

4-3A Factoring Review

previous assignment:
Page 233, 1-3 all
4-12 evens and #13

- greatest common factor
- grouping
- trinomials
- differences of perfect squares

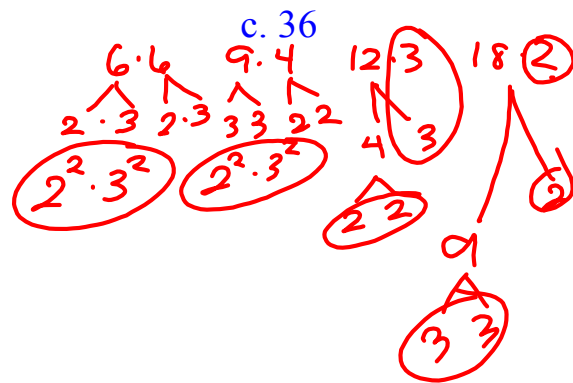
what is factoring?

- writing a number as a product of its factors.
- the "undo-ing" of multiplication.

Numeric Examples: write the following as a product of its factors.

a. 10
2 · 5

b. 15
3 · 5



Factoring by GCF (greatest common factor)

- ALWAYS the 1st type of factoring.
- divide each term by the gcf.
- rewrite as a product of the gcf and the remaining terms.

gcf ()

1. $\frac{3s^2t}{\cancel{st}} + \frac{4st^2}{\cancel{st}} + \frac{st^3}{\cancel{st}}$ gcf = st

$st(3s + 4t + t^2)$

2. $\frac{24a^2b}{2ab} - \frac{18ab^2}{2ab}$ gcf = 6ab

$2ab(\frac{12a}{3} - \frac{9b}{3})$

$6ab(4a - 3b)$

Factoring by grouping

- can only be used with an even amount of 4 or more terms.
- split into two equal groups.
- find the gcf of the each group, remaining parts should match.
- rewrite as a product of two quantities.

$$(a+b)(x+y)$$

F O I L

$$3. \frac{a^2}{a} - \frac{2ab}{a} + a - 2b$$

$$a(a-2b) + (a-2b)$$

$$(a+1)(a-2b)$$

$$4. ax - bx + ay - by$$

$$x(a-b) + y(a-b)$$

$$(x+y)(a-b)$$

Factoring trinomials

- guess, check, and revise.
- a trinomial is usually the product of two binomials with like terms.

() ()

$$5. x^2 + 5x + 6$$

1,6
2,3

F O I L

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

$$(x+2)(x+6)$$

$$6. x^2 - 13x + 42$$

-2, -2
-3, -14
-4, -16
-6, -7

$$(x-6)(x-7)$$

$$7. x^2 + 7x - 30$$

$$(x+10)(x-3)$$

15 -2
-15 2
5 -6
-5 6
-1 30
1 -30
10 3
-10 3

$$8. 2x^2 + 11x + 12$$

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

1 12
3 24 6
4

Factoring binomials

$$(x+a)(x-a) \quad \boxplus$$

- gcf, then guess, check, and revise
- many times a product of two binomials with like terms canceling.

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

$$\begin{array}{cccc} \text{F} & \text{O} & \text{I} & \text{L} \\ x^2 & +7x & -7x & -49 \end{array}$$

7. $x^2 - 25$

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

8. $x^2 - 64$

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

9. $8x^2 - 18$

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

Factoring Summary

- always look to factor a **gcf**.
- count the # of terms to determine which factoring approach to use.
- after factoring, look for more factors within the **remaining terms**.
- if you cannot factor **AT ALL**, then write **prime**.



4-3A Worksheet