Last Name _____ First Name _____ Date _____ Per ___

Multiplying and Factoring Review

1. Determine the GCF of each expression

a. $3x^2 + x + 27x$

x

b. $4x^3 + 2x^2 + 7$

none

2. Factor out the GCF

a. $10a^3 - 15a^2$

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

b. $3x^3 + 21x - 6$

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

3. Rewrite the polynomial into standard form. State the leading coefficient, and then name its type by the degree and number of terms

a. $-2 + 4x^3$

$4x^3 - 2$ 4 is leading coef.

cubic binomial

b. $7x - x^2 + 3$

$-x^2 + 7x + 3$ -1 leading

quadratic trinomial

c. $4x + 1$

in standard form

4 leading coefficient

linear binomial

4. Find the product

a. $(3a^5)(5a^2 + 4)$

$15a^7 + 12a^5$

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

$10x^5 + 4x^3 - 14x^2$

c. $(x + 3)(x - 7)$

$x^2 - 7x + 3x - 21$

$x^2 - 4x - 21$

d. $(y + 6)(y - 6)$ difference of 2 squares product

$y^2 - 36$

e. $(2x - 3)(4x + 5)$

$8x^2 + 10x - 12x - 15$

$8x^2 - 2x - 15$

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

$4x^2 - 20x + 25$

5. Use multiplication to determine if each pair of expressions given are equivalent

g. $(x - 3)(4x + 2) = 4x^2 - 10x - 6$

$4x^2 + 2x - 12x - 6$

$4x^2 - 10x - 6$ = ✓

h. $(x + 5)^2 = x^2 + 25$

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

$x^2 + 10x + 25 \neq$

6. Determine if the binomials is difference of two squares. If it is, factor the binomial.

a. $4x^2 - 81$ yes

$(2x-9)(2x+9)$

b. $x^2 - 100$ yes

$(x-10)(x+10)$

c. $a^4 - 9$ yes

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

d. $x^2 + 121$ no

↑ not the difference

7. Factor the following binomials. If they are not factorable, write not factorable (or prime).

a. $b^2 + 16b + 64$

$(b+8)(b+8)$

OR $(b+8)^2$

b. $x^2 - 4x + 24$

$(x- \ )(x+ \ )$

24, -4

not factorable

1 24
2 12
3 8
4 6

c. $n^2 - 5n - 6$

$-6n^2$, $1n$, $-6n$, $-5n$

1 6
2 3

$(n-6)(n+1)$

d. $x^2 + 2x - 35$

$-35x^2$, $7x$, $-5x$, $2x$

-1 35
-5 7

$(x-5)(x+7)$

e. $x^2 + 4x + 7$ 1 7

$7x^2$, $4x$

not factorable

f. $x^2 + 16x + 15$

$15x^2$, $1x$, $15x$, $16x$

$(x+1)(x+15)$

8. Factor completely

Hint: Make sure to look for a GCF before factoring. There may or may not be one. If the polynomial cannot be factored, write prime.

Be sure to check your work!!!

a. $2k^2 + 5k + 2$

$4k^2$, $1k$, $4k$, $5k$

or

$(2k^2+1k)+(4k+2)$

$k(2k+1) + 2(2k+1)$

$(2k+1)(k+2)$

b. $2v^2 + 11v + 5$

$10v^2$, $1v$, $10v$, $11v$

	v	5
2v	$2v^2$	10v
1	1v	5

$(v+5)(2v+1)$

c. $5x^2 - 18x + 9$

$15x^2$, $-3x$, $-15x$, $-18x$

1 45
-3 -15
5 9

$(5x^2 + -15x) + (-3x + 9)$

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

$(5x-3)(x-3)$

d. $3x^2 + 7x - 1$

not factorable

$-3x^2$, $7x$

1 3

Prime

e. $6z^2 + 5z - 6$

$-36z^2$, $-4z$, $9z$, $5x$

1 36
2 18
3 12
-4 9
6 6

	2z	3
3z	$6z^2$	9z
-2	-4z	-6

$(2z+3)(3z-2)$

f. $4x^2 - 17x - 15$

$-60x^2$, $3x$, $-20x$, $-17x$

1 60
2 30
3 -20
4 15
6 10

$4x^2 - 20x + 3x - 15$

$4x(x-5) + 3(x-5)$

$(x-5)(4x+3)$

g. $5v^2 - 30v + 40$

$5(v^2 - 6v + 8)$

$5(v-4)(v-2)$

h. $4x^2 + 12x + 8$

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

$4(x+2)(x+1)$

i. $2x^2 - 50$

$2(x^2 - 25)$

Difference of 2 squares

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

j. $7x^3 - 28x$

$7x(x^2 - 4)$

$7x(x-4)(x+4)$