

Today we learned about factoring by grouping. Below are the answers to last night's homework, followed by the notes and practice completed in class. The last page is the homework assignment.

11)  $x^2 - 16$

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

12)  $4n^2 - 25$

$$(2n+5)(2n-5)$$

13)  $x^2 - 1$

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

14)  $2x^2 - 18$

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

15)  $100k^2 - 16$

$$4(25k^2 - 4)$$
$$4(5k-2)(5k+2)$$

16)  $9x^2 - 1$

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

17)  $4b^2 - 100$

$$4(b^2 - 25)$$
$$4(b-5)(b+5)$$

$$9a^6 - 100$$
$$(3a^3 + 10)(3a^3 - 10)$$

18)  $32k^2 - 50$

$$2(16k^2 - 25)$$
$$2(4k-5)(4k+5)$$

19)  $k^2 - 9$

$$(k-3)(k+3)$$

20)  $18n^2 - 2$

$$2(9n^2 - 1)$$
$$2(3n-1)(3n+1)$$

# Factoring by Grouping

You can use the Distributive Property to factor by grouping if two groups of terms have the same factor.

## Steps for Success!

- 1 Make 2 Groups ( ) ( )
- 2 Factor out GCF from both groups
- 3 Rewrite (GCF)(Common Factors)
- 4 Check by FOIL

Factor:  $(4n^2 + 8n)(5n - 10)$   
 $4n^2(n+2) - 5(n+2)$   
 $(4n^2 - 5)(n+2)$

Or you can still use the Box Method

	$n$	$2$
$4n^2$	$4n^3$	$8n^2$
$-5$	$-5n$	$-10$

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

$5t^3 + 6t + 20t^2 + 24$

$5t^3$	$5t^2$	$20t^2$
$+6$	$6t$	$24$

$(5t^2 + 6)(t + 4)$

$6x^2 + 3x^2 - 4x - 2$

$(3x^2 - 2)(x + 1)$   
 look for GCF!!

$45x^2 + 20x^2 + 9x + 4$

$(5x^2 + 1)(9x + 4)$

$2w^3 + w^3 - 14w - 7$

$(w^2 - 7)(2w + 1)$

$2p(6p^3 + 5p^2 - 18p - 15)$

$12p^4 - 10p^3 - 36p^2 - 30p$

$6p^3$	$5p^2$
$-18p$	$-15$

$2p(p^2 - 3)(6p + 5)$

$3m(15m^3 - 3m^2 + 10m - 2)$

$45m^4 - 9m^3 + 30m^2 - 6m$

$3m(3m^2 + 2)(5m - 1)$

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

$(6x^2 + 5)(x - 1)$

$3(3c^3 - 4c^2 + 6c - 8)$

$9c^4 - 12c^3 + 18c^2 - 24c$

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

$4t(2t^3 + 3t^2 + 4t + 6)$

$8t^4 + 12t^3 + 16t^2 + 24t$

$t^2$	$2t^2$	$3t^2$
$2$	$4t$	$6$

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

## Factor by Grouping

Date \_\_\_\_\_ Period \_\_\_\_\_

Factor each completely.

1)  $4x^3 - 6x^2 - 2x + 3$

2)  $b^3 + 2b^2 + 2b + 4$

3)  $12n^3 + 15n^2 + 8n + 10$

4)  $4x^3 - 5x^2 - 8x + 10$

5)  $3b^3 - 12b^2 - 4b + 16$

6)  $12n^3 + 16n^2 + 9n + 12$

	$3n$	$4$
$4n^2$	$12n^3$	$16n^2$
$3$	$9n$	$12$

7)  $3n^3 + 4n^2 - 15n - 20$

8)  $4x^3 + 16x^2 - 5x - 20$

9)  $5x^3 - 5x^2 + 4x - 4$

10)  $3a^3 - 5a^2 - 12a + 20$

11)  $4m^3 + 8m^2 + m + 2$

12)  $12n^3 - 9n^2 + 4n - 3$

13)  $3n^3 - 9n^2 - 2n + 6$

14)  $2n^3 + 8n^2 - 5n - 20$

15)  $2a^3 - 8a^2 + 3a - 12$

16)  $4n^3 + 3n^2 - 4n - 3$