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Mark Scheme (Results)

Summer 2021

Pearson Edexcel International GCSE  
Mathematics A (4MA1)  
Paper 1F

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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.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- 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
  - awrt – answer which rounds to
  - 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 to another.

## NOTES

Please note: [height =]  $8 + 0.5 \times 6 (=11)$ [metres] means we do not need to see 'height =' or 'metres' and if we see  $8 + 0.5 \times 6$  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" 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 Q22 asks for 3 significant figures which is 34.6

The mark scheme says award this mark for 34.6 or better, so if you see 34.6028, for instance, you would award full marks, even if this value is rounded too far later, eg to 35. If you only saw 35 and never saw a value that rounds to 34.6 it is likely that the student would gain the method marks if they showed a fully correct method. However, 35 with no working would gain zero marks.

**International GCSE Maths**

Apart from question 22c (where the mark scheme states otherwise) the correct answer, unless clearly obtained from an incorrect method, should be taken to imply a correct method.

<b>Q</b>	<b>Working</b>	<b>Answer</b>	<b>Mark</b>	<b>Notes</b>
<b>1</b> (a)		8	1	B1 cao allow words
(b)		35	1	B1 cao allow words
(c)		17	1	B1 cao allow words
(d)		9	1	B1 cao allow words
(e)		17 & 48	1	B1 cao either order
				<b>Total 5 marks</b>

<b>2</b> (a)		12.6	1	B1 Allow 12.6(000...) may be seen under the arrow
(b)		1.4	1	B1 Allow 1.4(000...) may be seen by the scales
(c)		760	1	B1 Allow 760(.000...)
(d)		91.6	1	B1 Allow 91.6(00)
(e)		19 15	1	B1 Allow 19.15 or 19:15 oe
				<b>Total 5 marks</b>

<b>3</b>	$(3.7 + 6.1) \div 2$ oe or $6.1 - ((6.1 - 3.7) \div 2)$ oe or $3.7 + ((6.1 - 3.7) \div 2)$ oe		2	M1 Allow list of decimals from 3.7 to 6.1 showing a method to find halfway (eg crossing of each end to get to the middle) Allow one error in the list.
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	4.9		A1 oe
				<b>Total 2 marks</b>

<b>4</b>	(a)	$30d$	1	B1 Allow $d30$ but not $30 \times d$
	(b)	$4e$	1	B1 cao
	(c)	7	1	B1 cao
	(d)	14	1	B1 cao
				<b>Total 4 marks</b>

5	(a)		2.0034, 2.08, 2.111, 2.13, 2.7	1	B1 All five numbers must be present may include extra zero's eg 2.7000
	(b)		5.84	1	B1 cao
	(c)		$\frac{73}{100}$	1	B1 oe eg $\frac{730}{1000}$  Do not allow $\frac{7.3}{10}$
	(d)		(6) hundredths	1	B1 $\frac{6}{100}$ (not 0.06) Accept incorrect spelling if meaning is clear NB not hundreds
	(e)		0.17	1	B1 Accept (...000000).17 Allow comma for decimal point
	(f)	$252 \div 0.7(0)$ oe or $252 \div \frac{70}{100}$ oe or $\frac{252 \times 100}{70}$ oe		2	M1
		<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	360		A1 Trial and error scores zero marks unless correct answer is clearly seen
					<b>Total 7 marks</b>

6	2 [litres] = 2000 [millilitres] or 300 [millilitres] = 0.3 [litres]		3	B1 oe for a correct conversion within working
	“2000” ÷ 300 (= 6.66...) oe <b>or</b> 2 ÷ “0.3” (= 6.66...) oe <b>or</b> 300 + 300 + 300 + 300 + 300 + 300 (= 1800) oe <b>or</b> 0.3 + 0.3 + 0.3 + 0.3 + 0.3 + 0.3 (= 1.8) oe <b>or</b> 300 + 300 + 300 + 300 + 300 + 300 + 300 (= 2100) oe <b>or</b> 0.3 + 0.3 + 0.3 + 0.3 + 0.3 + 0.3 + 0.3 (= 2.1) oe			M1 Allow use of their converted values  Allow 300 + ... + 300 = 1800 or 0.3 + ... + 0.3 = 1.8  If adding 300 or 0.3 they must have sufficient values just below or just above their amount of squash
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working eg a wrong conversion)</i>	200 millilitres or 0.2 litres		A1 Must have correct units (ml or l can be used) Must come from correct working
				<b>Total 3 marks</b>

7	[perimeter =] $10 + 6 + 10 + 6 (= 32)$ <b>or</b> $(10 + 6) \times 2 (= 32)$ <b>or</b> $10 + 6 (= 16)$		4	M1 for perimeter or semi perimeter of rectangle
	[area =] $10 \times 6 (= 60)$			M1 (indep) for area of rectangle
	$(“32” \div 4)^2 - ‘60’$ <b>or</b> $(“16” \div 2)^2 - ‘60’$			M1 for a completely correct method Allow 60 – area of square
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working eg a wrong conversion)</i>	4		A1
				<b>Total 4 marks</b>

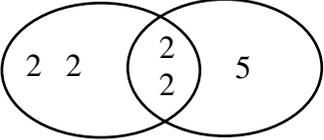
<b>8</b>	(a)	$95 \div (30 \div 24)$ oe eg $95 \div 1.25$ <b>or</b> $95 \times (24 \div 30)$ oe eg $95 \times 0.8$		2	M1
		<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	76		A1 Answer may be in the table or clearly stated on the diagram
	(b)	French “76” Arabic 60° English 60 and 75° Spanish 100°	Correct “76” and 60, angles of 60 <sup>[o]</sup> , 75 <sup>[o]</sup> and 100 <sup>[o]</sup> and correct pie chart	3	B3 B3 for fully correct pie chart (including labels) and 3 correct angles and <i>their</i> 76 (answer from (a)) for frequency for French and 60 for frequency for English in the table  <b>OR</b>  B2 for 3 or 4 numbers from <i>their</i> 76 or 60 <sup>[o]</sup> or 60 or 75 <sup>[o]</sup> or 100 <sup>[o]</sup> in the table <b>and</b> at least one angle in pie chart correct <b>or</b> 5 numbers: <i>their</i> 76, 60 <sup>[o]</sup> , 60, 75 <sup>[o]</sup> and 100 <sup>[o]</sup> in the table with no pie chart (or incorrect pie chart)  <b>OR</b>  B1 for two numbers from <i>their</i> 76 or 60 <sup>[o]</sup> or 60 or 75 <sup>[o]</sup> or 100 <sup>[o]</sup> in the table  NB Use their value from part (a) throughout their working
					<b>Total 5 marks</b>

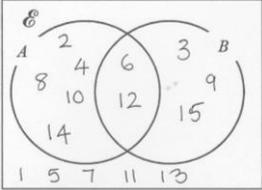
9	$25 \div 3 (= 8.(33\dots))$ or use of $8 \times 2 (= 16)$ or $8 \times 3 (= 24)$ or a diagram indicating 16 pens oe (eg 34 34 0, 34 34 0 etc showing need to pay for 16 pens [+1]) or a diagram indicating a minimum of 24 pens oe (eg 68 68 68 68 68 68 68)		3	M1
	$34 \times '16' + 34$ oe $68+68+68+68+68+68+68+68+34$ oe			M1 for a complete method
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	578		A1
				<b>Total 3 marks</b>

<b>10</b> (a)	<p><i>For information</i></p> $\frac{3}{8} = \frac{30}{80} = 0.375 \text{ or } 0.38 \text{ or } 37[.5\%] \text{ or } 38[\%]$ $\frac{1}{4} = \frac{20}{80} = 0.25 \text{ or } 25[\%]$ $\frac{7}{20} = \frac{28}{80} = 0.35 \text{ or } 35[\%]$ $\frac{5}{16} = \frac{25}{80} = 0.31[25] \text{ or } 31[.25\%]$	$\frac{1}{4}, \frac{5}{16}, \frac{7}{20}, \frac{3}{8}$	2	<p><b>B2</b> can be given as fraction, decimal or percentage equivalents</p> <p><b>B1</b> for 3 fractions oe in the correct order <b>or</b> for 4 fractions oe in the correct reverse order <b>or</b> for 2 fractions correctly converted to decimals or percentages <b>or</b> 2 fractions written with a common denominator that is a multiple of 80</p>
(b)		$\frac{5}{14}$	1	<p><b>B1</b> oe but must be fraction Do not allow 5:14 or 5 out of 14</p>
				<b>Total 3 marks</b>

<b>11</b>	[interior angle of pentagon =] $540 \div 5 (= 108)$ oe or [exterior angle of pentagon =] $360 \div 5 (= 72)$		3	M1 for a correct calculation for an interior or an exterior angle of a regular pentagon
	$360 - (90 + \text{"108"})$ or $90 + \text{"72"}$ or $180 - (\text{"108"} - 90)$ oe			M1 for a fully correct method "108" or "72" must come from correct working and be used correctly
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	162		A1
				<b>Total 3 marks</b>

12 (a)		shape with vertices  (6, 4) (10, 5) (11, 1) (9, 3)	2	B2 if not B2 then award  B1 for  a correct reflection in a vertical line <b>or</b> for 3 correct points of the correct shape <b>or</b> for a correct reflection $y = 6$
(b)		Enlargement	3	B1 Enlargement (with none of reflection, rotation, translation, mirrored, flipped or moved (up, right, left, down etc) stated)
		Scale factor 3		B1 Scale factor 3 or sf 3
		[Centre] (0, 0)		B1 [centre] (0, 0) <b>or</b> origin <b>or</b> $O$ (with no column vector or equation of line)
				<b>Total 5 marks</b>

<p><b>13</b></p>	<p>16, 32, 48,... <b>and</b> 20, 40, 60...  <b>or</b>          [9] 16, [9] 32, [9] 48, ..... <b>and</b>          [9] 20, [9] 40, [9] 60 (or 10), .....  <b>or</b>          2, 2, 2, 2 <b>or</b> 2, 2, 5  <b>or</b></p> 		<p>3</p>	<p>M1 for any correct valid method e.g.</p> <p>for starting to list at least <b>three</b> multiples of each number (allow one error (ft eg 16, 34, 50) in one list)</p> <p><b>or</b> 2, 2, 2, 2 <b>or</b> 2, 2, 5 seen (may be in a factor tree and ignore 1)</p> <p><b>or</b> for a Venn diagram with correct factors for one of 16 or 20</p>
	<p>16, 32, 48, 64, 80 <b>and</b> 20, 40, 60, 80  <b>or</b>          [9] 16, [9] 32, [9] 48, [10] 04, [10] 20 <b>and</b>          [9] 20, [9] 40, [9] 60 (or 10), [10] 20  <b>or</b>  <math>2 \times 2 \times 2 \times 2 \times 5 (= 80)</math> or <math>2^4 \times 5 (= 80)</math></p>			<p>M1 for a correct method leading to 80 or the correct time (all working must be correct for the award of this mark) or for stating 80</p>
	<p><i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i></p>	<p>10 20</p>		<p>A1 10 20 or 10 20 am or twenty past ten oe</p>
				<p><b>Total 3 marks</b></p>

14		Fully correct Venn diagram	3	B3 for all 4 correct regions B2 for 3 correct regions B1 for 2 correct regions
				<b>Total 3 marks</b>

15 (a)	<table border="1" data-bbox="443 564 1046 699"> <thead> <tr> <th></th> <th>hockey</th> <th>rugby</th> <th>football</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>year 10</td> <td>12</td> <td>42</td> <td>24</td> <td>78</td> </tr> <tr> <td>year 11</td> <td>27</td> <td>16</td> <td>29</td> <td>72</td> </tr> <tr> <td>Total</td> <td>39</td> <td>58</td> <td>53</td> <td>150</td> </tr> </tbody> </table>		hockey	rugby	football	Total	year 10	12	42	24	78	year 11	27	16	29	72	Total	39	58	53	150		3	B3 for all 6 entries (B2 for 4 or 5 correct entries) (B1 for 2 or 3 correct entries)
	hockey	rugby	football	Total																				
year 10	12	42	24	78																				
year 11	27	16	29	72																				
Total	39	58	53	150																				
(b)	$\frac{78}{150} \times 100$ oe		2	M1																				
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	52		A1																				
				<b>Total 5 marks</b>																				

<b>16</b>	For [8 hours 12 minutes =] 8.2 [hours] or $8\frac{12}{60}$ oe or $\frac{41}{5}$ oe or $8 \times 60 + 12 (= 492)$ [minutes]		3	B1 for correctly writing the time as a time in hours or minutes or for a correct calculation to do this
	[Average speed =] $\frac{5658}{8.2}$ oe $\frac{5658}{"492"} \times 60$ oe			M1 for use of speed = distance $\div$ time (use of their time in hours – if used minutes, then must multiply by 60) (allow $5658 \div 8.12 (= 696.79\dots)$ for this mark if B0 awarded (allow 696 – 697))
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	690		A1
				<b>Total 3 marks</b>

17		$91 - 6n$	2	<p>B2 for a correct answer in any form eg  <math>91 - 6 \times n</math> or  <math>-6n + 91</math> or  <math>85 + (n - 1)(-6)</math> oe</p> <p>(B1 for <math>-6n + k</math> oe (<math>k</math> may be zero or absent))</p> <p>NB: award full marks for eg  <math>x = 91 - 6n</math> or <math>n</math>th term = <math>91 - 6n</math>  but only B1 for <math>n = 91 - 6n</math></p>
				<b>Total 2 marks</b>

18	$8 \times x (= 8x)$ <b>or</b> $14 \times x (= 14x)$ <b>or</b> $(14 - 8) \times x (= 6x)$ <b>or</b> $\frac{1}{2} \times (14 - 8) \times (13 - x) (= 39 - 3x)$ <b>or</b> $\frac{13+x}{2} \times (14-8) (= 39 + 3x)$ <b>or</b> $\frac{1}{2} \times 13 \times (14 - 8) (= 39)$ <b>or</b> $\frac{8+14}{2} \times x (= 11x)$ <b>or</b> $14 \times 13 (= 182)$ <b>or</b> $8 \times (13 - x) (= 104 - 8x)$ <b>or</b> $\left( \frac{8+14}{2} \times (13 - x) \right) (= 143 - 11x)$ oe		4	M1 one correct area linked to the shape
	$14x + 6 \times \frac{1}{2} \times (13 - x)$ oe eg $8x + \frac{x+13}{2} \times 6$ <b>or</b> $\frac{8+14}{2} \times x + \frac{13 \times (14-8)}{2}$ <b>or</b> "182" - $\left( \frac{8+14}{2} \times (13 - x) \right)$ <b>or</b> $11x + 39$ oe			M1 ft from correct working expression for total area of shape – with no parts omitted or duplicated  Adding up parts of given shape <b>or</b>  Large rectangle subtracting trapezium (or subtracting (rectangle + triangle))
	eg $11x + 39 = 91.8$ <b>or</b> $14x + 39 - 3x = 91.8$ <b>or</b> "182" - $143 + 11x = 91.8$ or $16x + 6x + 78 = 183.6$ oe			M1 fully correct equation with no fractions (allow 91.8 or multiples of 91.8 but no other decimals) <b>and</b> no brackets
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	4.8		A1 or $4\frac{4}{5}$ oe or $\frac{24}{5}$ oe
				<b>Total 4 marks</b>

<b>19</b>	eg $(36 \div 9) \times 5$ <b>or</b> 20 [ducks] <b>or</b> 20 : 36 <b>or</b> for writing the 3 parts of the ratio correctly eg 35 : 10 : 18 oe		3	M1 for a fully correct calculation for the number of ducks or stating 20 ducks – may be shown in a ratio – does not need to be labelled if it is clear that the number or calculation refers to the number of ducks
	“20” $\div 2 = 10$ and $10 \times 7$ oe or $\frac{36}{18} \times 35$ oe			M1 for a correct calculation to find the number of chickens.  (award the M2 for 70 : 20 : 36 or a different order if intention is clear eg by labels)
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	70		A1
				<b>Total 3 marks</b>

20	(a)	$6x^2 + 9x - 3x^2 - 5x$		2	M1 expansion with at least 3 correct terms (must see for example, $6x^2$ and not just $3x \times 2x$ )(can assume that no sign in front of a number is a + if terms written in a list or table)
		<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	$3x^2 + 4x$		A1 or $4x + 3x^2$ or $x(3x + 4)$ or $x(4 + 3x)$
	(b)	$p + d = at$ <b>or</b> $-at = -d - p$ <b>or</b> $\frac{p}{a} = \frac{at}{a} - \frac{d}{a}$ oe		2	M1 Correct first stage in rearrangement
		<i>Working not required, so correct answer scores full marks</i>	$t = \frac{p+d}{a}$		A1 oe eg $t = \frac{p}{a} + \frac{d}{a}$ or $t = \frac{-p-d}{-a}$ Must have “t=” either in working or on answer line
	(c)	$w^2 \times w^n = w^{10}$ <b>or</b> $w^5 \times w^n = w^{13}$ <b>or</b> $w^5 \times w^{n-3} = w^{10}$ <b>or</b> $\frac{w^{5+n}}{w^3} = w^{10}$ <b>oe</b> <b>or</b> $5 + n - 3 = 10$ <b>or</b> $2 + n = 10$ <b>or</b> $5 + n = 13$		2	M1 A correct first stage simplifying at least one index in a correct equation <b>or</b> a correct equation using indices only
		<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	8		A1 accept $w^8$  (trial and error gains full marks if correct and no marks if incorrect unless a rule of indices is clearly shown)
					<b>Total 6 marks</b>

21 (a)	eg $1 - (0.2 + 0.12 + 0.08) (= 0.6)$ <b>or</b> $1 - \left( \frac{20}{100} + \frac{12}{100} + \frac{8}{100} \right) \left( = \frac{60}{100} \right)$ oe <b>or</b> $100(\%) - (20(\%) + 12(\%) + 8(\%)) (= 60(\%))$ <b>or</b> $0.2 + 0.12 + 0.08 + 3x + x = 1$ oe		3	M1 for a correct calculation for the remaining probabilities <b>or</b> a correct equation for the remaining probabilities
	$"0.6" \div 4 (= 0.15)$ oe <b>or</b> $"0.6" \div 4 \times 3$ <b>or</b> $"0.6" \times 0.75$ oe (Sight of 0.15 in the table for Orange or Pink or 0.45 for Pink gains M2)			M1 For dividing the remaining probability by 4 or finding $\frac{3}{4}$ of the remaining probability NB "0.6" means 0.6 must come from correct working
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	0.45		A1 or $\frac{9}{20}$ oe <b>or</b> 45% (if working in % final answer must have % sign). Allow $\frac{0.45}{1}$ If no answer on answer line, check in the correct space in table above.
(b)	$0.12 \times 150$ oe eg $12 + 6$		2	M1 for a correct calculation to find the number of times the spinner lands on blue
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	18		A1 (an answer of $\frac{18}{150}$ scores M1A0 as this is a probability not a number of times)
				<b>Total 5 marks</b>

<b>22</b>	(a)		$x \leq 2$	1	B1 Allow $2 \geq x$
	(b)		$-2, -1, 0, 1, 2$	2	B2 (B1 for 4 correct values and no incorrect values (eg $-1, 0, 1, 2$ ) <b>or</b> for 6 values with no more than one incorrect value (eg $-2, -1, 0, 1, 2, 3$ ))
	(c)	$7t - 2t \leq 31 + 3$ or $5t \leq 34$ or $-3 - 31 \leq 2t - 7t$ or $-34 \leq -5t$ oe		2	M1 $t$ terms on one side and numbers on the other. Condone = rather than $\leq$ or any other sign for this mark.
		<i>Working required</i>	$t \leq 6.8$		A1 oe eg $t \leq \frac{34}{5}$ <b>or</b> $t \leq 6\frac{4}{5}$ or $6.8 \geq t$  Must have correct sign on answer line dep on M1 (sight of correct answer in working space and just 6.8 on answer line gains M1 only)
					<b>Total 5 marks</b>

23	(a)	$1.4 \times 10^9 - 8.2 \times 10^7$ <b>or</b> $1.4 \times 10^9 - 0.082 \times 10^9$ <b>or</b> $140 \times 10^7 - 8.2 \times 10^7 (= 131.8 \times 10^7)$		2	M1 or for 1 318 000 000 oe but not in standard form eg $1318 \times 10^6$ <b>or</b> $1.318 \times 10^n$ where $n \neq 9$
		<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	$1.318 \times 10^9$		A1 Allow $1.3 \times 10^9$ or $1.32 \times 10^9$
	(b)	$\frac{9.9 \times 10^6}{9.1 \times 10^5}$ oe		2	M1
		<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	11		A1 allow 10.8 – 11 (inclusive)  SC: if M1 not scored, award B1 for an answer of $\frac{1}{11}$ allow 10.8 – 11 for the denominator
<b>Total 4 marks</b>					

24	(a)		$5a^4c^3(5c^4d + 9a^5h)$	2	<p>B2 If not B2 then award B1 for any <b>correct</b> factorisation with at least 2 of: the 5, a term in <math>a</math>, a term in <math>c</math>, outside the bracket  eg <math>5ac(5a^3c^6d + 9a^8c^2h)</math>  <b>or</b> <math>a^2c(25a^2c^6d + 45a^7c^2h)</math> (NB: not just <math>a^4</math> etc as we want to know students have considered more than just one letter or the number)  <b>or</b>  the correct common factor <b>and</b> a 2 term expression inside the bracket eg <math>5a^4c^3(5c^4 + 9a^5)</math> (this is missing <math>d</math> in first term and <math>h</math> in the second but the common factor is correct)</p>
	(b)	$4x^2 + 10x + 10x + 25 = 4x^2 - 2x + 6x - 3$ $4x^2 + 20x + 25 = 4x^2 + 4x - 3$		3	<p>M1 Correct expansion of <math>(2x + 5)^2</math> <b>or</b> <math>(2x + 3)(2x - 1)</math>  <b>or</b> expansion of <b>both</b> sets of brackets with at least 3 of 4 terms correct in both (NB: if written as a 3 term quadratic (and not seen as 4 terms) then the middle term must be correct as it is equivalent to 2 correct terms) (eg (RHS) <math>4x^2 + 4x + 3</math> has 1 error, <math>2x^2 + 4x - 3</math> has 1 error, <math>4x^2 + 10x - 3</math> has 2 errors)</p>
		$10x + 10x - 6x + 2x = -3 - 25$ <b>or</b> $3 + 25 = -16x$ <b>or</b> $16x = -28$ oe			<p>M1 ft if previous mark awarded. For terms in <math>x</math> on one side and number terms on the other side in a correct ft equation dependent on a linear equation</p>
		<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working eg -1.75 oe from <math>2x^2 + 20x + 25 = 2x^2 + 4x - 3</math> scores M2A0)</i>	-1.75		<p>A1 <b>or</b> <math>-1\frac{3}{4}</math> <b>or</b> <math>-\frac{7}{4}</math> <b>or</b> <math>-\frac{28}{16}</math> <b>or</b> <math>-1\frac{12}{16}</math> oe</p>
					<b>Total 5 marks</b>

25	$5 \times 74 (= 370)$ <b>or</b> $6 \times 77 (= 462)$ <b>or</b> $5 \times 0.74 (= 3.7)$ <b>or</b> $6 \times 0.77 (= 4.62)$		3	M1 one correct product	M2 for $74 + (3 \times 6)$ oe
	$6 \times 77 - 5 \times 74$ <b>or</b> "462" – "370" <b>or</b> $(6 \times 0.77 - 5 \times 0.74) \times 100$ <b>or</b> ("4.62" – "3.7") $\times 100$			M1 from correct working	<b>or</b> $77 + (3 \times 5)$ oe  (where $3 = 77 - 74$ )
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	92		A1	allow 92/100 <b>or</b> 92% <b>or</b> 92 out of 100  (trial and error scores no marks unless correct – and then it gains full marks)
				<b>Total 3 marks</b>	

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