

Unit 3 -- Polynomials Quiz

Name: _____

Key

A. Adding and Subtracting Polynomials:

i) State the degree of the polynomials...

	Polynomial Expression	Degree
A	$2x^7$	7 th
B	$-x^5 + 5x^3 + 4x^2 - 10$	5 th

ii) Simplify the following...

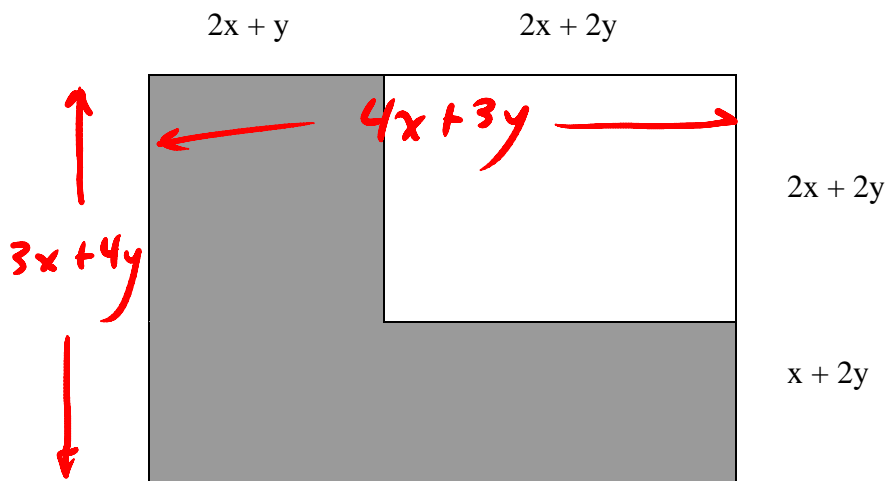
1. $(15x - 7y) + (x - 12y)$ $= 16x - 19y$	2. $(7x - 3y) - (2x - 3y)$ $= 5x$
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B. Expand and Simplify:

1. $2(3x + 4) - 5(7 - 2x)$ $= 6x + 8 - 35 + 10x$ $= 16x - 27$	2. $3x^2(4x^3 - 2x^2 + 7x + 5)$ $= 12x^5 - 6x^4 + 21x^3 + 15x^2$
3. $(x+7)(x-1)(x+3)$ $= (x^2 + 6x - 7)(x+3)$ $= x^3 + 3x^2 + 6x^2 + 18x - 7x - 21$ $= x^3 + 9x^2 + 11x - 21$	4. $(x + 3)^2$ $= (x+3)(x+3)$ $= x^2 + 6x + 9$

<p>5. $-5(x + 3)(x - 2)$ $= -5[x^2 + x - 6]$ $= -5x^2 - 5x + 30$</p>	<p>6. $(x + 7)(x^2 + 4x - 3)$ $= x^3 + 4x^2 - 3x$ $\quad 7x^2 + 28x - 21$ <hr/> $= x^3 + 11x^2 + 25x - 21$</p>
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C. Calculate the shaded area...



D.

$$A_{\text{large}} = (4x + 3y)(3x + 4y)$$

$$= 12x^2 + 25xy + 12y^2$$

$$A_{\text{small}} = (2x + 2y)(2x + 2y)$$

$$= 4x^2 + 8xy + 4y^2$$

$$A_{\text{shaded}} = 12x^2 + 25xy + 12y^2$$

$$- (4x^2 + 8xy + 4y^2)$$

$$8x^2 + 17xy + 8y^2$$

Factor the following...

<p>1. $4x(x+2)+8(x+2)$ $= (x+2)(4x+8)$ $= 4(x+2)(x+2)$ $= 4(x+2)^2$</p> <p><i>GCF 1</i> (circled around $x+2$) <i>GCF 2</i> (circled around 4)</p>	<p>2. $(2x+5)^2 + 2(2x+5) - 48$ $= A^2 + 2A - 48$ $= (A+8)(A-6)$ $= (2x+13)(2x-1)$</p>
<p>3. $5x^2 + 6x + 1$ $= (5x+1)(x+1)$</p> <p><i>5x 1</i> <i>x 1</i></p>	<p>4. $6x^2 - 23x + 15$ $= (6x-5)(x-3)$</p> <p><i>6x 5</i> <i>1x 3</i> <i>5x</i> <i>18x</i> <i>23x</i></p>
<p>5. $3(x+5)^2 - 22(x+5) - 16$ $= 3A^2 - 22A - 16$ $= (3A+2)(A-8)$ $= (3x+15+2)(x+5-8)$ $= (3x+17)(x-3)$</p> <p><i>3A 2</i> <i>A 8</i></p>	<p>6. $(2x-3)^2 - 121$ $= A^2 - 121$ $= (A+11)(A-11)$ $= (2x+8)(2x-14)$ $= 4(x+4)(x-7)$</p>
<p>7. $81 - (3x-4)^2$ $= 81 - A^2$ $= (9+A)(9-A)$ $= (9+3x-4)(9-(3x-4))$ $= (3x+5)(-3x+13)$</p>	<p>8. $x^4 + 3x^2 - 28$ $= (x^2+7)(x^2-4)$ $= (x^2+7)(x+2)(x-2)$</p>

E.

or
 $-(3x+5)(3x-13)$

Divide the following polynomials...

$$\begin{array}{r}
 x+6 \quad \overline{)25} \\
 x-3 \overline{)x^2+3x+7} \\
 \underline{-(x^2-3x)} \\
 6x+7 \\
 \underline{-(6x-18)} \\
 25
 \end{array}$$

$\therefore (x-3)(x+6) + 25$

$$\begin{array}{r}
 3x+2.5 \\
 2x-3 \overline{)6x^2-4x+13} \\
 \underline{-(6x^2-9x)} \\
 5x+13 \\
 \underline{-(5x-7.5)} \\
 20.5
 \end{array}$$

$\therefore (2x-3)(3x+2.5) + 20.5$

3. Divide $x^3 - 5x + 3$ by $(x+1)$

$$\begin{array}{r}
 x^2 - x - 4 \\
 x+1 \overline{)x^3+0x^2-5x+3} \\
 \underline{-(x^3+x^2)} \\
 -x^2-5x \\
 \underline{-(-x^2-x)} \\
 -4x+3 \\
 \underline{-(-4x-4)} \\
 7
 \end{array}$$

$\therefore (x+1)(x^2-x-4) + 7$