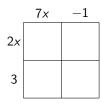
## Factoring $ax^2 + bx + c$

## Summary

- 1. Always look for a greatest common factor (GCF) to factor out first.
- 2. We will use the ac-method of factoring with grid

Recall for multiplying (2x + 3)(7x - 1):



## The ac-Method of Factoring $ax^2 + bx + c$

- 1. Check for a GCF first. Factor out if applicable.
- 2. Multiply the values of a and c.
- 3. Find 2 numbers that
  - Multiply to make the value of ac AND
  - Add to make the value of b.
- 4. Note: Factor out a negative when applicable.

For instance, to factor  $5x^2 - 14x + 8$ :

- 1. Multiply 5 and 8 to get 40.
- 2. Find 2 numbers that
  - Multiply to make 40 AND
  - ullet Add to make -14

5 <i>x</i> <sup>2</sup>	
	8

**Example 1.** Factor each completely. Don't forget to check for a GCF first.

(a) 
$$3x^2 - 20x + 28$$

(b) 
$$2x^2 - 9x - 35$$

(c) 
$$3x^2 - 13x + 4$$

(d) 
$$3x^2 + 10x - 8$$

(e) 
$$12x^2 - 5x - 2$$

(f) 
$$8x^2 - 22x + 5$$

(g) 
$$8x^6 - 10x^5 - 3x^4$$

(h) 
$$6x^6 + 19x^5 - 7x^4$$