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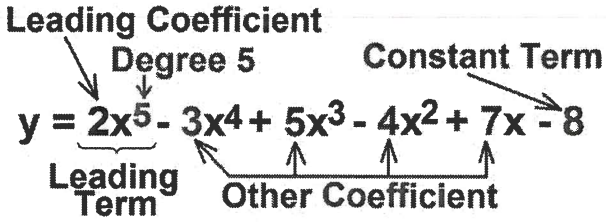
Math 10C

L11 – 5.1 Multiplying Polynomials

Part 1 – Polynomial Terminology



Q1: Complete the following table:

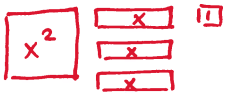
Polynomial	*Leading Coefficient*	*Degree*	*Constant*	*Number of Terms*	*Type of Polynomial*
$2x^2 - 5x + 6$	2	2	6	3	Trinomial
$x^2 - 49$	1	2	-49	2	Binomial
$-2x^3 + 6x^2 - 8$	-2	3	-8	3	Trinomial

1 term would be a "Monomial"

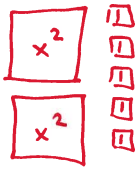
Part 2 – Modelling Polynomials with Tiles

Q2: Model the following polynomials:

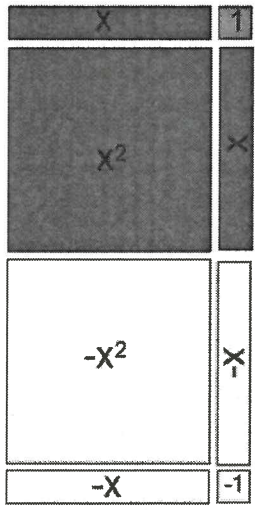
$x^2 + 3x + 1$



$2x^2 + 5$



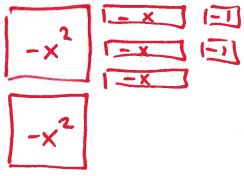
$x^2 + x + 2$



$-x^2 + 2x + 1$

$x^2 - 3x + 1$

$-2x^2 - 3x - 2$



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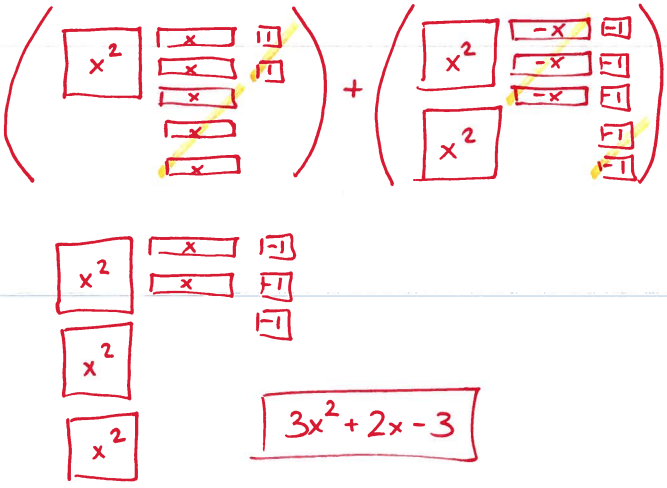
Part 3 – Adding and Subtracting Polynomials with Tiles

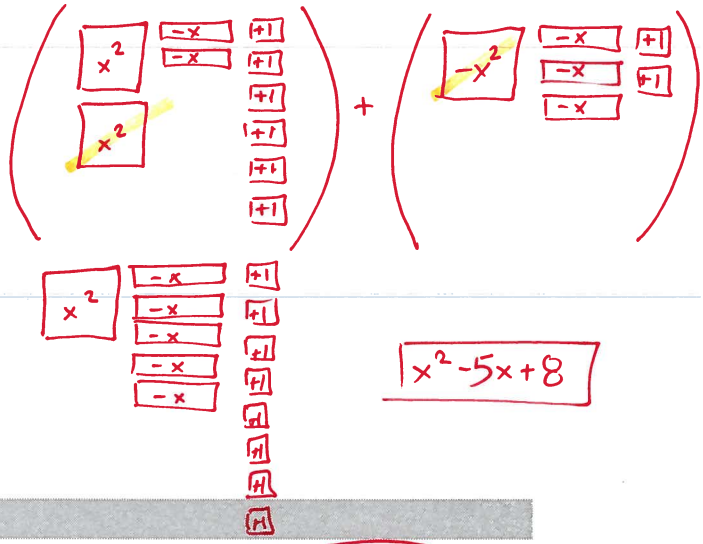
Q3: Simplify $(x^2 + 5x + 2) + (2x^2 - 3x - 5)$



$3x^2 + 2x - 3$

Changes all the signs. "Add the opposite"

Q4: Simplify $(2x^2 - 2x + 6) - (x^2 + 3x - 2)$



$x^2 - 5x + 8$

Part 4 – Adding and Subtracting Polynomials without Tiles

Q5: Simplify $(x^2 + 5x + 2) + (2x^2 - 3x - 5)$

$3x^2 + 2x - 3$

Q6: Simplify $(2x^2 - 2x + 6) - (x^2 + 3x - 2)$

$2x^2 - 2x + 6 \quad -x^2 - 3x + 2$

$x^2 - 5x + 8$

Q7: Simplify $(2x - 5) - (x^2 - 3) + (x^2 + 6)$

$2x - 5 \quad -x^2 + 3 \quad +x^2 + 6$

$0x^2 + 2x + 4$

$2x + 4$

Q8: Simplify $(2x^2) + (5x - 2y) - (x^2 - 3x)$

$2x^2 + 5x - 2y \quad -x^2 + 3x$

$x^2 + 8x - 2y$

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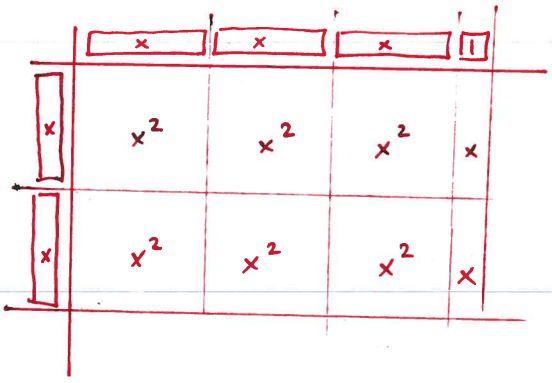
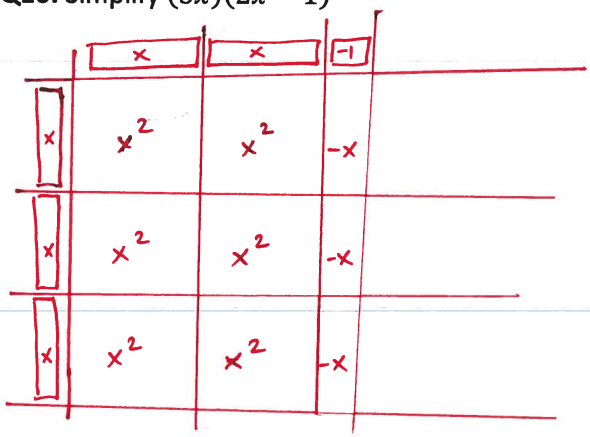
Part 5 – Multiplying Polynomials with Tiles

Q9: Simplify $2x(3x + 1)$



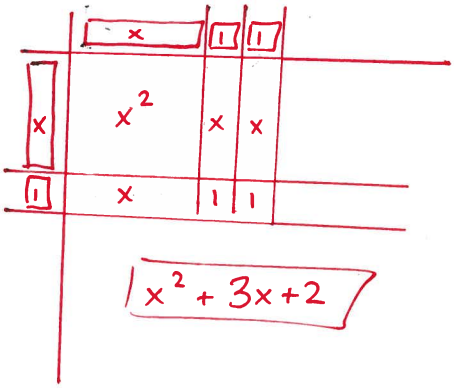
$6x^2 + 2x$

Q10: Simplify $(3x)(2x - 1)$



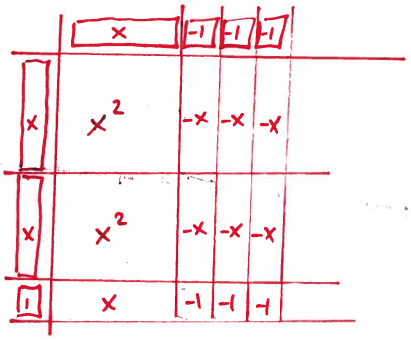
$6x^2 - 3x$

Q11: Simplify $(x + 1)(x + 2)$



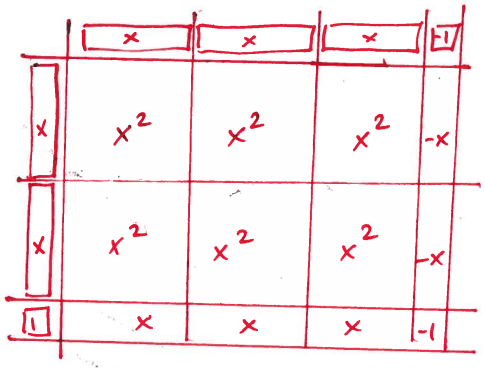
$x^2 + 3x + 2$

Q12: Simplify $(2x + 1)(x - 3)$



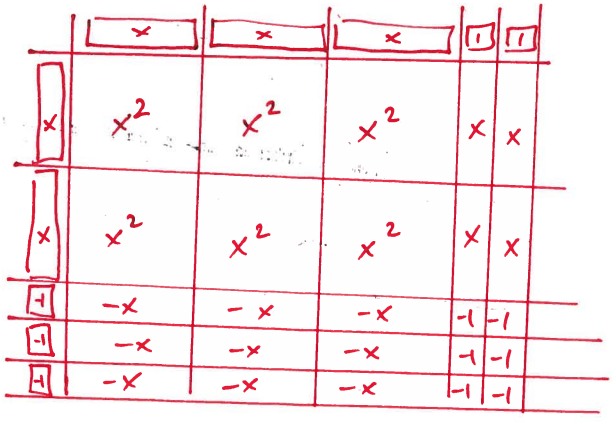
$x^2 - 5x - 3$

Q13: Simplify $(2x + 1)(3x - 1)$



$6x^2 + x - 1$

Q14: Simplify $(3x + 2)(2x - 3)$



$6x^2 - 5x - 6$

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Part 6 – Multiplying Polynomials without Tiles

Q15: Simplify $2x(3x + 1)$

Option #1:

	$3x$	$+1$
$2x$	$6x^2$	$+2x$

$6x^2+2x$

Option #2:

$2x(3x+1)$

$6x^2+2x$

Q16: Simplify $(3x)(2x - 1)$

Option #1

	$2x$	-1
$3x$	$6x^2$	$-3x$

$6x^2-3x$

Option #2

$3x(2x-1)$

$6x^2-3x$

NEW MATERIAL BEGINS HERE

Q17: Simplify $(x + 1)(x + 2)$

Option #1

	x	$+2$
x	x^2	$+2x$
$+1$	$+1x$	$+2$

x^2+3x+2

Option #2

FOIL

(Front, outside, inside, last)

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

$x^2+2x+1x+2$

x^2+3x+2

Q18: Simplify $(2x + 1)(x - 3)$

Option #1

	x	-3
$2x$	$2x^2$	$-6x$
$+1$	$+1x$	-3

$2x^2-5x-3$

Option #2

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

$2x^2-6x+1x-3$

$2x^2-5x-3$

Q19: Simplify $(2x + 1)(3x - 1)$

Option #1

	$3x$	-1
$2x$	$6x^2$	$-2x$
$+1$	$+3x$	-1

$6x^2+x-1$

Option #2

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

$6x^2-2x+3x-1$

$6x^2+x-1$

Q20: Simplify $(3x + 2)(2x - 3)$

Option #1

	$3x$	$+2$
$2x$	$6x^2$	$+4x$
-3	$-9x$	-6

$6x^2-5x-6$

Option #2

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

$6x^2-9x+4x-6$

$6x^2-5x-6$

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Part 7 – Harder Questions

Q21: Simplify $(x+2)(x^2-2x+5)$

Option #1

	x^2	$-2x$	$+5$
x	x^3	$-2x^2$	$+5x$
$+2$	$+2x^2$	$-4x$	$+10$

$x^3+0x^2+1x+10$

$\boxed{x^3+x+10}$

Option #2

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

$x^3-2x^2+5x+2x^2-4x+10$

$x^3+0x^2+1x+10$

$\boxed{x^3+x+10}$

Q22: Simplify $(x+5)^2$

$(x+5)(x+5)$

$x^2+5x+5x+25$

$\boxed{x^2+10x+25}$

Q23: Simplify $(a-3)^2+(a+4)(2a-3)$

$(a-3)(a-3) + (a+4)(2a-3)$

$(a^2-3a-3a+9) + (2a^2-3a+8a-12)$

$(a^2-6a+9) + (2a^2+5a-12)$

$3a^2-1a-3$

$\boxed{3a^2-a-3}$

Part 8 – Textbook Practice

Pg 209 #1ace, 2, 3acef, 4acef, 6ab