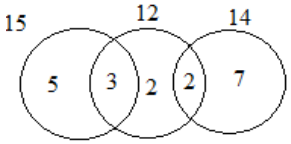
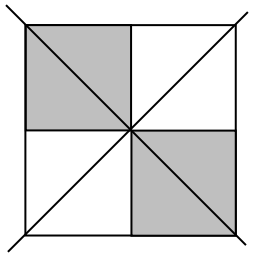
Question		Working	Answer	Mark	Notes
1		Two from $12 = 2^2 \times 3$ (or $12 = 4 \times 3$), $14 = 2 \times 7$ or $15 = 3 \times 5$ **or** |	12	14	15 | | 2 | 6 | 7 | | | 2 | 3 | | | | 3 | 1 | | 5 | | 5 | | | 1 | | 7 | | 1 | | **or**  		2	M1 for correct prime factors for 12 and one of 14 or 15. We are accepting $12 = 4 \times 3$ (may be seen on factor tree) **or** a list of at least **5** multiples including 420 for 12 and one of 14 or 15 **or** Use of table method for 12 and one of 14 or 15. Do not need all the rows but the final number in the columns should be prime eg |	12	14	15 | | 3 | 4 | | 5 | | 2 | 2 | 7 | | **or** Venn diagram for 12 and one of 14 or 15 
		Working required	420		A1oe ISW eg $2^2 \times 3 \times 5 \times 7$ or $2 \times 2 \times 3 \times 5 \times 7$
					Total 2 marks

Question		Working	Answer	Mark	Notes
2		$\frac{6}{5} \times \frac{7}{12}$		2	M1 Correct multiplication of an improper fraction. **ALT** $[1\times]\frac{7}{12} + \frac{1}{5} \times \frac{7}{12}$
		Working required	$\frac{\cancel{6}^{1}}{5} \times \frac{7}{\cancel{12}_{2}} = \frac{7}{10}$ or $\frac{1}{5} \times \frac{7}{2} = \frac{7}{10}$ or $\frac{42}{60} = \frac{7}{10}$		A1 cao dep on M1 scored and must see one of cancelling fractions prior to multiplication or a correct uncancelled single fraction eg $\frac{\cancel{6}}{5} \times \frac{7}{\cancel{12}_{2}} = \frac{7}{10}$ or $\frac{7}{5 \times 2} = \frac{7}{10}$ **for ALT** method allow $\frac{35}{60} + \frac{7}{60} = \frac{7}{10}$ ISW
					Total 2 marks

Question		Working	Answer	Mark	Notes
3	**(a)**		$8x^2$	1	B1 cao Do not ISW
	(b)		$6y^5$	1	B1 cao Do not ISW
					Total 2 marks

Question		Working	Answer	Mark	Notes
4	**(a)**			1	B1 cao two lines(allow dashed or dotted) joining opposite corners drawn on diagram. No extra incorrect lines must be drawn unless clearly crossed out
	(b)		3	1	B1 cao must be a single number
					Total 2 marks

Question		Working	Answer	Mark	Notes
5	**(a)**		38, 45	1	B1 Ignore extra terms. Accept 45, 38
	(b)		80	1	B1
					Total 2 marks

Question		Working	Answer	Mark	Notes
6		$(x-7)(x+2)$		2	M1 Factorised form must expand to give 2 terms of the quadratic. eg $(x-2)(x+7)=x^2+5x-14$
			$(x-7)(x+2)$ or $(x+2)(x-7)$		A1 Do not ISW This must be the answer on the answer line or if no answer on the answer line their final answer which may be shown for example by circling or underlining.
					Total 2 marks

Question		Working	Answer	Mark	Notes
7	(a)		5	1	B1 cao no other numbers must be given
	(b)	2,3,5,5,5,7,8,9,10,11		2	M1 place numbers in order (at least 6 with none missing) or sight of $\frac{5+7}{2}$ May be seen in part (a) or in question. Allow with signs eg + between
		Correct answer scores full marks (unless from obvious incorrect working)	6		A1 cao
					Total 3 marks

Question		Working	Answer	Mark	Notes
8		$360 \div 24$ [= 15] oe or $24 \times 180 - 360$ [= 3960] or $(2 \times 24 - 4) \times 90$ [= 3960] or $(24-2) \times 180 [= 3960]$ oe		3	M1 for a correct method to find an exterior angle or total of the interior angles. Implied by seeing 15 or 3960 or 165
		$180 - "15"$ or $\frac{"3960"}{24}$ oe			M1 dep on M1 correct method to find one interior angle. This may be implied by seeing 165
		Correct answer scores full marks (unless from obvious incorrect working)	165		A1 cao do **not** ISW This must be the answer on the answer line or if no answer on the answer line their final answer which may be shown for example by circling or underlining.
					Total 3 marks

Question		Working	Answer	Mark	Notes
9		$T^2 = \frac{2r}{g}$ or $T^2 g = 2r$ or $\sqrt{g} = \frac{\sqrt{2r}}{T}$		2	M1 correctly remove square root sign or make root g the subject.
		Correct answer scores full marks (unless from obvious incorrect working)	$g = \frac{2r}{T^2}$		A1 cao Condone missing "$g =$" on answer line if fully correct expression seen in working. Allow $g = \left(\frac{\sqrt{2r}}{T}\right)^2$ or $g = 2rT^{-2}$
					Total 2 marks

Question		Working	Answer	Mark	Notes
10		$\left[x^2(3x+1)=\right]3x^3+x^2$		3	M1 correct expansion of brackets before differentiating. eg $3x^3+1x^2$
		$\left[\frac{dy}{dx}=\right]20x^3+9x^2+2x$			M1 at least one correct term
		Correct answer scores full marks (*unless from obvious incorrect working*)	$20x^3+9x^2+2x$		A1 oe eg $20x^3+9x^2+2x^1$
					Total 3 marks

Question		Working	Answer	Mark	Notes
11		$\frac{120}{360}\pi r^2=48\pi\left[\Rightarrow r=12\right]$		3	M1 for forming an equation involving the radius using the given area. eg $\frac{1}{3}\pi r^2=48\pi$ or $\frac{1}{3}r^2=48$
		$\left[\text{Arc length}=\right]\frac{120}{360}\times2\pi\times\text{"12"}\left[=8\pi\right]$			M1 Find an expression for the arc length *ABC*, ft their radius. Allow awrt 25.1 May be seen as part of working eg $\frac{1}{3}\times2\times\pi\times\text{"12"}+2\times\text{"12"}$ where 12 is their radius
		Correct answer scores full marks (*unless from obvious incorrect working*)	$8\pi+24$		A1 oe eg $8(3+\pi)$ **allow** awrt 15.6π (need not be simplified) eg $\frac{120}{360}\times2\pi\times12+12+12$ **ISW**
					Total 3 marks

Question		Working	Answer	Mark	Notes
12		eg $2(x+2)+3(x-3)=60$ or $4(x+2)+6(x-3)=120$ or $\frac{2(x+2)}{12}+\frac{3(x-3)}{12}[=5]$ or $\frac{4(x+2)}{24}+\frac{6(x-3)}{24}[=5]$ or $\frac{x}{6}+\frac{1}{3}+\frac{x}{4}-\frac{3}{4}[=5]$ oe		3	M1 Clear intention to multiply all terms by a multiple of 12 If correct expression with brackets in is not seen allow a maximum of one incorrect term if the brackets are expanded **or** express the LHS as two fractions over a multiple of 12 or as a single fraction with a denominator which is a multiple of 12 eg $\frac{2(x+2)+3(x-3)}{12}=5$ If correct expression with brackets in is not seen allow a maximum of one incorrect term if the brackets are expanded No need for = 5 **or** expressing the LHS as 4 fractions. No need for = 5
		$5x=60-4+9$ or $10x=120-8+18$ $\frac{5x}{12}=5-\frac{1}{3}+\frac{3}{4}$ oe			M1 indep for a correct equation with the terms in x combined eg $\frac{5x-5}{12}=5$ or $5x=65$ or $\frac{5}{12}x=\frac{65}{12}$
		Working required	$x = 13$		A1 dependent on at least one M mark being awarded
					Total 3 marks

Question		Working	Answer	Mark	Notes
13			$p = 15$	3	B1 cao
		$-5-2p$ or $-5-2\times"15"$ **or** $-5\mathbf{b}-2p\mathbf{b}=q\mathbf{b}$ **or** $2p+q=-5$ oe			M1 compare coefficients of **b** Allow one sign error in $-5-2p$ eg $-5+2p$ or allow ft of their p value and one sign error ie $5-2\times"15"$ or $-5+2\times"15"$ or $-5\mathbf{b}+2p\mathbf{b}=q\mathbf{b}$ or $5\mathbf{b}-2p\mathbf{b}=q\mathbf{b}$ or $-5\mathbf{b}-2p\mathbf{b}=-q\mathbf{b}$ oe Allow $p =$ "15" subst
		Correct answer scores full marks (*unless from obvious incorrect working*)	$q = -35$		A1
					SC if p and q are correct but not written on the answer line, at least one must be labelled in their working to award full marks. If both values are correct but neither labelled or they are on the wrong answer lines they get 2/3 marks
					Total 3 marks

Question		Working	Answer	Mark	Notes
14	**(a)**		$0.07y$	1	B1 cao oe $\left(\frac{7}{100}y\right)$
	(b)	number bottle $B = 0.12y$ increase $= 0.05y$ or 5%		1	M1 for sight of $0.12y$ or $\frac{12}{100}y$ or $0.05y$ or $\frac{5}{100}y$ or 5% $12\%-7\%$ or $12\%y-7\%y$
		$0.12y-"0.07y"=60$ or $0.05y=60$ or $60\div5\times100$ or $5\% = 60$ or $5\%y=60$ or $12\%-7\%=60$ or $12\%y-7\%y=60$		1	M1 oe follow through their result from part (a)
			1200	1	A1 cao Must come from a correct equation Correct answer with no working gains full marks
					Total 4 marks

Question		Working	Answer	Mark	Notes
15		$20x + 7y = 4$ $\quad$ $40x + 14y = 8$ $\underline{20x - 20y = -50}$ $\quad$ $\underline{14x - 14y = -35}$ $27y = 54$ $\quad$ $54x = -27$ or $20\left(\frac{2y-5}{2}\right)+7y=4$ or $20x+7\left(\frac{2x+5}{2}\right)=4$ or $2\left(\frac{4-7y}{20}\right)-2y=-5$ or $2x-2\left(\frac{4-20x}{7}\right)=-5$ oe		4	M1 eliminating either x or y (equate coefficient and use correct operation) Allow 1 error either one incorrect term in equating the coefficients eg –4 instead of 8 **or** one error when eliminating either x or y **or** substitute for x or y to form an equation in only one variable. Allow 1 sign slip only
			$x = -\frac{1}{2}$ or $y = 2$		A1 dep on M1
		$20 \times "-\frac{1}{2}" + 7y = 4$ or $20x + 7 \times "2" = 4$ or $2 \times "-\frac{1}{2}" - 2y = -5$ or $2x - 2 \times "2" = -5$ oe			M1dep on previous method mark For repeating first method (allow one sign error) or substitute their x or y into a correct equation
		Working required	$x = -\frac{1}{2}$ and $y = 2$		A1 dep on M1 M1
					Total 4 marks