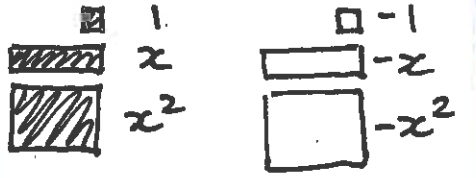
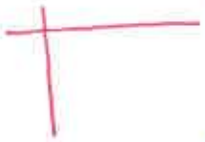
Chapter 4 Review – POLYNOMIALS

ALGEBRA TILES:



* set up for x and ÷



TERMS:

coefficient, variable

e.g.			
$-2x^2$	-2	x	2
y	1	y	1
$-ab^2$	-1	a, b	3
27	27	none	0

constant (no variable)

degree of term (sum of exponents on variables)

TYPES OF POLYNOMIALS:

e.g. $-2x^2$ (2) — monomial, degree = 2

$3x^2+7x$ (2, 1) — binomial, degree = 2

$4x^2y+3x^2-10xy$ (3, 2, 2) — trinomial, degree = 3

* degree of polynomial = degree of highest degree term

LIKE TERMS:

* have the same variable(s) and exponent(s)

e.g. 29 and -71

$3x^2$, $-2x^2$ and $\frac{1}{2}x^2$

$6x$, $-21x$ and $7x$

$5xyz^2$ and $-2xyz^2$

TO ADD: collect like terms and combine

e.g. $(3x^2-2x+7)+(-2x^2+7x-4)$

$=3x^2-2x^2-2x+7x+7-4$

$=x^2+5x+3$

TO SUBTRACT: add the opposite

e.g.

$(-x^2+4x+2)-(3x^2+7x-9)$

$=(-x^2+4x+2)+(-3x^2-7x+9)$

$=-x^2-3x^2+4x-7x+2+9$

$=-4x^2-3x+11$

TO MULTIPLY:

e.g. $3x(4x^2)$

$=(3)(4)(x)(x^2)$

$=12x^3$

use distributive property

e.g. $-2x(4x^2-3x+2)$

$=-8x^3+6x^2-4x$

TO DIVIDE:

e.g. $12x^2y \div 2x$

$=\frac{12x^2y}{2x}$

$=\left(\frac{12}{2}\right)\left(\frac{x^2}{x}\right)\left(\frac{y}{1}\right)$

$=6xy$

eg. $\frac{9x^3-12x^2+3x}{3x}$

$=\frac{9x^3}{3x}-\frac{12x^2}{3x}+\frac{3x}{3x}$

$=3x^2-4x+1$

EXPAND: use the distributive property to multiply

e.g. Expand $2x(3x-7)$

$= 6x^2 - 14x$

Getting rid of unnecessary numbers / symbols also makes things simpler.

e.g. $-1x^2 + -27$

$= -x^2 - 27$

SIMPLIFY: make it simpler! < expand (if needed) collect like terms

e.g. Simplify $-2(4x^2 - 2x + 7) - (-3x^2 - 7x + 2)$

$= -8x^2 + 4x - 14 + 3x^2 + 7x - 2$

$= -8x^2 + 3x^2 + 4x + 7x - 14 - 2$

$= -5x^2 + 11x - 16$

EVALUATE: find the value

e.g. Evaluate the expression $x(4x-7)$ when $x = -2$

$= -2(4(-2) - 7)$

$= -2(-8 - 7)$

$= -2(-15)$

$= 30$

VERIFY: check

e.g. Verify that the area of a circle is $28.27 m^2$ when the diameter $= 6$ cm.

$A = \pi r^2$ $\quad r = \frac{d}{2}$

$= \pi(3)^2$ $\quad = 3$cm

$= \pi(9)$

$= 28.27 cm^2$ ✓