Name: _____

Factorising Quadratic Equations: In Steps

Each of the quadratic equations in the first two columns can be factorised into two brackets. Select the appropriate expressions from the right-hand column.
Note: Expressions may be used more than once.

(i) $x^2+2x-15$	(vi) $2x^2-7x-15$	(x+3) (x+5) (x-3) (x-5) (2x-3) (3x-1) (2x+3) (3x+1)
(ii) $x^2-2x-15$	(vii) $3x^2-10x+3$	
(iii) x^2+6x+9	(viii) $6x^2+9x+3$	
(iv) $2x^2+9x+9$	(ix) x^2-25	
(v) $3x^2-16x+5$	(x) $9x^2-1$	

Factorise $5x^2+17x+6$	
Look at the first term: it's a prime number	This means there is a 5x and an x
Look at the last sign: positive	This means both the signs are the same and you are looking for a sum to 17
Look at the middle sign: positive	This means the signs are positive
Form the brackets	(5x + ?)(x + ?)
How can you make the last number?	1×6 or 2×3
How could you arrange those numbers?	(5x + 1)(x + 6) or (5x + 6)(x + 1) (5x + 2)(x + 3) or (5x + 3)(x + 2)
Which pair is correct?	Answer:

Factorise $3x^2-2x-8$ *Look at the first term: it's a prime number* *Look at the last sign: negative* *Look at the middle sign: negative* *Form the brackets (don't put in the signs yet)* *How can you make the last number?* *How could you arrange those numbers?* *(Consider where the negative could go)* *Which pair is correct?*	 This means there is a 3x and an x This means the signs are different and you are looking for a difference of -2 Remember to check where you will put the minus sign (3x)(x) 2×4 or 1×8 (3x-1)(x+8) or (3x+1)(x-8) or (3x-8)(x+1) or (3x+8)(x-1) or _____ _____ Answer:
Factorise $3x^2+4x-7$ *Look at the first term: it's a prime number* *Look at the last sign: negative* *Look at the middle sign: negative* *Form the brackets (don't put in the signs yet)* *How can you make the last number?* *How could you arrange those numbers?* *Which pair is correct?*	 This means there is a 3x and an x This means the signs are different and you are looking for a difference of +4 Remember to check where you will put the minus sign (3x ?)(x ?) __×__ Answer:

Factorise $2x^2-14x+20$ *Look at the first term: <u>it's a prime number</u>* *Look at the last sign: <u>positive</u>* *Look at the middle sign: <u>negative</u>* *Form the brackets* *How can you make the last number?* *How could you arrange those numbers?* *Which pair is correct?*	 This means there is a 2x and an x This means both the signs are the same and you are looking for a sum to -14 This means the signs are negative (2x -)(x -) Answer:
Factorise $7x^2+64x+9$ *Look at the first term: <u>it's a prime number</u>* *Look at the last sign: <u>positive</u>* *Look at the middle sign: _____* *Form the brackets* *How can you make the last number?* *How could you arrange those numbers?* *Which pair is correct?*	 This means there is a 7x and an x This means both the signs are the same and you are looking for a sum to 64 This means the signs are _____ Answer:

Factorise $5x^2+32x+12$ *Look at the first term: it's a prime number* *Look at the last sign: _____* *Look at the middle sign: _____* *Form the brackets* *How can you make the last number?* *How could you arrange those numbers?* *Which pair is correct?*	This means there is a 5x and an x This means _____ _____ Answer:
Factorise $11x^2+17x-10$ *Look at the first term: it's a prime number* *Look at the last sign: _____* *Look at the middle sign: _____* *Form the brackets* *How can you make the last number?* *How could you arrange those numbers?* *Which pair is correct?*	Answer:

Questions

Factorise: (a) $7x^2-20x-3$ (b) $5x^2+13x-10$ (c) $3x^2-17x+10$ (d) $6x^2+5x+1$ (Extension)