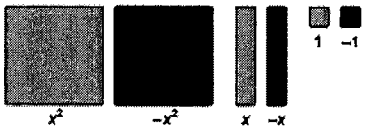
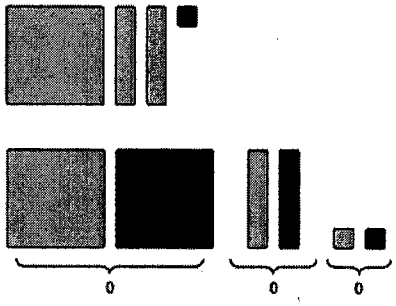
Name: KEY
Date: _____

Foundations of Math & Pre-Calculus 10
Polynomials Review from Grade 9

Skill	Description	Example
Recognize the different parts of a polynomial.	A polynomial may have variable terms and a constant term. The number in front of a variable is its coefficient.	variable term $3x^2 + 2x + 4$ coefficient, constant
Describe and classify polynomials.	A polynomial can be classified by its number of terms and by its term with the greatest degree.	Monomial: $3x$ Binomial: $2x + 5$ Trinomial: $x^2 + 2x - 1$ degree 2
Use algebra tiles to represent a polynomial.	We use these tiles:  A pair of tiles with the same shape and size, but different colours forms a zero pair. The tiles model 0.	$x^2 + 2x - 1$ 
Simplify polynomials by combining like terms.	To simplify a polynomial, add the coefficients of like terms.	Like terms: $4x^2$ and $-2x^2$ Unlike terms: $3x$ and -5 $4x^2 - 2x^2 = 2x^2$
Add polynomials.	To add polynomials, remove the brackets and add the coefficients of like terms.	$(4x^2 + 3x) + (x^2 - 5x)$ $= 4x^2 + 3x + x^2 - 5x$ $= 4x^2 + x^2 + 3x - 5x$ $= 5x^2 - 2x$
Subtract polynomials.	To subtract a polynomial, add the opposite terms.	$(3x^2 + 5x) - (2x^2 - x)$ $= 3x^2 + 5x + (-2x^2 + x)$ $= 3x^2 + 5x - 2x^2 + x$ $= 3x^2 - 2x^2 + 5x + x$ $= x^2 + 6x$
Multiply a polynomial by a monomial.	To multiply a polynomial by a monomial, use the distributive property.	$3x(6x - 5)$ $= 3x(6x) + (3x)(-5)$ $= 18x^2 + (-15x)$ $= 18x^2 - 15x$
Divide a polynomial by a monomial.	To divide a polynomial by a monomial, divide each term of the polynomial by the monomial.	$\frac{24x^2 - 32x}{8x} = \frac{24x^2}{8x} + \frac{-32x}{8x}$ $= 3x - 4$

1. Is the polynomial a monomial, binomial, or trinomial?

a) $-3s^2 + 11$ binomial

b) $8d$ monomial

c) $2e^2 - 9e + 7$ trinomial

d) $8h - 1$ binomial

2. Sketch algebra tiles to model each polynomial.

a) $3k - 4$

b) $2m^2 - m + 3$

c) $-n^2 + 5n - 2$

3. Simplify each polynomial.

a) $-7d - 4 + 8d + 2$

$= d - 2$

b) $3e^2 - 8e + 2e^2 + 11e$

$= 5e^2 + 3e$

c) $13 - 6h + 2h^2 + 7h - 9$

$= 2h^2 + h + 4$

d) $-9k^2 + 15k - 8 - 2k^2 - 4k + 3$

$= -11k^2 + 11k - 5$

6. Add.

a) $(7r + 11) + (-2r + 3)$

$= 5r + 14$

b) $(-9s^2 + 5s) + (16s^2 - 9s - 14)$

$= 7s^2 - 4s - 14$

8. Subtract.

a) $(6v + 5) - (13v - 3)$

$= \boxed{-7v + 8}$

b) $(10w^2 - 7) - (-2w + 9w^2 + 5)$

$= \boxed{w^2 + 2w - 12}$

10. Multiply.

a) $6(-7y^2 + 1)$

$= \boxed{-42y^2 + 6}$

b) $-9(-2z^2 - 4z + 5)$

$= \boxed{18z^2 + 36z - 45}$

11. Divide.

a) $\frac{16a - 40}{8} = \boxed{2a - 5}$

b) $\frac{27b^2 - 9b + 36}{-9} = \boxed{-3b^2 + b - 4}$

13. Multiply.

a) $3e(5e - 2)$

$= \boxed{15e^2 - 6e}$

b) $-4f(5f + 2)$

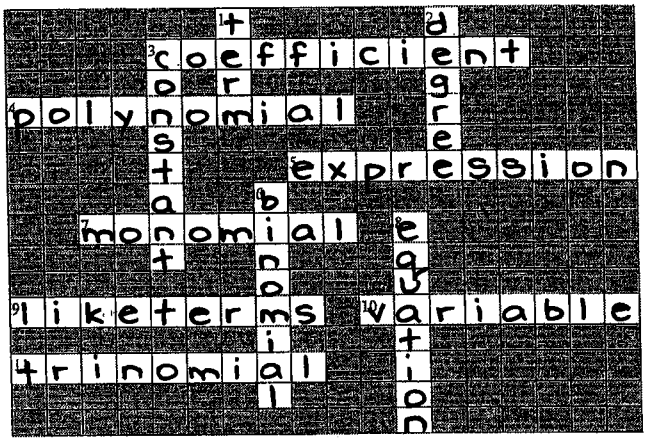
$= \boxed{-20f^2 - 8f}$

14. Divide.

a) $\frac{-21k^2}{7k} = \boxed{-3k}$

b) $\frac{81m^2 - 45m}{-9m} = \boxed{-9m + 5}$

c) $\frac{-33n^2 + 36n}{-3n} = \boxed{11n - 12}$



ACROSS

3. the numerical factor of a term
4. one term or the sum of terms whose variables have whole-number exponents
5. a mathematical statement made up of numbers and/or variables connected by operations
7. a polynomial with one term
9. terms that have the same variable (two words)
10. a letter or symbol representing a quantity that can vary
11. a polynomial with three terms

DOWN

1. a number, a variable, or the product of numbers and variables
2. the value of the greatest exponent of a term in a polynomial
3. the number in an expression or equation that does not change
6. a polynomial with two terms
8. a mathematical statement that two expressions are equal