Name:	Date:
Algebra II	Lesson 1-2

FACTORING REVIEW

FACTOR – TWO IMPORTANT MEANINGS

(1) Factor (verb) – To rewrite a quantity as an equivalent product.
(2) Factor (noun) – Any individual component of a product.

Always keep in mind that when we **factor** (*verb*) a quantity, we are simply rewriting it in a different form that is completely equal to the original quantity.

GCF: Greatest Common Factor

What to look for:

Always look for this first – the terms will have a common factor

Directions: Factor each of the following expressions by "factoring out" the greatest common factor (GCF). The greatest common factor can be comprised of numbers, variables, or both.

(a)
$$6-14x$$

(b)
$$30x^2 - 20$$

(b)
$$30x^2 - 20$$
 (c) $24x^3 + 20x^2$

$$2(3-7x)$$

$$4x^{2}(6x+5)$$

DOTS: Difference Of Two Squares

What to look for:

- 1. Binomial
- 2. Subtraction
- 3. Perfect Square coefficients, constant terms, numerators and denominators of fractions. Even exponents for variable terms.

Directions: Express each of the following binomials as the difference of perfect squares (DOTS).

(a)
$$4x^2 - 25$$

(b)
$$16 - 81x^2$$

(c)
$$36x^2 - 49y^2$$

(d)
$$v^4 - 100$$

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

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

(a)
$$4x^2-25$$
 (b) $16-81x^2$ (c) $36x^2-49y^2$ (d) y^4-100 ($2x+5$) ($2x-5$) ($4+9x$)($4-9x$) ($6x+7y$)($6x-7y$) (y^2+10)(y^2-1)

TRAM: TRinomial Add Multiply

What to look for: Trinomial (3 terms)

In calc: 1= #/x

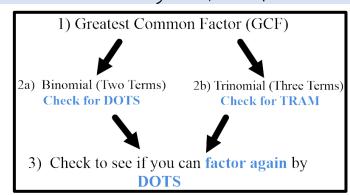
Directions: Factor each of the following trinomials by using TRAM.

The easiest of all trinomial factoring occurs when the leading coefficient is one (a=1). $\sqrt{2}$



(c)
$$x^4 + 2x^2 - 35$$
 $(x^2 + 7)(x^2 - 5)$

Factoring Completely



Directions: Using a combination of gcf, difference of perfect squares factoring, and/or tram **factoring.** Write each of the following in its completely factored form.



(a)
$$-x^2 + 13x - 22$$

-1 ($x^2 - 13x + 33$) GCF
-1 ($x - 11$)($x - 3$) TRAM

(b)
$$28x^2 - 7$$

 $7(4x^2 - 1)$ GCF
 $7(a_{x+1})(a_{x-1})$ Dots

(c)
$$x^5 - 1x$$

 $x(x^4 - i)$ GCF
 $x(x^2 + i)(x^2 - i)$ Dots
 $x(x^2 + i)(x + i)(x - i)$ Dots

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FACTORING REVIEW PRACTICE QUESTIONS FACTOR EACH OF THE FOLLOWING EXPRESSIONS

1)
$$x^2 - 13x + 22$$

 $(X - 11)(X - 2)$ TRAM

2)
$$\frac{1}{49}x^2 - 121$$

 $(\frac{1}{7}X + II)(\frac{1}{7}X - II)$ Dots

3)
$$-x^2 + 5x - 6$$

-1 $(X^2 - 5x + 6)$ CICF
-1 $(X - 2)(X - 3)$ TRAM

4)
$$27x^3 - 12x$$

 $3 \times (9x^2 - 4)$ GICF
 $3 \times (3x + 2)(3x - 2)$ DOTS

5)
$$10x^2 + 100x + 250$$

 $10(X^2 + 10x + 25)$ GCF
 $10(X+5)(X+5)$ TRAM
 $10(X+5)^2$

6)
$$x^8 - 16$$

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

7)
$$4x^4 - 64$$

 $4(x^4 - 16)$ GCF
 $4(x^2 + 4)(x^2 - 4)$ DOTS
 $4(x^2 + 4)(x^2 + 2)(x^2 - 2)$ DOTS

8)
$$343x^2 - 7x^4$$

 $7x^2(49 - x^2)$ C1CF
 $7x^2(7 - x)(7 + x)$ Dots

9)
$$x^4 + 4x^2 - 5$$

 $(X^2 + 5)(X^2 - 1)$ TRAM
 $(X^2 + 5)(X + 1)(X - 1)$ DOTS

10) Challenge Question: $x^{2a} + 4x^a - 32$

PRACTICE ANSWERS

1. TRAM
$$(x-11)(x-2)$$

2. DOTS
$$(\frac{1}{7}x - 11)(\frac{1}{7}x + 11)$$

3. GCF
$$\rightarrow$$
TRAM $-1(x-2)(x-3)$

4. GCF
$$\rightarrow$$
 DOTS $3x(3x + 2)(3x - 2)$

5. GCF
$$\rightarrow$$
TRAM $10(x+5)^2$

6. DOTS
$$\rightarrow$$
 DOTS $(x^2 + 2)(x^2 - 2)(x^4 + 4)$

7. GCF
$$\rightarrow$$
DOTS \rightarrow DOTS $4(x-2)(x+2)(x^2+4)$

8. GCF
$$\to$$
 DOTS $7x^2(7-x)(7+x)$

9. TRAM
$$\to$$
DOTS $(x^2 + 5)(x - 1)(x + 1)$

10. TRAM
$$(x^a + 8)(x^a - 4)$$