Name Key
Math 8A – 8A-E

Date _____
Period _____

Factoring Completely
Classwork

Aim: *How can we factor a polynomial completely?*

Warm Up: Identify the type of factoring required to factor each problem; then, factor it.

Polynomial	Type of Factoring	Polynomial in factored form
(a) $4x^2 + 16x$	GCMF	$4x(x+4)$
(b) $4x^2 - 9$	D.O.P.S	$(2x+3)(2x-3)$
(c) $x^2 + 5x - 14$	Tri	$(x+7)(x-2)$

order: ① GCMF
② DOPS
③ Tri / TrickyTri

Guided Practice: Factoring, Completely
In Exercise 1-6, Factor Completely. You will be factoring more than once, per problem.

(1) $5x^2 - 125$

$5(x^2-25)$ GCMF

$5(x+5)(x-5)$ DOPS

(2) $2x^2 + 8x - 10$

$2(x^2+4x-5)$ GCMF (m: 4, A: 1, ms: −5)

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

(3) $x^4 - 1$

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

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

(4) $2x^2 - 50$

$2(x^2-25)$ GCMF

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

(5) $4x^2 + 16x + 12$

$4(x^2+4x+3)$ GCMF (m: 4, A: 1, ms: 3)

$4(x+3)(x+1)$ Tri

(6) $xy^2 - x^3$

$x(y^2-x^2)$ GCMF

$x(y+x)(y-x)$ DOPS

Problem Set:

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

m A ms

$4(x^2 - 2x + 1)$ GCMF

$4(x-1)(x-1)$ Tri

$4(x-1)^2$

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

$(x^2+y^2)(x^2-y^2)$ DOPS

$(x^2+y^2)(x+y)(x-y)$ DOPS

m A ms

(3) $81x^4 - x^8$

$x^4(81 - x^4)$ GCMF

$x^4(9+x^2)(9-x^2)$ DOPS

$x^4(9+x^2)(3+x)(3-x)$ DOPS

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

$(x^2-3)(x^2-1)$ Tri

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

(5) $3x^3 - 6x^2 - 9x$

m A ms

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

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

(6) $y^6 - y^2$

$y^2(y^4 - 1)$ GCMF

$y^2(y^2+1)(y^2-1)$ DOPS

$y^2(y^2+1)(y+1)(y-1)$ DOPS

(7) $2x^3 - 24x^2 + 64x$

m A ms

$2x(x^2 - 12x + 32)$ GCMF

$2x(x-4)(x-8)$ Tri

(8) $2x^3 - 34x^2 + 140x$

m A ms

$2x(x^2 - 17x + 70)$ GCMF

$2x(x-10)(x-7)$ Tri

(9) $3x^3 - 33x^2 + 54x$

m A ms

$3x(x^2 - 11x + 18)$ GCMF

$3x(x-9)(x-2)$ Tri

(10) *** Challenge***

$45x^2 - 168x - 3x^3$

$-3x^3 + 45x^2 - 168x$

$-3x(x^2 - 15x + 56)$ GCMF

$-3x(x-8)(x-7)$ Tri