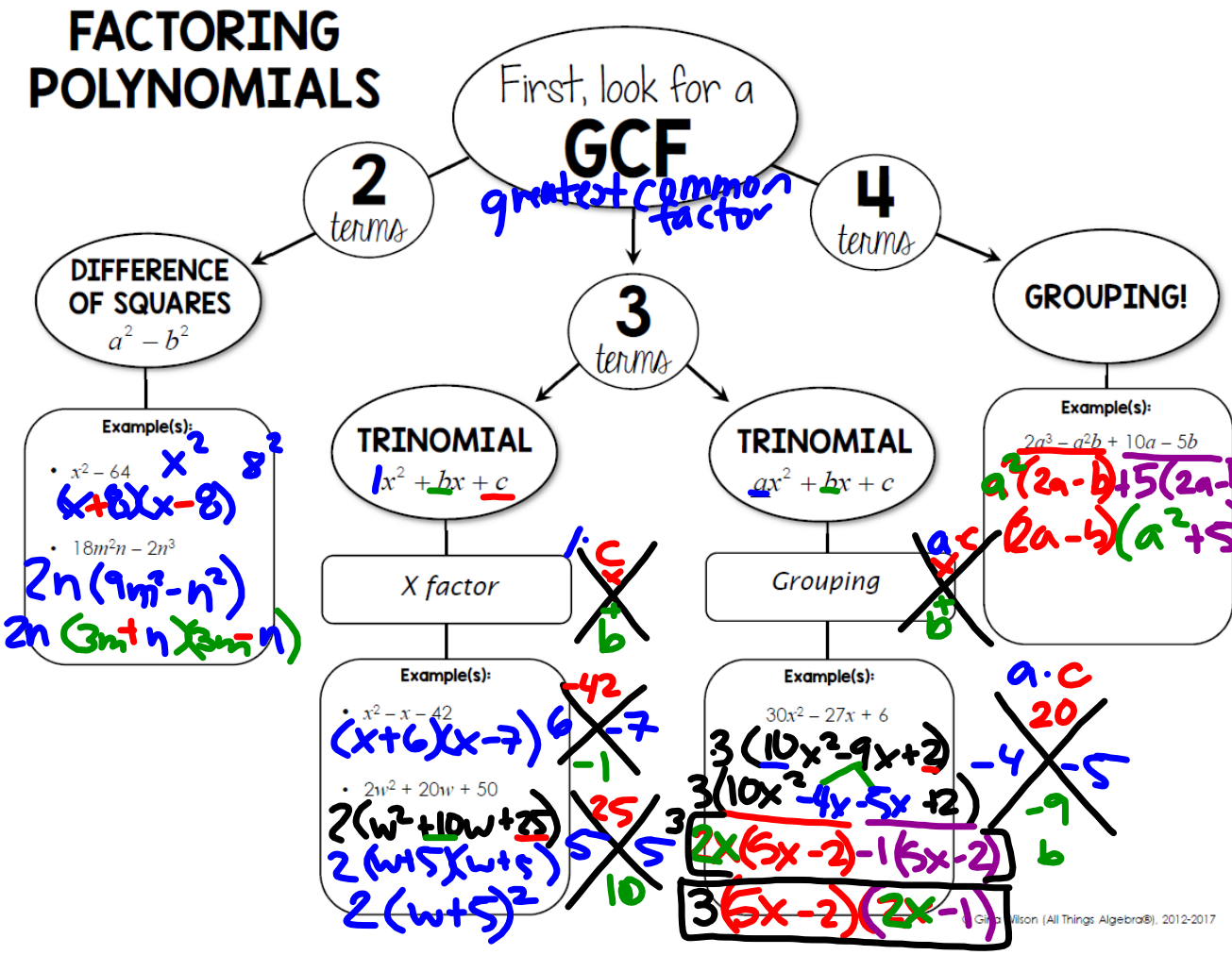
FACTORING POLYNOMIALS
First, look for a GCF
greatest common factor
2 terms
3 terms
4 terms
DIFFERENCE OF SQUARES
$a^2 - b^2$
Example(s):
$x^2 - 64$
$18m^2n - 2n^3$
TRINOMIAL
$1x^2 + bx + c$
X factor
Example(s):
$x^2 - x - 42$
$2w^2 + 20w + 50$
TRINOMIAL
$ax^2 + bx + c$
Grouping
Example(s):
$30x^2 - 27x + 6$
GROUPING!
Example(s):
$2a^3 - a^2b + 10a - 5b$
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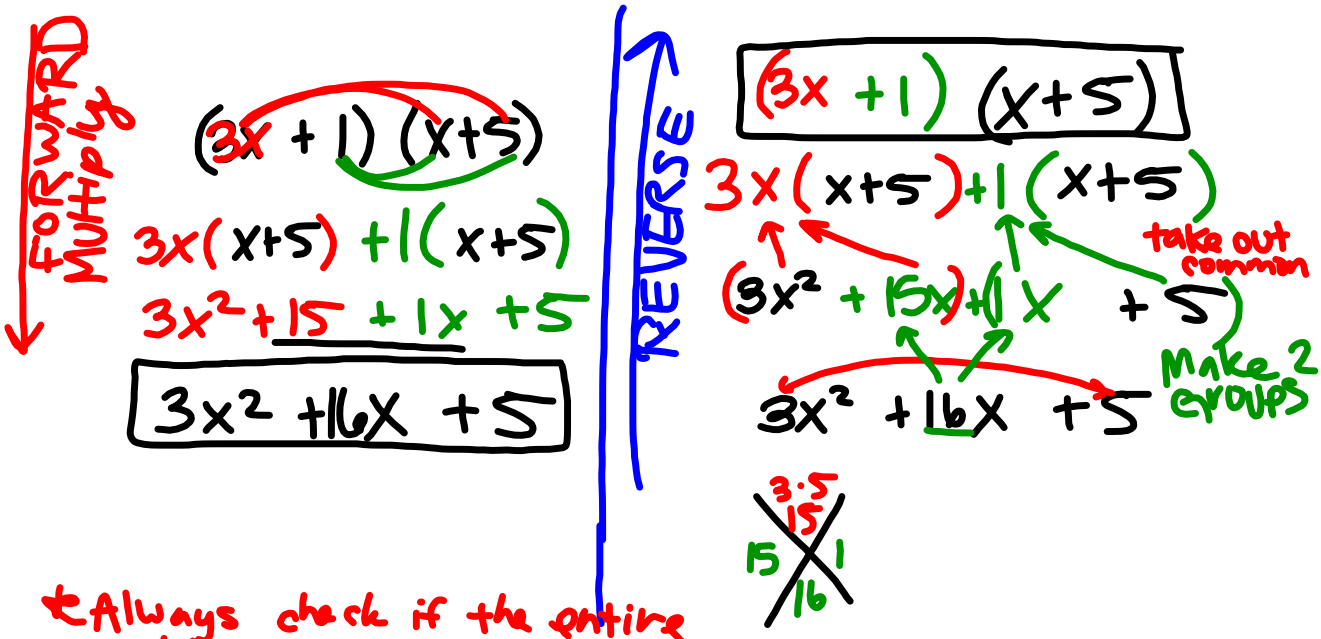
In Class Notes

Grouping Method=reverse FOIL



*Always check if the entire problem can be simplified. can take something out before you begin. Check for common factor!

Example: $18x^2 + 24x - 24$

3·6 4·6 4·6

CAN TAKE 6 OUT!

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

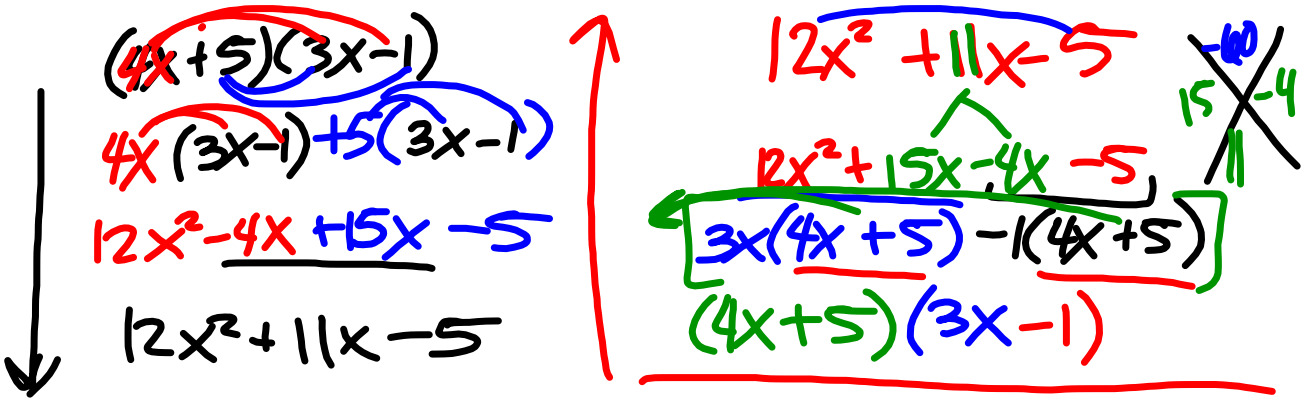
WAY MORE SIMPLE!

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

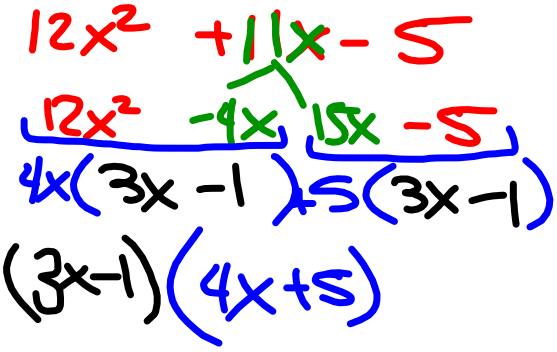
$3(6x^2+12x-4x-8)$

8x

... more examples. →



Does it matter if you switch the green numbers?



NO!! Same Answer

Kuta Software - Infinite Algebra 2 Name_____

1. GCF
2. group & magic X

Factoring Quadratic Expressions GROUPING Date_____

Factor each completely.

1) $x^2 - 7x - 18$

$x^2+2x-9x-18$

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

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

$x^2-9x+2x-18$ ✓

2) $p^2 - 5p - 14$

3) $m^2 - 9m + 8$ ✓

$m^2-1m-8m+8$

$m(m-1)-8(m-1)$

$(m-1)(m-8)$

$m^2-8m-1m+8$

4) $x^2 - 16x + 63$

5) $7x^2 - 31x - 20$

6) $7k^2 + 9k$

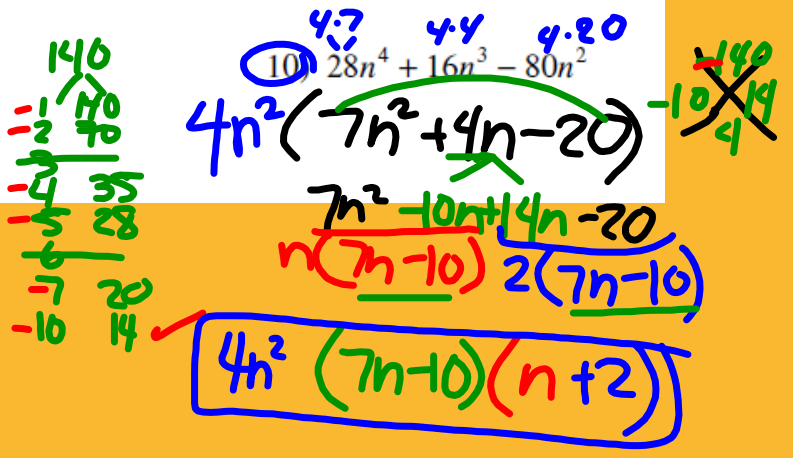
$k(7k+9)$

7) $7x^2 - 45x - 28$

8) $2b^2 + 17b + 21$

9) $5p^2 - p - 18$

10) $28n^4 + 16n^3 - 80n^2$



11) $3b^3 - 5b^2 + 2b$

12) $7x^2 - 32x - 60$

13) $30n^2b - 87nb + 30b$

14) $9r^2 - 5r - 10$

doesn't factor

15) $9p^2r + 73pr + 70r$

$r(9p^2+73p+70)$

630, 63, 10, 73

$9p^2+63p+10p+70$

$9p(p+7)+10(p+7)$

$r(p+7)(9p+10)$

16) $9x^2 + 7x - 56$

-504, 7

Doesn't factor

-504

1	504
2	252
3	168
4	126
6	84
7	72
8	63
9	56
20	
21	24
24	21

17) $4x^3 + 43x^2 + 30x$

18) $10m^2 + 89m - 9$

Critical thinking questions:

19) For what values of b is the expression factorable?
$x^2 + bx + 12$

20) Name four values of b which make the expression factorable:
$x^2 - 3x + b$

Factoring By Grouping

Factor each completely. If non-factorable, write "Non-factorable".

1) $48h^3 - 48h^2 - 48h + 48$

$48(h^3 - h^2 - h + 1)$

$h^2(h-1) - 1(h-1)$

$48(h-1)(h^2-1)$

2) $3w^3 - 6w^2 + 21w - 42$

3) $10x^3 - 45x^2 - 4x + 18$

6) $x^3 - 9x^2 + 6x - 54$

7) $24k^3 - 96k^2 - 36k + 144$

GCF: 12

$12(2k^3 - 8k^2 - 3k + 12)$

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

$12(k-4)(2k^2-3)$

8) $18c^3 + 30c^2 - 9c - 15$

4) $3q^3 - 15q^2 - 24q + 120$

5) $3m^3 + 12m^2 - 21m - 84$

9) $24y^3 - 30y^2 - 20y + 25$

10) $9s^3 + 24s^2 + 24s + 64$