Unit 1 – 7 Polynomials

Name: _____

Name	Examples		Non-Examples
Monomial *(one term)*	1. $3x^4$	*degree:4*	1. $2x^{-4}$ ← NEGATIVE EXP
	2. a^2	*degree:2*	2. $5\sqrt{m}$ ← RADICAL
	3. 5	*degree:0*	3. $3t^{\frac{2}{3}}$ ← FRACTIONAL EXPONENTS
Binomial *(two terms)*	1. $2n^3 - n$	*degree:3*	1. $\frac{2x+1}{x} = 2 + \frac{1}{x}$ ← DENOMINATOR VARIABLE
	2. $p - 3$	*degree:1*	
	3. $-3a^3b^4 + a^4b^5$	*degree:9*	2. $\sqrt{c^3 - 2}$ ← RADICAL
Trinomial *(three terms)*	1. $-2x^3 + 2x - 3$	*degree:3*	1. $x^{-3} + 2x - 5$ ← NEGATIVE EXP
	2. $d(d^2 + 2d^4 - 2)$ ($d^3 + 2d^5 - 2d$)	*degree:5*	2. $2^x + 3x - 5$ ← VARIABLE EXPONENT
Polynomial *(one or more terms)*	1. $3x^4 + 2x^3 - 5x + 1$	*degree:4*	1. $3q^3 + \frac{p}{q}$ ← VARIABLE IN DENOMINATOR
	2. $5y^6$	*degree:6*	2. $2^x + 3\sqrt{x}$ ← EXP VARIABLE, RADICAL
	3. $\frac{1}{2}x^2 + \sqrt{3}\,x^3 - 6x^4 + 1x - 3$	*degree:4*	

1. EXPAND and SIMPLIFY (Also, list the degree and leading coefficient of your answer).

a. $(7x+3)-(2-2x)$

$7x + 3 - 2 + 2x$

$9x + 1$

$9x+1$; DEG: 1 ; LC: 9

b. $(5x^3 - 3x^4 - 2x - 9x^2 - 2) + (3x^3 + 2x^2 - 5x - 7)$

$5x^3 - 3x^4 - 2x - 9x^2 - 2 + 3x^3 + 2x^2 - 5x - 7$

$-3x^4 + 8x^3 - 7x^2 - 7x - 9$

$-3x^4+8x^3-7x^2-7x-9$; DEG: 4 ; LC: -3

c. $3(x+5)+8x$

$3x + 15 + 8x$

$11x + 15$

$11x+15$; DEG: 1 ; LC: 11

d. $-2(3x+2y)-(5x-6y)+2x-7$

$-6x - 4y - 5x + 6y + 2x - 7$

$-9x + 2y - 7$

$-9x+2y-7$; DEG: 1 ; LC: -9, 2

e. $(2x^2+5x)-(6x^2-2x)$

$2x^2 + 5x - 6x^2 + 2x$

$-4x^2 + 7x$

$-4x^2+7x$; DEG: 2 ; LC: -4

f. $(2x^3+5x-8)+(5x^3-9x^2-11x+5)$

$2x^3 + 5x - 8 + 5x^3 - 9x^2 - 11x + 5$

$7x^3 - 9x^2 - 6x - 3$

$7x^3-9x^2-6x-3$; DEG: 3 ; LC: 7

g. $(2x+3)(3x-5)$

DISTRIBUTION

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

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

$6x^2 + 9x - 10x - 15$

F.O.I.L.

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

$6x^2 - 10x + 9x - 15$

$6x^2-1x-15$; DEG: 2 ; LC: 6

h. $(2x-5)^2$

$(2x-5)\cdot(2x-5)$

$4x^2 - 10x - 10x + 25$

$4x^2-20x+25$; DEG: 2 ; LC: 4

(1 Continued). EXPAND and SIMIPLIFY

i. $4y^2(y^2+2y)$

$4y^2 \cdot y^2 + 4y^2 \cdot 2y$

$4 \cdot y \cdot y \cdot y \cdot y + 4yy \cdot 2 \cdot y$

$4y^4 + 8y^3$; DEG: 3 ; LC: 8

j. $-6y^2(3y^2 - 2y - 7)$

$-6y^2 \cdot 3y^2 - (-6y^2)(2y) - (-6y^2)(7)$

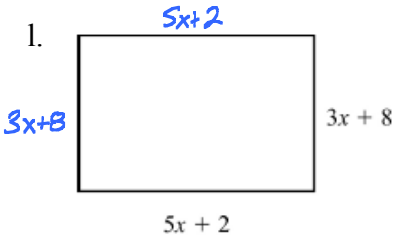
$-18y^4 + 12y^3 + 42y^2$; DEG: 4 ; LC: -18

k. $(x+3)(x+5)$

$x^2 + 5x + 3x + 15$

$x^2 + 8x + 15$; DEG: 2 ; LC: 1

l.



$A = l \cdot w$

$A = (5x+2)(3x+8)$

$15x^2 + 40x + 6x + 16$

$15x^2 + 46x + 16$

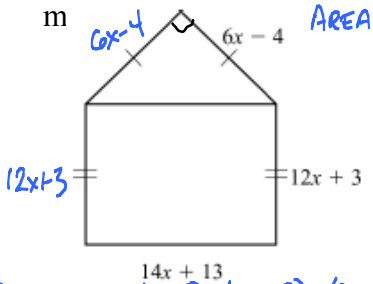
PERIMETER $= (5x+2) + (3x+8) + (5x+2) + (3x+8)$

Determine an expression that represents:

Perimeter = $16x + 20$ units

Area = $15x^2 + 46x + 16$ sq units

m



AREA $\triangle = \frac{b \cdot h}{2} = \frac{(6x-4)(6x-4)}{2}$

$= \frac{36x^2 - 24x - 24x + 16}{2}$

$= 18x^2 - 12x - 12x + 8$

$= 18x^2 - 24x + 8$

AREA $\square = l \cdot w$

$= (14x+13)(12x+3)$

$= 168x^2 + 42x + 156x + 39$

$= 168x^2 + 198x + 39$

$\triangle + \square = 168x^2 + 198x + 39 + 18x^2 - 24x + 8$

$186 + 174$

PERIMETER $= (14x+13) + (12x+3) + (6x-4) + (6x-4) + (12x+3)$

Determine an expression that represents:

Perimeter = $50x + 11$ UNITS

Area = $186x^2 + 174x + 47$ sq units

2. Divide the following.

a. $\frac{32a^5 + 24a^3}{8a^3} = \frac{32a^5}{8a^3} + \frac{24a^3}{8a^3}$

$4a^2 + 3$

$4a^2 + 3$

b. $\frac{21x^4 + 3x^3}{3x^2} = \frac{21x^4}{3x^2} + \frac{3x^3}{3x^2}$

$7x^2 + 1x$

$7x^2 + 1x$

c. $\frac{36a^3d^5 + 72a^2d^3}{6ad^2}$

$6a^2d^3 + 12ad$

3. Factor the GCF from each expression

a. $15x^4 + 3x^5$

$3 \cdot 5 \cdot x \cdot x \cdot x \cdot x + 3 \cdot x \cdot x \cdot x \cdot x$

$3x^4(5 + x)$

a. $3x^4(5+x)$

b. $16x^2 + 24$

$2 \cdot 2 \cdot 2 \cdot 2 \cdot x \cdot x + 3 \cdot 2 \cdot 2 \cdot 2$

$8(2x^2 + 3)$

b. $8(2x^2+3)$

c. $18x^4y^7 + 36x^3y^6 - 42x^5y^5$

$3 \cdot 3 \cdot 2 \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y + 3 \cdot 2 \cdot 3 \cdot 2 \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y - 3 \cdot 2 \cdot 7 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y$

c. $6x^5y^5(3xy^2 + 6y - 7x^2)$

$6x^3y^5(3xy^2 + 6y - 7x^2)$

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

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

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