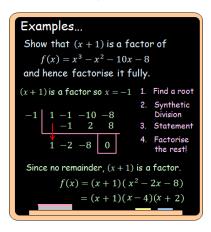
Outcome 1 - When given a factor

Bronze example



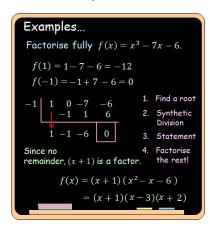
Bronze questions

Fully factorise the following polynomials...

	Factor	Polynomial
1	(x - 1)	$x^3 + 2x^2 - 13x + 10$
2	(x + 1)	$x^3 - x^2 - 26x - 24$
3	(x - 2)	$x^3 - 9x^2 + 6x + 16$
4	(x + 3)	$x^3 - 4x^2 - 39x - 54$
5	(x - 5)	$x^3 - 4x^2 - 7x + 10$
6	(x + 4)	$x^3 + 3x^2 - 6x - 8$
7	(x - 6)	$x^3 - 6x^2 - 4x + 24$
8	(x - 3)	$x^3 + 4x^2 - 9x - 36$

Outcome 2 - When not given a factor/missing terms

Silver example



Silver questions

Fully factorise the following polynomials...

$$f(x) = x^3 - 21x + 20$$

$$g(x) = 2x^3 + 3x^2 - 8x + 3$$

$$h(x) = x^3 - 111x + 110$$

$$f(x) = 4x^3 + 17x^2 + 16x + 3$$

$$h(x) = x^3 - 3x - 2$$

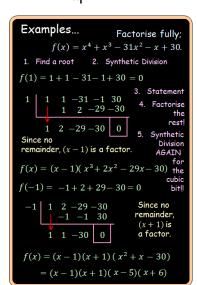
$$f(x) = 5x^3 - 19x^2 + 16x + 4$$

$$g(x) = x^3 - 12x - 16$$

$$h(x) = x^3 + x^2 - 12x$$

Outcome 3 - Factorising polynomials of degree 4

Gold example



Gold questions

Fully factorise the following polynomials...

$$f(x) = x^4 - 5x^3 + 5x^2 + 5x - 6$$

$$g(x) = x^4 + x^3 - 31x^2 - x + 30$$

$$h(x) = 3x^4 - 13x^3 + x^2 + 13x - 4$$

$$f(x) = 2x^4 - 5x^3 - 5x^2 + 5x + 3$$

$$h(x) = x^4 - 23x^2 + 18x + 40$$

$$f(x) = x^4 - 3x^3 - 28x^2 + 36x + 144$$

Bronze Answers

$$(x-1)(x-2)(x+5)$$

$$(x+1)(x-6)(x+4)$$

$$(x-2)(x-8)(x+1)$$

$$(x+3)(x-9)(x+2)$$

$$(x-5)(x-1)(x+2)$$

$$(x+4)(x-2)(x+1)$$

$$(x-6)(x-2)(x+2)$$

$$(x-3)(x+3)(x+4)$$

Silver Answers

$$(x-1)(x-4)(x+5)$$

$$(x-1)(2x-1)(x+3)$$

$$(x-1)(x-10)(x+11)$$

$$(x+1)(4x+1)(x+3)$$

$$(x+1)(x+1)(x-2)$$

$$(x-2)(5x+1)(x-2)$$

$$(x+2)(x-4)(x+2)$$

$$x(x-3)(x+4)$$

Gold Answers

$$(x-1)(x+1)(x-2)(x-3)$$

$$(x-1)(x+1)(x-5)(x+6)$$

$$(x-1)(x+1)(3x-1)(x-4)$$

$$(x-1)(x+1)(2x+1)(x-3)$$

$$(x+1)(x-2)(x-4)(x+5)$$

$$(x+2)(x-3)(x-6)(x+4)$$