

Question	Working	Answer	Mark	Notes
<b>1</b>			0.25	1 B1
<b>Total 1 mark</b>				
<b>2</b>	(i)		13 or 23	1 B1
	(ii)		36	1 B1
	(iii)		14	1 B1
<b>Total 3 marks</b>				
<b>3</b>	(a)		$10ab$	1 B1
<b>3</b>	(b)		4	1 B1
<b>Total 2 marks</b>				
<b>4</b>	(a)		-4, (-1), 2, (5), 8, 11, (14), 17	2 B2 for -4, 2, 8, 11, 17
				(B1 for 3 or 4 correct values)
	(b)			2 M1 (may ft from (a) if B1 awarded) for at least 5 points correctly plotted – if no plots, use points at which graph crosses squares or M1
			Graph drawn	A1 for correct graph drawn from $x = -1$ to $x = 6$
<b>Total 4 marks</b>				
<b>5</b>	(a)		An acute angle drawn at $A$	1 B1
	(b)		Diameter drawn	1 B1 Diameter should not extend significantly beyond circumference.
<b>Total 2 marks</b>				

<b>6</b>	(a)		BG, BO, BP, RG, RO, RP, YG, YO, YP	2	B2 all 9 combinations given with no extras or repeats
					(B1) at least 5 correct combinations given, condone repeats and incorrect combinations
	(b)		$\frac{1}{3}$	1	B1 oe,ft from (a), accept 0.33(33...)
	(c)				M1 for $\frac{7}{a}$ where $a > 7$ or $\frac{b}{20}$ where $b < 20$
			$\frac{7}{20}$	2	A1 oe
					<b>Total 5 marks</b>

<b>7</b>	(a)		correct bar	1	B1 for bar drawn at correct height of 13 Allow a line instead of a bar
	(b)		Brazil	1	B1
	(c)	29		2	M1 for $\frac{29}{k}$ with $k > 29$ or $\frac{n}{113}$ with $n < 113$ oe May work in millions Allow incorrect notation e.g. 29 out of 113 or 29:113 oe
			$\frac{29}{113}$		A1 oe Allow 0.26 or 0.256(6371.....)
					<b>Total 4 marks</b>

<b>8</b>	(a)(i)		<	1	B1 for <
	(ii)		>	1	B1 for >
	(b)		Neon	1	B1 for neon
	(c)		Mercury	1	B1 for mercury
					<b>Total 4 marks</b>

<b>9</b>			<b>3</b>	<b>B3</b> B3 for all 4 correct regions <b>B2</b> or 2 or 3 correct regions <b>B1</b> for 1 correct regions
				<b>Total 3 marks</b>

<b>10</b>	(a)		0.5, 0.501, 0.51, 0.55	1	B1
	(b)		$\frac{3}{10}$	1	B1 for $\frac{3}{10}$ oe eg $\frac{30}{100}$
	(c)		0.47	1	B1
<b>Total 3 marks</b>					

<b>11</b>	(a)		$11m - 3k$	2	B2 If not B2 then award B1 for either $11m$ or $-3k$
	(b)	$2 \times 5 + 3 \times 8$ <b>or</b> $10 + 24$		2	M1 for substituting the values of $a$ and $b$ into $P$
			34		A1
	(c)	$16 = 2a + 3 \times 20$ <b>or</b> $16 = 2a + 60$	$P - 3b = 2a$	3	M1 for substituting the values of $P$ and $b$ into the equation <b>or</b> rearranging the equation $P = 2a + 3b$ for $2a$ correctly
		$16 - 60 = 2a$ $-44 = 2a$ <b>oe or</b>	$16 - 2 \times 30 = 2a$ <b>or</b> $16 - 60 = 2a$		M1 for rearranging the equation for $2a$ correctly <b>or</b> substituting the values of $P$ and $b$ into the correctly rearranged equation
			-22		A1
<b>Total 7 marks</b>					

<b>12</b>		$T = 10m + 6n$	3	B3 for $T = 10m + 6n$ oe (B2 for $10m + 6n$ or $T = 10m + an$ or $T = bm + 6n$ or $T = 6m + 10n$ ) (B1 for $10m + an$ or $bm + 6n$ or $6m + 10n$ ) or for $T =$ an incorrect expression in $m$ and $n$
				<b>Total 3 marks</b>

<b>13</b>	(a)		$x^7$	1	B1
	(b)	eg $7^8 \times 7^4 = 7^{12}$ or $7^8 \div 7^3 = 7^5$ or $7^5 \times 7^4 = 7^9$ or $7^4 \div 7^3 = 7$ or $7^8 \times 7$ or $7^{12} \div 7^3 = 7^{12-3}$		2	M1 for one correct step – must be written as a power of 7 A1 for $7^9$
					<b>Total 3 marks</b>

<b>14</b>	(i)		kilometres	1	B1 accept m
	(ii)		grams	1	B1 accept g or grammes
	(iii)		square metres	1	B1 accept m <sup>2</sup>
					<b>Total 3 marks</b>

<b>15</b>		$3\frac{4}{10}$ or $\frac{17}{5}$		2	M1 for converting to a simplified improper fraction or an unsimplified mixed fraction A1
			$3\frac{2}{5}$		
					<b>Total 2 marks</b>

<b>16</b>	(a)		$5x - x^2$	1	B1
	(b)		$3(y - 7)$	1	B1
	(c)	$f + d = 3p$ or $\frac{f}{3} = p - \frac{d}{3}$		2	M1 A correct first stage in a correct formula
			$p = \frac{f + d}{3}$		A1 for $p = \frac{f + d}{3}$ (must see p = ... at some stage) (SCB1 for $p = \frac{f - d}{3}$ )
<b>Total 4 marks</b>					

<b>17</b>	$\frac{14}{3}(+) \frac{19}{5}$ or $(4) \frac{10}{15}(+) (3) \frac{12}{15}$ or $(4) \frac{10a}{15a}(+) (3) \frac{12a}{15a}$		3	M1 for correct improper fractions or fractional part of numbers written correctly over a common denominator	
	eg $\frac{14 \times 5 + 19 \times 3}{3 \times 5}$ or $\frac{70}{15} + \frac{57}{15}$ or $\frac{70a}{15a} + \frac{57a}{15a}$ or $4 \frac{10}{15} + 3 \frac{12}{15} = 7 \frac{22}{15}$ oe			M1 for correct fractions with a common denominator of 15 or a multiple of 15	
	$\frac{70}{15} + \frac{57}{15} = \frac{127}{15} = 8 \frac{7}{15}$ or $7 \frac{22}{15} = 8 \frac{7}{15}$ or if shows $8 \frac{7}{15} = \frac{127}{15}$ at the beginning then show that the addition comes to $\frac{127}{15}$	Shown		A1 dep on M2 for a correct answer from fully correct working <b>or</b> shows that $RHS = \frac{127}{15}$ <b>and</b> fully correct working shows LHS = $\frac{127}{15}$	
<b>Total 3 marks</b>					

<b>18</b>	(a)	$m^2 - 8m + 5m - 40$		2	M1 for any 3 correct terms <b>or</b> for 4 out of 4 correct terms ignoring signs <b>or</b> for $m^2 - 3m \dots$ <b>or</b> for $\dots - 3m - 40$
			$m^2 - 3m - 40$		A1
					<b>Total 2 marks</b>

<b>19</b>			Rotation 180° and (0, 0)	2	B1 Rotation (with none of reflection, translation, enlargement, mirrored, flipped or moved stated)
					B1 180° centre (0, 0) or <i>O</i> (award if no vector or equation of line or SF mentioned)  (B2 for enlargement SF -1 centre <i>O</i> )
					<b>Total 2 marks</b>

<b>20</b>		$\frac{3}{4} \times \frac{16}{15}$ <b>or</b> E.g. $\frac{12}{16} \div \frac{15}{16}$		2	M1
		E.g. $\frac{3}{4} \times \frac{16}{15} = \frac{48}{60} = \frac{4}{5}$ <b>or</b> $\frac{12}{16} \div \frac{15}{16} = \frac{12}{15} = \frac{4}{5}$ <b>or</b>	Shown		A1 for fully correct method leading to $\frac{4}{5}$ - this must be preceded by a correct equivalent fraction e.g. $\frac{48}{60}$ , $\frac{12}{15}$ , $\frac{16}{20}$ <b>or</b> fully correct cancelling must be seen within a multiplication
					<b>Total 2 marks</b>

21	$2x > 4 - 7$ or $x + 3.5 > 2$		2	M1 For a correct first step allow $2x = 4 - 7$ or $x + 3.5 = 2$ or an answer of $x = -1.5$ or $x < -1.5$ or $-1.5$
		$x > -1.5$		A1 for $x > -1.5$ oe
				<b>Total 2 marks</b>

22		$5y(1 + 4y)$	2	B2 If not B2 then award B1 for $5(y + 4y^2)$ or $y(5 + 20y)$ or $5y(a + 4y)$ where $a$ is an integer and $a \neq 0$ or $5y(1 + by)$ where $b$ is an integer and $b \neq 0$
				<b>Total 2 marks</b>

23		Fully correct angle bisector with all relevant arcs shown	2	B2 Fully correct angle bisector with all arcs shown. B1 for all arcs and no angle bisector drawn or for a correct angle bisector within guidelines but not arcs or insufficient arcs
				<b>Total 2 marks</b>

24		Trapezium with vertices at (6, 3) (8, 3) (8, 6) (4, 6)	2	B2 If not B2 then award  B1 for shape of correct size and orientation or 3 or 4 points plotted correctly
				<b>Total 2 marks</b>

<b>25</b>		E.g. $6x - 15$ or $12x - 30$ oe		4	M1 for expansion of a correct bracket
		$2 \times 3(2x - 5) = 9 - x$ oe <b>or</b> $2('6x - 15') = 9 - x$ oe <b>or</b> $3(2x - 5) = \frac{9}{2} - \frac{x}{2}$ oe			M1 for removal of fraction <b>or</b> separating fraction (RHS) in an equation
		$12x + x = 9 + 30$ oe <b>or</b> $6x + \frac{x}{2} = \frac{9}{2} + 15$ oe			M1 ft (dep on 4 terms) for terms in $x$ on one side of equation; number terms on the other
			3		A1 dep on at least M2 awarded
					<b>Total 4 marks</b>

<b>26</b>			1	1	B1
					<b>Total 1 mark</b>



<b>27</b>	$(x \pm 8)(x \pm 5)$	$\frac{-(-3) \pm \sqrt{(-3)^2 - 4 \times 1 \times (-40)}}{2 \times 1}$ or $\frac{3 \pm \sqrt{9+160}}{2}$			M1 <b>or</b> $(x + a)(x + b)$ where $ab = -40$ <b>or</b> $a + b = -5$ <b>OR</b> correct substitution into quadratic formula (condone one sign error in $a$ , $b$ or $c$ and missing brackets) (if + rather than $\pm$ shown then award M1 only unless recovered with answers)
	$(x - 8)(x + 5)$	$\frac{3 \pm \sqrt{169}}{2}$ or $\frac{3 \pm 13}{2}$			M1 $\frac{3 \pm \sqrt{169}}{2}$ or $\frac{3 \pm 13}{2}$
			8, -5	3	A1 dep on at least M1 for correct values
<b>Total 3 marks</b>					

<b>28</b>	$32.4 \times 100^3$		2	M1 for $32.4 \times 100^3$ oe
		32 400 000		A1 for 32 400 000 accept $3.24 \times 10^7$
<b>Total 2 marks</b>				

Qn	Paper	Question	Skill tested	Max score	Mean %	Edexcel averages: scores of candidates who achieved grade:						
						ALL	5	4	3	2	1	U
1	1F	Q06a	Decimals	1	92	0.92	0.99	0.99	0.98	0.93	0.67	0.45
2	2F	Q01	Integers	3	94	2.81	2.98	2.94	2.89	2.74	2.38	1.38
3	2F	Q05	Linear equations	2	92	1.84	1.96	1.94	1.93	1.83	1.43	0.80
4	2F	Q08	Graphs	4	82	3.28	3.91	3.85	3.63	2.88	1.29	0.23
5	2FR	Q03	Circle properties	2	80	1.59	1.91	1.77	1.52	1.19	0.34	0.00
6	1FR	Q07	Probability	5	90	4.49	4.94	4.78	4.41	4.19	3.00	1.00
7	1F	Q02	Bar charts	4	81	3.24	3.81	3.64	3.39	2.85	2.12	1.32
8	2F	Q11abc	Integers	4	83	3.31	3.81	3.60	3.31	3.11	2.48	1.55
9	2F	Q16	Set language and notation	3	79	2.38	2.82	2.68	2.53	2.16	1.37	0.51
10	2F	Q02	Degree of accuracy	3	73	2.18	2.77	2.56	2.23	1.78	1.16	0.44
11	1F	Q08	Expressions and formulae	7	64	4.51	6.36	5.60	4.72	3.23	1.51	0.56
12	2F	Q13d	Expressions and formulae	3	58	1.73	2.65	2.26	1.74	1.13	0.28	0.03
13	2F	Q17	Powers and roots	3	53	1.58	2.66	2.13	1.51	0.76	0.20	0.07
14	1F	Q03a	Measures	3	61	1.84	2.29	2.08	1.84	1.56	1.23	0.80
15	1F	Q06b	Fractions	2	55	1.09	1.58	1.27	1.08	0.79	0.53	0.16
16	2F	Q13abc	Expressions and formulae	4	47	1.87	3.44	2.49	1.68	0.82	0.24	0.02
17	2F	Q19	Fractions	3	43	1.28	2.53	1.75	1.04	0.47	0.18	0.07
18	1F	Q21a	Algebraic manipulation	2	44	0.87	1.67	1.16	0.78	0.36	0.11	0.02
19	2F	Q14	Transformation geometry	2	44	0.88	1.44	1.13	0.84	0.53	0.17	0.04
20	1F	Q06c	Fractions	2	37	0.74	1.41	0.94	0.67	0.35	0.15	0.07
21	2F	Q23a	Inequalities	2	33	0.65	1.39	0.90	0.48	0.21	0.05	0.00
22	1F	Q21b	Algebraic manipulation	2	30	0.60	1.32	0.80	0.48	0.20	0.04	0.00
23	2F	Q21	Construction	2	29	0.58	1.23	0.75	0.45	0.22	0.09	0.03
24	1F	Q19	Transformation geometry	2	26	0.51	1.23	0.70	0.34	0.08	0.05	0.00
25	1F	Q21d	Linear equations	4	24	0.94	2.10	1.13	0.75	0.38	0.13	0.02
26	1F	Q21c	Powers and roots	1	16	0.16	0.39	0.20	0.09	0.04	0.04	0.03
27	2F	Q23b	Quadratic equations	3	14	0.41	1.20	0.47	0.21	0.05	0.00	0.00
28	2F	Q18	Measures	2	3	0.06	0.20	0.05	0.02	0.02	0.00	0.00
			<b>TOTAL</b>	<b>80</b>	<b>58</b>	<b>46.34</b>	<b>64.99</b>	<b>54.56</b>	<b>45.54</b>	<b>34.86</b>	<b>21.24</b>	<b>9.60</b>

### Suggested grade boundaries

<b>Grade</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
Mark	60	50	40	29	16