

Worksheet 28 B

Another method given in the book is called Slide and Divide. It has the advantage that it converts the problem of factoring a quadratic with a coefficient of x^2 not equal to one into factoring a quadratic with a coefficient of x^2 equal to one. The disadvantage is that there are several steps to remember.

Given a quadratic in the form $ax^2 + bx + c$

0. Factor out all common factors.
1. Slide the a over and multiply: replace c with ac.
2. Factor the new trinomial $x^2 + bx + ac$.
3. Divide each of the constants in your factors by a.
4. Reduce the fractions in each factor to simplest terms.
5. Slide the denominators of the constant terms in front of the x.

For example factor $-72x^2 + 66x + 30$

$$-6(12x^2 - 11x - 5) \quad (\text{Step 0: Factor out all common factors})$$

Now to factor

$$12x^2 - 11x - 5$$

$$x^2 - 11x - 60 \quad (\text{Step 1: Slide the a over and multiply: replace c with ac.})$$

$$(x - 15)(x + 4) \quad (\text{Step 2: Factor the new trinomial } x^2 + bx + ac.)$$

$$\left(x - \frac{15}{12}\right)\left(x + \frac{4}{12}\right) \quad (\text{Step 3: Divide each of the constants in your factors by a})$$

$$\left(x - \frac{5}{4}\right)\left(x + \frac{1}{3}\right) \quad (\text{Step 4 Reduce the fractions in each factor to simplest terms})$$

$$(4x - 5)(3x + 1) \quad (\text{Step 5 Slide the denominators of the constant terms in front of the x})$$

$$\text{So, } -72x^2 + 66x + 30 = -6(4x - 5)(3x + 1)$$

$$\text{Factor } 12x^2 - 10x - 12$$

Step 0 Factor out all common factors.

$$12x^2 - 10x - 12 =$$

Step 1 Slide the a over and multiply: replace c with ac.

$$6x^2 - 5x - 6 =$$

Step 2 Factor the new trinomial $x^2 + bx + ac$.

$$x^2 - 5x - 36 =$$

Step 3 Divide each of the constants in your factors by a

$$(x - 9)(x + 4) =$$

Step 4 Reduce the fractions in each factor to simplest terms

$$\cdot \left(x - \frac{9}{6}\right) \left(x + \frac{4}{6}\right) =$$

Step 5 Slide the denominators of the constant terms in front of the x.

$$\left(x - \frac{3}{2}\right) \left(x - \frac{2}{3}\right) =$$

Then the final answer is