

INSTRUCTOR GUIDANCE EXAMPLE: Week Five Discussion

Factoring

Since there are several different types of factoring problems assigned from pages 345-346, four types will be demonstrated here to offer a selection, even though individual students will only be working two from these pages.

- #73. $x^3 - 2x^2 - 9x + 18$
 $x^2(x - 2) - 9(x - 2)$
 $(x - 2)(x^2 - 9)$
 $(x - 2)(x - 3)(x + 3)$
- Four terms means start with **grouping**
The common **factor** for each group is $(x - 2)$
Notice the difference of squares in second group
Now it is completely factored.
- #81. $6w^2 - 12w - 18$
 $6(w^2 - 2w - 3)$

 $6(w - 3)(w + 1)$
- Every term has a **GCF** of 6
Common **factor** is removed, now have a trinomial
Need two numbers that add to -2 but multiply to -3
Try with -3 and +1
This works, check by multiplying it back together
- #97. $8vw^2 + 32vw + 32v$
 $8v(w^2 + 4w + 4)$
 $8v(w + 2)(w + 2)$
 $8v(w + 2)^2$
- Every term has a **GCF** of $8v$
The trinomial is in the form of a **perfect square**
Showing the squared binomial
Writing the square appropriately
- #103. $-3y^3 + 6y^2 - 3y$
 $-3y(y^2 - 2y + 1)$
 $-3y(y - 1)(y - 1)$
 $-3y(y - 1)^2$
- Every term has a **GCF** of $-3y$
Another **perfect square** trinomial
Showing the squared binomial
Writing the square appropriately

Here are two examples of problems similar to those assigned from page 353.

- $5b^2 - 13b + 6$
- $a = 5$ and $c = 6$, so $ac = 5(6) = 30$. The **factor** pairs of 30 are 1, 30 2, 15 **3, 10** 5, 6
 $-3(-10) = 30$ while $-3 + (-10) = -13$ so replace $-13b$ by $-3b$ and $-10b$
Now **factor by grouping**.
The common binomial **factor** is $(5b - 3)$.
Check by multiplying it back together.
- $5b^2 - 3b - 10b + 6$
 $b(5b - 3) - 2(5b - 3)$
 $(5b - 3)(b - 2)$
- $3x^2 + x - 14$
- $a = 3$ and $c = -14$, so $ac = 3(-14) = -42$. The **factor** pairs of -42 are
1, -42 -1, 42 3, -14 -3, 14
2, -21 -2, 21 6, -7 **-6, 7**
We see that $-6(7) = -42$ while $-6 + 7 = 1$ so replace x with $-6x + 7x$.
Factor by grouping.
The common binomial **factor** is $(x - 2)$.
Check by multiplying it back together.
- $3x^2 - 6x + 7x - 14$
 $3x(x - 2) + 7(x - 2)$
 $(x - 2)(3x + 7)$

