ab = -24$ **or** $a + b = 2$
		Working not required, so correct answer scores full marks	$(x + 6)(x - 4)$		A1
	(ii)	*Answer must come from the factors in (i) as the questions says 'Hence solve…'*	$-6, 4$	1	B1 **Must** follow through from their factors in (i), so even if the answers 8 and –6 are given, the mark can only be awarded if it follows from the factorisation in (i) (dep on 2 factors)
					Total 3 marks
					NB: Some students may show the whole of their working in the space for (i) or (ii). Please award the marks for (i) and (ii) so long as there is no ambiguity.

Question	Working	Answer	Mark	Notes
24	$11.2^2 - 7.4^2$ (= 70.68) or $[x =]\cos^{-1}\left(\frac{7.4}{11.2}\right)(= 48.64...)$ or $[y =]\sin^{-1}\left(\frac{7.4}{11.2}\right)(= 41.35...)$ or $\sin^{-1}\left(\frac{7.4\sin 90}{11.2}\right)$		5	M1 A correct first stage to finding the perpendicular height of the triangular cross section
	eg $\sqrt{11.2^2 - 7.4^2}$ (= 8.407...) **or** $[h =]\sin"48.64..."\times 11.2$ **or** $\tan"48.64..."\times 7.4(= 8.407...)$ **or** $[h =]\cos"41.35..."\times 11.2$ **or** $\frac{7.4}{\tan"41.35..."}$ (=8.407…)			M1 oe eg $h = \frac{11.2\sin"48.64..."}{\sin 90}$
	eg 7.4 × "8.407" ÷ 2 (= 31.10....) **or** 7.4 × "8.407" × 15 (= 933.19...)			M1 for method to find area of cross section **or** volume of cuboid
	eg "31.10" × 15 (= 466.59...) **or** "933.19" ÷ 2 (= 466.59...)			M1 complete method to find volume of the prism
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	467		A1 accept 466 – 467 SCB2 (if M0 awarded) for $0.5 \times 7.4 \times \sqrt{11.2^2 + 7.4^2} \times 15$ (= 745) **or** SCB1 (if M0 awarded) for $7.4 \times \sqrt{11.2^2 + 7.4^2} \times 15$ (= 1490) or $0.5 \times 7.4 \times \sqrt{11.2^2 + 7.4^2}$ (49.6…) or 0.5 × 7.4 × 11.2 × 15 (= 621.6) or 622
				Total 5 marks

Question	Working	Answer	Mark	Notes
25 (a)	eg 100 + 24 (=124 [%]) **or** 1 + 0.24 (= 1.24) **or** $\frac{180000}{124}$ (=1451.6...)		3	M1
	eg 180 000 ÷ 1.24 180 000 ÷ 124 × 100 or 180 000 × 100 ÷ 124 oe			M1 for a complete method
	Working not required, so correct answer scores full marks (unless from obvious incorrect working) *NB: this question is one where students could misread the number of zeros (eg one too many or one too few) in the question, up to M2 could be awarded if a correct method is seen with this misread*	145 000		A1 accept 145 000 − 145 200 (if a correct answer is seen in working and then rounded incorrectly, award full marks) (if no marks awarded, SCB1 for 223 200 or 223 000)
(b)	for 0.018 × 120 000 oe **or** 2160 **or** 1.018 × 120 000 oe **or** 122 160		3	M1 For finding 1.8% or 101.8% of the value **OR** M2 for 120 000 × 1.018^3 **or** 120 000 × 1.018^4 **or** 128 876.09 (M1 for 120 000 × 1.018^2 **or** 124 358.88)
	1.018 × "122 160" (= 124 358.88) oe **and** 1.018 × "124 358.88" (= 126 597.34) oe			M1 for completing the method
	Working not required, so correct answer scores full marks (unless from obvious incorrect working) *NB: this question is one where students could misread the number of zeros in 120 000 (eg one too many or one too few) in the question, up to M2 could be awarded if a correct method is seen with this misread*	127 000		A1 or 126 597 – 126 600 (if a correct answer is seen in working and then rounded incorrectly, award full marks) **SC:** if no other marks gained award M1 for 1.054 × 120 000 oe **or** 126 480 **or** 6 480 accept (1 + 0.018) as equivalent to 1.018 throughout
				Total 6 marks

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