Partial Key

A21 page 1

Things added together = terms  Things multiplied together = factors
Canceling, any number divided by itself = _____
You may cancel any common _____ but not common _____.
Undistributing = f- - - - - ing

The first step of factoring is to factor out the GCF if possible.

Polynomial
GCF
GCF (result of ÷)

factor: $6ab^2 - 8a^2b$
$2ab$
$2ab(3b - 4a)$

$14p^3q^3 - 21p^2q^2 + 35pq$
( )

Sometimes the GCF will be a polynomial (ex. $(x - 3)$). But be on the lookout for opposites you can make them the same by multiply by $(-1)$.

Factor: $x(x + 2y) - (x + 2y)$
( ) ( ) ( )

$2r(r - s) + s(s - r)$
$2r(r-s) -$ ( )
( ) ( )

For four terms you need to factor by grouping (pairs). Factor out the GCF for the 1st pair of terms and 2nd pair of terms separately.
Then factor by polynomial factoring.

Factor: $rs + 5r + st + 5t$
r ( ) + ( )
( ) ( ) ( )

$3a^3 + a^2 + 6a + 2$

Then to factor polynomials of the form $ax^2 + bx + c$ we follow these five steps.

1. Factor out GCF (if possible)
2. Factors of $a \cdot c$ "+" to $b$
   $a \cdot c$, $b$
3. use ___ to write $ax^2 + bx + c$ as 4 terms $ax^2 + 0x + 0x + c$
4. Factor by Grouping (pairs)
5. Polynomial Factoring

(then we can check by distributing)

Factor: $8c^3 + 8c^2 - 6c$
$2c$
$2c(4c^2 + 4c - 3)$
a b c

$-12$
6 $-2$
4

$2c(4c^2 + 6c - 2c - 3)$
$2c$ $-1$
$2c[2c(2c+3) - 1(2c+3)]$
$(2c+3)$
$2c[(2c+3)(2c-1)]$

check $2c[4c^2 - 2c + 6c - 3]$
$2c[4c^2 + 4c - 3]$
$8c^3 + 8c^2 - 6c$

A 2.1 cont.

## Overall Factoring Rules

The first step is to always Factor out any Greatest Common Factors if possible.
Next we ask ourselves How Many Terms.
Complete the procedures below.

**4**

1st Factor by Grouping (GCF from pairs)

2nd Polynomial Factoring

**3**

$ax^2 + bx + c$

$a \cdot c$ that adds to $b$

rewrite as 4 terms

ex. $ax^2 + 0x + 0x + c$

* unless $a = 1$

Then just $(x\ 0)(x\ 0)$


**2**

Is it

Then

Remember is forever.

1-2 Factor. Show and label all 5 steps. Box your answer.

1. $2x^2 + 11x + 12$

2. $12x^5 - 20x^4 + 3x^3$

3-9 Factor completely. Box your answer.

3. $b^2 - 49$

4. $4c^2 + 81$

5. $16x^2 - 9y^6$

6. $x^2 - 10xy + 21y^2$

7. $2a^2 - 4a + 2$

8. $x^5y - xy^5$

9. $x(x - 2y) - (2y - x)$