3.7 Multiplying Polynomials
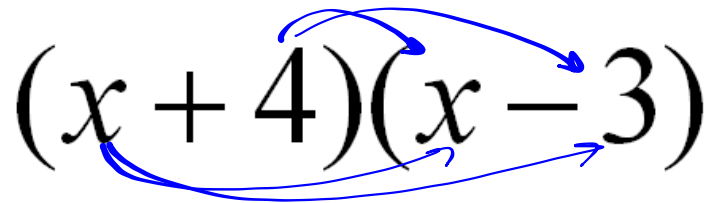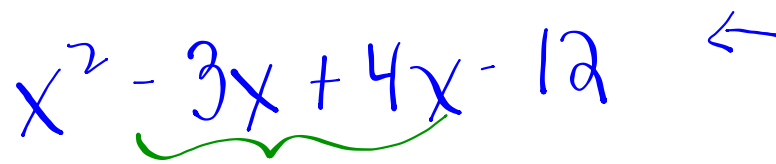
$$1 \times 2 = 2$$

$$3n^4 (5m^3n - 10m^2n^2)$$

$$15m^3n^5 - 30m^2n^6$$

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

$2 \times 2 = 4$

$$x^2 - 3x + 4x - 12 \quad \leftarrow$$

$$x^2 + x - 12$$

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

	x	+4
x	X²	+ 4X
-3	-3x	-12

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

$$-6x^2 + 10x - 21x + 35$$

$$-6x^2 - 11x + 35$$

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

	-3x	+5
2x	-6x²	+10x
-7	+21x	+35

$$2 \times 3 = 6$$

Ultimate Question

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

$$6x^3 - 8x^2 + 12x - 6x^2 + 8x - 2$$

$$6x^3 - 14x^2 + 10x - 2$$

5) $(10x^5 + 3)$ $(-2x^2 - 11x + 2)$

	$-2x^2$	$-11x$	$+2$
$10x^5$	○	○	○
$+3$	○	○	○

Expand and simplify

$$2^2 = 2 \times 2$$
$$4^2 = 4 \times 4$$

$$-3x$$

$$(x - 3)^2$$

$$(x - 3)(x - 3)$$

$$x^2 - 3x - 3x + 9$$

$$x^2 - 6x + 9$$

Expand and simplify

$$(x + 2)^3$$

$$(x + 2)(x + 2)(x + 2)$$

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

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

$$x^3 + 2x^2 + 4x^2 + 8x + 4x + 8$$

$$x^3 + 6x^2 + 12x + 8$$

$$23 \times 52 \times {}^-14$$

Expand and simplify

$$(x-3)(x-1)(x-5)$$

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

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

$$x^3 - 5x^2 - 4x^2 + 20x + 3x - 15$$

$$\boxed{x^3 - 9x^2 + 23x - 15}$$

Expand and simplify

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

$$(x-1)(x-1) \;+\; (x+4)(x+4)$$

$$x^2 - x - x + 1 \;+\; x^2 + 4x + 4x + 16$$

$$x^2 - 2x + 1 \;+\; x^2 + 8x + 16$$

$$2x^2 + 6x + 17$$

Expand and simplify

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

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

$$x^2 - 3x - 3x + 9 - (x^2 + x + x + 1)$$

$$x^2 - 6x + 9 - x^2 - 2x - 1$$

$$-8x + 8$$

Homework Sheet

P1: #5 - 16

P2: #9 - 16

Answers

#1. $30b + 15$

#2. $48r + 24$

#3. $16x + 2y$

#4. $15m^2n + 10mn^2$

Numbers, Relations & Functions 10   Name_____

Mutilpying Polynomials   Date_____

Find each product.

1) $5(6b + 3)$ 2) $8(6r + 3)$

3) $2(8x + y)$ 4) $5mn(3m + 2n)$

5) $7(x - 7y)$ 6) $2mn(8m - 2n)$

7) $(4x - 2y)(6x + 6y)$ 8) $(6x + 3y)(4x - 7y)$

9) $(2x + 5y)(7x - 8y)$ 10) $(3x + 6y)(5x - 8y)$

11) $(5x - 4y)(5x^2 - 4xy + 6y^2)$ 12) $(8x - 7y)(6x^2 + 8xy + 3y^2)$

13) $(6a^2 - 2a - 3)(8a + 2)$ 14) $(2k^2 + 8k - 2)(7k + 4)$

15) $(7a^2 - 2ab + 2b^2)(a^2 - 2ab - 8b^2)$ 16) $(x^2 - 4xy + 2y^2)(x^2 - 2xy - 7y^2)$

Answers to Mutilpying Polynomials

1) $30b + 15$ 2) $48r + 24$ 3) $16x + 2y$ 4) $15m^2n + 10mn^2$

5) $7x - 49y$ 6) $16m^2n - 4mn^2$ 7) $24x^2 + 12xy - 12y^2$ 8) $24x^2 - 30xy - 21y^2$

9) $14x^2 + 19xy - 40y^2$ 10) $15x^2 + 6xy - 48y^2$ 11) $25x^3 - 40x^2y + 46xy^2 - 24y^3$

12) $48x^3 + 22x^2y - 32xy^2 - 21y^3$ 13) $48a^3 - 4a^2 - 28a - 6$

14) $14k^3 + 64k^2 + 18k - 8$ 15) $7a^4 - 16a^3b - 50a^2b^2 + 12ab^3 - 16b^4$

16) $x^4 - 6x^3y + 3x^2y^2 + 24xy^3 - 14y^4$