Algebra 2
Unit 1 Lesson 5 - Factoring Quadratics using "Slide and Divide"

- Factor quadratics in the following form when a does not equal 1: $f(x) = ax^2 + bx + c$

Recap: Factor the following...

$81 - x^2 = (9+x)(9-x)$

$x^2 - 10x + 16 = (x-8)(x-2)$

$-8 \quad -2$

Factoring when a does not equal 1:

Slide and Divide method!

Example: Factor $6x^2 - x - 2$

Step 1: Slide the 6 over to the 2 (multiply)

$x^2 - 1x - 12$

1 -12
-1 12
2 -6
-2 6
+3 -4
-3 4

Step 2: Factor using old method

$(x - \frac{4}{6})(x + \frac{3}{6})$

Step 3: Divide the numbers by the number you slid.

$(x - \frac{4}{6})(x + \frac{3}{6})$

Step 4: Reduce

$(x - \frac{2}{3})(x + \frac{1}{2})$

Step 5: Move any denominators in front of the x they are with.

$(3x - 2)(2x + 1)$

Ex: Factor $4x^2 + 4x - 3$

Slide: $x^2 + 4x - 12$

Factor: $(x+6)(x-2)$

Divide: $\frac{6}{4}$ $\frac{2}{4}$

Simplify: $\left(x + \frac{3}{2}\right)\left(x - \frac{1}{2}\right)$

move denominators: $(2x+3)(2x-1)$

Ex: Factor $10x^2 - 3x - 1$

slide: $x^2 - 3x - 10$

factor: multiply to give -10
add to give -3
... -5, +2

divide:

$(x - \frac{5}{10})(x + \frac{2}{10})$

Reduce: $(x - \frac{1}{2})(x + \frac{1}{5})$

move denominators: $(2x - 1)(5x + 1)$

- Special Case: When you can factor a number out first.

Ex: $3x^2 + 9x - 54$

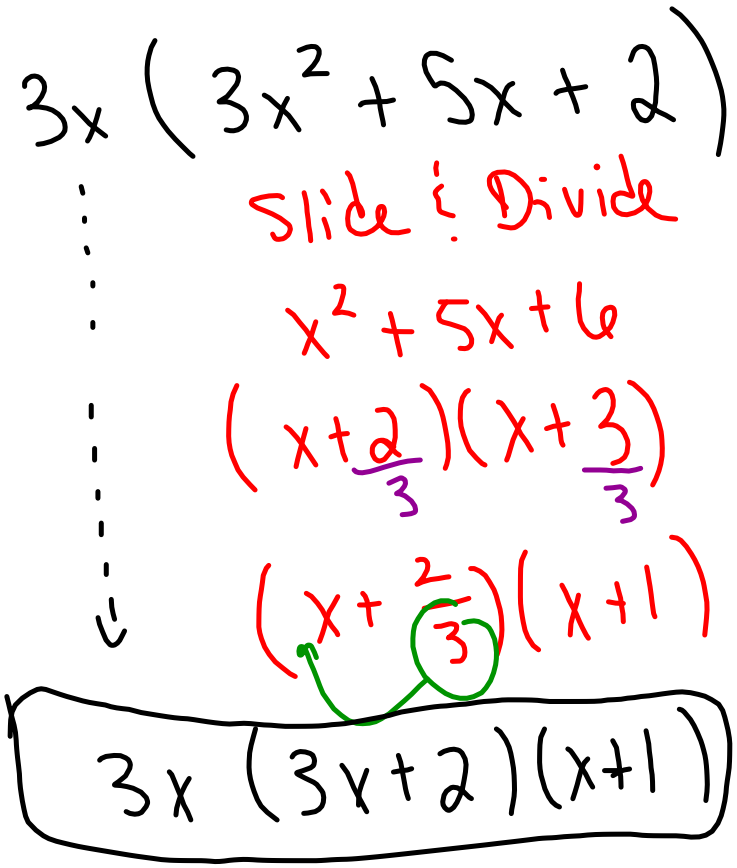
$\frac{3}{3}$ $\frac{9}{3}$ $\frac{54}{3}$

Factor out the greatest common factor FIRST. Then factor using the easiest method.

$3(x^2 + 3x - 18)$

$3(x+6)(x-3)$

Ex: Factor $9x^3+15x^2+6x$



Examples like these won't show up on your QA, but they WILL show up on your test over unit 1.

Algebra 2 Homework:

Finish worksheet from previous lesson.

QA over Lesson 5 and 6 on the next school day.