

National 5 Mathematics

Algebraic Operations - Solutions - 2014-2019

Marks are indicated in brackets after each question number

2014 Paper 1 Question 2, (2)

$$\begin{aligned}(2x - 5)(3x + 1) &= 6x^2 - 15x + 2x - 5 \\ &= 6x^2 - 13x - 5\end{aligned}$$

2015 Paper 1 Question 4, (3)

$$\begin{aligned}(x - 4)(x^2 + x - 2) \\ &= x^3 + x^2 - 2x - 4x^2 - 4x + 8 \\ &= x^3 - 3x^2 - 6x + 8\end{aligned}$$

2016 Paper 2 Question 4, (2)

$$\begin{aligned}3x^2 - 48 \\ &= 3(x^2 - 16) \\ &= 3(x - 4)(x + 4)\end{aligned}$$

2017 Paper 1 Question 4, (3)

$$\begin{aligned}(2x + 3)(x^2 - 4x + 1) \\ &= 2x^3 - 8x^2 + 2x + 3x^2 - 12x + 3 \\ &= 2x^3 - 5x^2 - 10x + 3\end{aligned}$$

2017 Paper 1 Question 8, (1) (3)

a) $4x^2 - 25 = (2x)^2 - 5^2$

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

b) $\frac{4x^2 - 25}{2x^2 - x - 10} = \frac{(2x - 5)(2x + 5)}{(2x - 5)(x + 2)}$

$$= \frac{2x + 5}{x + 2}$$

2018 Paper 1 Question 2, (3)

$$(3x + 1)(x - 1) + 2(x^2 - 5)$$

$$= 3x^2 + x - 3x - 1 + 2x^2 - 10$$

$$= 5x^2 - 2x - 11$$

2019 Paper 1 Question 3, (3)

$$(x + 5)(2x^2 - 7x - 3)$$

$$= 2x^3 - 7x^2 - 3x + 10x^2 - 35x - 15$$

$$= 2x^3 + 3x^2 - 38x - 15$$