Name: Key Date: _____

Q3 Test Review – Polynomials and Factoring

1. What is the sum of the polynomials $8x^2-7x+3$ and $2x^2+10x-5$?

(1) $10x^2+3x-2$ (3) $6x^2+17x-8$

(2) $16x^2-70x-15$ (4) $10x^4+3x^2-2$

2. The *product* of the monomial $-2x^3$ with the binomial $4x^2-2$ is equivalent to

(1) $-6x^6-4x^3$ (3) $2x^5-4x^3$

(2) $-8x^6+4x^3$ (4) $-8x^5+4x^3$

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

$-8x^5+4x^3$

3. If the length of a rectangle is represented by $x+8$ and its width is represented by $2x+3$ then its area could be expressed as which of the following polynomials?

(1) $2x^2+24$ (3) $2x^2+19x+24$

(2) $2x^2+11$ (4) $2x^2+11x+16$

$A = l \cdot w$

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

$2x^2+3x+16x+24$

$19x$

4. Which of the polynomials results from squaring the binomial $x-4$?

(1) x^2+16 TRAP! (3) $x^2-8x-16$

(2) x^2-16 (4) $x^2-8x+16$

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

	x	-4
x	x^2	$-4x$
-4	$-4x$	$+16$

5. Which of the following shows the binomial $10x^3+40x$ factored ***incorrectly***?

(1) $10(x^3+4x)$ (3) $10x(x^2+4)$

(2) $5x^2(2x+8)$ (4) $5x(2x^2+8)$

$10x^3+40x^2$ uh oh!!!

6. The binomial x^2-64 can be written equivalently as

(1) $(x-8)(x-8)$ (3) $(x-4)(x+16)$

(2) $(x+8)(x-8)$ (4) $(x+4)(x-16)$

conjugate pairs!

7. The trinomial $2x^2 - 3x - 20$ can be factored as the product of $x - 4$ and which of the following binomials?

(1) $2x + 5$ (3) $x - 5$

(2) $2x - 7$ (4) $x + 5$

$(x-4)(2x+5)$

$2x^2 - 3x - 20$

8. Find the difference when the polynomial $-5x^2 + 3x + 8$ is subtracted from the polynomial $2x^2 + 4x + 1$.

$(2x^2 + 4x + 1) - (-5x^2 + 3x + 8)$

$2x^2 + 4x + 1 + 5x^2 - 3x - 8$

$7x^2 + x - 7$

9. Factor using GCF

a) $3x^2 - 30x$

$3x(x-10)$

b) $21x + 35y - 63z$

$7(3x+5y-9z)$

c) $x^6 + 5x^3$

$x^3(x^3+5)$

10. Factor using D.O.T.S.

a) $x^2 - 1$

$(x+1)(x-1)$

b) $49x^2 - 36y^2$

$(7x+6y)(7x-6y)$

c) $4x^8 - 25$

$(2x^4+5)(2x^4-5)$

11. Factor using Trinomial (AM)

a) $x^2 - x - 6$ (A: -1, M: -6)

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

b) $x^2 - 5x - 6$ (A: -5, M: -6)

$(x-6)(x+1)$

c) $x^2 - x - 380$ (A: -1, M: -380)

$(x-20)(x+19)$

12. Mixed Factoring. Factor the following expressions.

a. $x^2 - 6x + 5$ (AM)

$(x-5)(x-1)$

b. $64 - 9x^2$ (DOTS)

$(8+3x)(8-3x)$

c. $15x^2y^3 - 10xy^3 + 25xy^2$ (GCF)

$5xy^2(3xy - 2y + 5)$

d. $x^2 - 12x - 45$ (AM)

$(x-15)(x+3)$

e. $x^2 - 100y^2$ (DOTS)

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

f. $54x^2 - 36$ (DOTS) GCF

$6(9x^2-6)$

g. $x^2 + 5x + 6$ (AM)

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

h. $x^2 + 5x - 6$ (note the difference with part g) (AM)

$(x+6)(x-1)$

i. $4n^2 - 1$ (DOTS)

$(2n+1)(2n-1)$

j. $y^2 - 10y + 25$ (AM)

$(y-5)(y-5)$

or

$(y-5)^2$

k. $n^2+19n+70$ (AM)

$(n+5)(n+14)$

l. $2x^2+13x+15$ Tricky Tri

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

15

15 1 x

5 3 ✓

m. $5x^2-22x+8$ Tricky Tri

$(5x-2)(x-4)$

8

8 1 x

4 2 ✓

n. $3x^2-5x-12$ Tricky Tri

~~$(3x$~~

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

12

1 12 x

2 6 x

3 4 ✓

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14. Divide $45x^2+9x$ by $9x$

$\frac{45x^2+9x}{9x}$

$5x+1$

don't forget!!

12. Challenge Problems: ***Completely*** factor each of the following expressions.

** a) x^4-81

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

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

** b) x^4-5x^2+4

$(x^2-4)(x^2-1)$!!

$(x+2)(x-2)(x+1)(x-1)$

** c) $(x+2)(x+100)+(x+2)(x+200)$

$(x+2)[(x+100)+(x+200)]$

$(x+2)(2x+300)$

a^2-b^2

** d) $(x+1)^2-(x+2)^2$ DOTS !!

$((x+1)+(x+2))((x+1)-(x+2))$

$(2x+3)(-1)$

$-2x-3$