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1.2 Expanding brackets

N1

a) $x^2 + 7x + 12$

- $x^2 + 4x + 3x + 12$

b) $x^2 - 49$

- $x^2 - 7x + 7x - 49$

c) $x^2 - 9x + 18$

- $x^2 - 3x - 6x + 18$

N2

a) $x^2 + y^2 + 2xy$

- $(x + y)(x + y)$
- $x^2 + xy + xy + y^2$

b) $x^2 - 8x + 16$

- $(x - 4)(x - 4)$
- $x^2 - 4x - 4x + 16$

c) $4x^2 - 20xy + 25y^2$

- $(2x - 5y)(2x - 5y)$
- $4x^2 - 10xy - 10xy + 25y^2$

N3

a) $20x^2 - 23xy - 21y^2$

- $20x^2 - 35xy + 12xy - 21y^2$

b) $x^3 - x - 9x^2y + 9y$

c) $x^2 - 2xy + 2x + 2y - 3y^2$

- $x^2 - 3xy + 2x + xy - 3y^2 + 2y$

N4

a) $10x^3 + 36xy - 18x^2 - 26x^2y + 12xy^2$

- $(2x^2 - 4xy)(5x - 3y - 9)$
- $10x^3 - 6x^2y - 18x^2 - 20x^2y + 12xy^2 + 36xy$

b) $27x^3 - 54x^2y + 36xy^2 - 8y^3$

- $(3x - 2y)(3x - 2y)(3x - 2y)$
- $(9x^2 - 6xy - 6xy + 4y^2)(3x - 2y)$
- $(9x^2 - 12xy + 4y^2)(3x - 2y)$
- $27x^3 - 18x^2y - 36x^2y + 24xy^2 + 12xy^2 - 8y^2$

c) $8x^3 + 16x^2 - 22x + 6$

- $(2x^2 + 6x - x - 3)(4x - 2)$
- $(2x^2 + 5x - 3)(4x - 2)$
- $8x^3 - 4x^2 + 20x^2 - 10x - 12x + 6$

N5

$a^3 + b^3 + 3a^2b + 3ab^2$

- $(a+b)(a+b)(a+b)$
- $(a^2 + ab + ab + b^2)(a+b)$
- $(a^2 + 2ab + b^2)(a+b)$
- $a^3 + a^2b + 2a^2b + 2ab^2 + ab^2 + b^3$

N6

$a = 3,\ b = 4$

$6x^2 - 13x - 28 = (2x - 7)(3x + 4)$

N7

a) $4x^2 + 4x + 1\ cm^2$

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

b) $8x^3 + 12x^2 + 6x + 1\ cm^3$

- $(4x^2 + 4x + 1)(2x+1)$
- $8x^3 + 4x^2 + 8x^2 + 4x + 2x + 1$

N8

a) $4x^2 + 8x + 2$

- $(3x+1)(2x+2)$
- $6x^2 + 6x + 2x + 2$
- $6x^2 + 8x + 2$
- $(2x+2 - x+2)(3x+1 - x+1)$
- $x\ 12x)$
- $6x^2 + 2x + 2 - 2x^2$

b) $x = 3$

- $4x^2 + 8x + 2 = 62$
- $4x^2 + 8x - 60 = 0$
- $4(x^2 + 2x - 15) = 0$
- $4(x^2 + 5)(x - 3) = 0$
- $(4x + 20)(x - 3) = 0$
- $4x + 20 = 0$ or $x - 3 = 0$
- $4x = -20$
- $x = -5$ or $x = 3$
- $x = 3$

N9

a) $p = 30;\ q = 1;\ r = 11;\ s = 2;$

- $(15a^2 + 10ab - 3ab - 2b^2)(2a - b)$
- $(15a^2 + 7ab - 2b^2)(2a - b)$
- $30a^3 - 15a^2b + 14a^2b - 7ab^2 - 4ab^2 - 2b^2$
- $30a^3 - a^2b - 11ab^2 + 2b^3$