Algebra 1: 12.3 Guided Notes **Name** _____ **Period** ____
More Practice Factoring Polynomials

Learning Goal:
To factor trinomials with a leading coefficient ≠ 1 using the "slide and divide" method.

In this lesson, we will take a quadratic equation with a leading coefficient ≠ 1 and rewrite it in standard form.

$$3x^2 - 7x - 6 \rightarrow (3x + 2)(x - 3)$$

Factoring Trinomials Using the "Slide and Divide" Method

Steps

1) Factor out the GCF, if possible.
2) Verify the leading coefficient (a) ≠ 1.
3) ***SLIDE the leading coefficient to the back of the polynomial and multiply it by the constant (ac).***
4) Rewrite the polynomial without the leading coefficient and replace the constant with the product of the leading coefficient and the constant.
5) Factor the polynomial using a multiplication table.
6) Rewrite the polynomial as a product of binomial factors.
7) ***DIVIDE the last term of each binomial factor by the leading coefficient (a).***
8) Reduce the fractions, if possible.
9) ***For fractions that remain, SLIDE the denominator in front of the first term of the binomial factor.***

Example 1: $3x^2 + 7x + 2$

Steps

1) There is no GCF.
2) $3 \neq 1$
3) $3 \cdot 2 = 6$
4) $x^2 + 7x + 6$ *(3 is no longer the leading coefficient and the constant term is the product of 3 • 2)*
5)

	x	+6
x	x^2	$6x$
+1	$1x$	**6**

Factor Pairs of 6	**Sum**
1 and 6	**7**
2 and 3	5

6) $x^2 + 7x + 6 = (x + 1)(x + 6)$
7) $\left(x+\frac{1}{3}\right)\left(x+\frac{6}{3}\right)$
8) $\left(x+\frac{1}{3}\right)(x+2)$ $\left(\frac{6}{3}$ *reduces to* $2\right)$
9) $3x^2 + 7x + 2 = (3x + 1)(x + 2)$

Example 2: $3x^2 + 14x + 8$

Steps

Example 3: $6t^2 + 4t - 2$

Steps