1(a)	$(5x - 4)(x + 2)$	B2	brackets in either order B1 factorisation to $(5x + a)(x + b)$ where $ab = -8$ or $a + 5b = 6$ or $\frac{1}{5}(5x - 4)(5x + 10)$
	Additional Guidance		
	Ignore any attempt to solve $(5x - 4)(x + 2) = 0$		
	Attempt at further factorisation, eg $(5x - 4)(x + 2) = 5(x - 0.8)(x + 2)$		B1

Q	Answer	Mark	Comments
2	$x - 5$	B1	

Q	Answer	Mark	Comments
3	$(x + 8)(x - 8)$	B1	

Q	Answer	Mark	Comments
4	$(3x + 2)(x - 6)$	B2	B1 $(3x + a)(x + b)$ where $ab = -12$ or $a + 3b = -16$ a and b must be integers SC1 $(-3x - 2)(6 - x)$
	Additional Guidance		
	Brackets in either order for B2 and B1 and SC1		
	$(3x + 6)(x - 2)$		B1
	$(3x + 4)(x - 3)$ or $(3x + 3)(x - 4)$ or $(3x - 3)(x + 4)$ or $(x + 3)(3x - 4)$		B1
	$(3x + 12)(x - 1)$ or $(x - 12)(3x + 1)$		B1
	Some B1 responses may be implied eg $3(x + 4)(x - 1)$ implies $(3x + 12)(x - 1)$		B1
	Do not allow answers involving fractions eg $3(x - 6)(x + \frac{2}{3})$		B0
	Some examples of B1 with $a + 3b = -16$ $(3x + 5)(x - 7)$ $(3x + 8)(x - 8)$ $(3x - 1)(x - 5)$ $(3x - 7)(x - 3)$		
	$(2 + 3x)$ is equivalent to $(3x + 2)$ etc		
	Condone use of multiplication signs in B2 or B1 responses eg $(3x + 2) \times (x - 6)$		B2
	Condone missing closing bracket in B2 or B1 responses eg $(3x + 6)(x - 2$		B1
	Ignore any attempt to 'solve' after B2 or B1 seen		

Q	Answer	Mark	Comments
5(a)	$(x - 9)(x + 10)$ $(= 0)$ and answer 9	B2	B1 $(x - 9)(x + 10)$ $(= 0)$ and answer 9 and –10 SC1 $(x + 9)(x - 10)$ $(= 0)$ and answer 10
	Additional Guidance		
	If no response is seen, check part (a) for any creditworthy work		
	Answer 9 with no working can be awarded up to B2 from correct factorising seen in part (a)		
	Answer 9 from quadratic formula or completing the square		B1
	Answer 9 and –10 from quadratic formula or completing the square		B0
	Answer from trial and improvement only		B0

Q	Answer	Mark	Comment
6	$x(x^2 - 49)$ or $(x^2 + 7x)(x - 7)$ or $(x^2 - 7x)(x + 7)$	M1	oe partial factorisation eg $x(x^2 - 7^2)$ any order eg $(x^2 - 49)x$
	$x(x + 7)(x - 7)$	A1	oe full factorisation any order eg $(x + 7)x(x - 7)$
	Additional Guidance		
	M1 may be awarded for correct work with no answer, or incorrect answer, even if this is seen amongst multiple attempts		
	Ignore correctly placed multiplication signs		
	Ignore missing final bracket eg $x(x - 7)(x + 7$		M1A1
	Allow x to be $1x$ throughout		
	Allow x to be $(x + 0)$ or $(x - 0)$ throughout		
	Ignore any equating to zero		
	Ignore any attempt to 'solve'		
	$x(-7 + x)(7 + x)$		M1A1

Q	Answer	Mark	Comments
7(a)	$(4x + 5)(2x - 7)$	B2	oe factorisation eg $(-2x + 7)(-4x - 5)$ B1 $(ax + b)(cx + d)$ where $ac = 8$ and $bd = -35$ or $(ax + b)(cx + d)$ where $ac = 8$ and $ad + bc = -18$ allow multiplication signs for B2 or B1
	Additional Guidance		
	B1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	$(8x - 7)(x + 5)$ $(ac = 8$ and $bd = -35)$		B1
	$(2x - 3)(4x - 3)$ $(ac = 8$ and $ad + bc = -18)$		B1
	For B1 allow use of fractions or decimals eg $(4x + 10)(2x - 3.5)$		B1
	For B1 allow eg $8(x + 1.25)(x - 3.5)$		B1
	Condone missing final bracket for B2 or B1		
	Ignore any attempt to 'solve' eg $(4x + 5)(2x - 7)$ in working lines with –1.25 and 3.5 on answer lines		B2

Q	Answer	Mark	Comments
8	$x^2 - 9x + 3x - 27$ or $x^2 - 6x - 27$	M1	oe implied by eg $\frac{1}{2}x^2 - \frac{9}{2}x + \frac{3}{2}x - \frac{27}{2}$ may be seen in a grid
	their $(x^2 - 9x + 3x - 27) = 12 - 2x^2$	M1dep	oe equation with brackets expanded eg their $\left(\frac{1}{2}x^2 - \frac{9}{2}x + \frac{3}{2}x - \frac{27}{2}\right) = 6 - x^2$
	$3x^2 - 6x - 39\ (= 0)$ or $3x^2 - 6x = 39$	M1dep	oe $ax^2 + bx + c\ (= 0)$ or $px^2 + qx = r$ eg $x^2 - 2x - 13\ (= 0)$ or $\frac{3}{2}x^2 - 3x - \frac{39}{2}\ (= 0)$ implied by eg $\frac{2 \pm \sqrt{56}}{2}$
	$d = k \quad e = 14k^2 \quad f = k$ where k is a non-zero constant	A1	eg $d = 1 \quad e = 14 \quad f = 1$ or $d = 2 \quad e = 56 \quad f = 2$ or $d = 6 \quad e = 504 \quad f = 6$
	Additional Guidance		
	Take the values on the answer lines as the final answer eg $\frac{2 \pm \sqrt{56}}{2}$ in working with $d = 2 \quad e = \sqrt{56} \quad f = 2$ on answer lines		M3A0
	$1 \pm \sqrt{14}$ in working with $d = 1 \quad e = 14 \quad f =$ (blank)		M3A0
	For terms seen in a grid accept eg $3x$ for $+3x$		
	For up to M2 accept algebraic fractions but do not allow 3rd M1 unless recovered eg $\frac{x^2 - 9x + 3x - 27}{x + 3} = \frac{12 - 2x^2}{x + 3}$		M1M1