

Bellwork: Factor the following polynomial

$$x^2 - 13x + 36$$

+ ×

$$(x-9)(x-4)$$

- 9 · - 4

$$3x^2 - 15x - 18$$

- 6 |

~~-3~~

- 3 + 2

$$3(x^2 - 5x - 6)$$

$$3(x-6)(x+1)$$

26) $x^2 - 5x + 0$

$$x(x-5)$$

$(x+0)(x-5)$

29) $x^2 - 144$ $x^2 + 0x - 144$

$$(x+12)(x-12)$$

Homework 3.3 Solutions

1. $(x+14)(x+1)$
2. $(x-3)(x-4)$
3. $(x-3)(x+2)$
4. $(x+7)(x-2)$
5. $(x+8)(x+2)$
6. $(x-9)(x-2)$
7. $(x-5)(x-2)$
8. $(x+1)(x+5)$
9. $(x-8)(x+1)$
10. $(x+5)(x-2)$
11. $(x-7)(x+3)$
12. $(x+5)(x+10)$
13. $(x-5)(x-11)$
14. $(x+9)(x+6)$
15. $(x-10)(x-6)$
16. $(x+12)(x-7)$
17. $(x-5)(x+16)$
18. $(x-22)(x+3)$
19. $(x+10)(x-3)$
20. $(x-4)(x-27)$
21. $3(x-6)(x+1)$
22. $5(x-2)(x+1)$
23. $-2(x-4)(x+1)$
24. $4(x-2)(x-2)$
25. $(x+3)(x-3)$
26. $x(x-5)$
27. $(x+7)(x-7)$
28. $x(x-20)$
29. $(x+12)(x-12)$
30. $x(x-36)$

Today's Objective:

I can factor quadratics when the coefficient of x^2 is not 1.

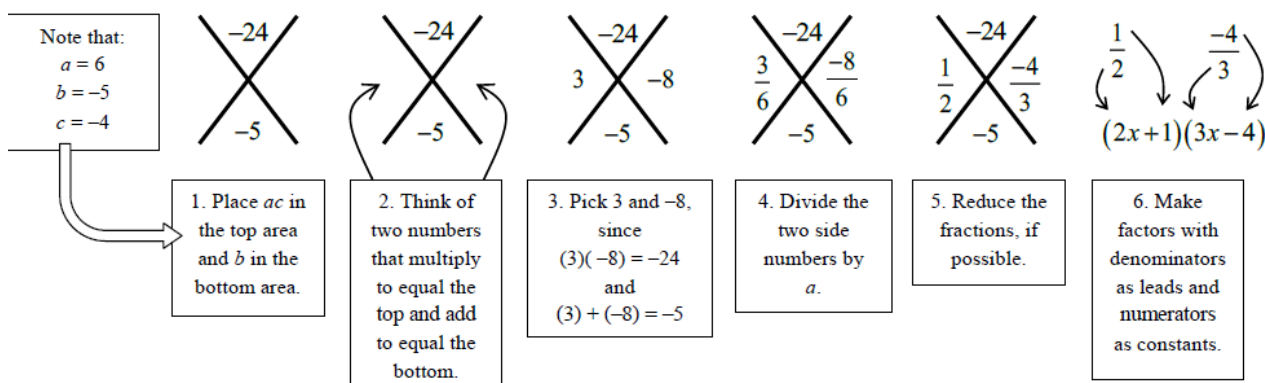
STEP 1: Factor out the GCF (greatest common factor) from all the terms, for any $GCF \neq 1$, if it exists.

STEP 2: Factor the quadratic using the X-method.

$$ax^2 + bx + c$$

$$\begin{array}{r} 64 \quad 2 \quad 12 \\ 3 \quad 8 \end{array}$$

EXAMPLE: Factor: $6x^2 - 5x - 4$



① $2x^2 + x - 15$

$2 \cdot -15 = -30$

$\frac{-5}{2}$ and $\frac{6}{2} \rightarrow \frac{3}{1}$

$(2x - 5)(x + 3)$

	$2x - 5$
\times	$2x^2 - 5x$
$+ 3$	$+ 6x - 15$

② $4x^2 - 17x - 42$

-168

$\frac{7}{4}$ and $\frac{-24}{4} \rightarrow \frac{-6}{1}$

$(4x + 7)(x - 6)$

3. $5x^2 + 4x - 1$

$$\begin{array}{cccccc} & & & -5 & & \\ & & & / & & \\ \frac{1}{1} & \frac{5}{5} & & & -\frac{1}{5} & -\frac{1}{5} \\ & & & \backslash & & \\ & & & 4 & & \end{array}$$

$$(x + 1)(5x - 1)$$

4. $4x^2 + 37x + 40$

$$\begin{array}{cccccc} & & & 160 & & \\ & & & / & & \\ \frac{8}{1} & \frac{32}{4} & & & \frac{5}{4} & \frac{5}{4} \\ & & & \backslash & & \\ & & & 37 & & \end{array}$$

$$(x + 8)(4x + 5)$$

5. $9x^2 - 30x + 16$

$$\begin{array}{ccccccc} & & 144 & & & & \\ & & / & & \backslash & & \\ -\frac{2}{3} & -\frac{6}{9} & & -\frac{24}{9} & -\frac{8}{3} & & \\ & & \backslash & & / & & \\ & & -30 & & & & \end{array}$$

$$\begin{array}{ccc} 24 & 12 & 12 \\ 26 & 8 & 18 \\ 30 & -6 & -24 \end{array}$$

$$(3x-2)(3x-8)$$

6. $8x^2 + 48x + 22$

$$\begin{array}{ccccccc} & & 2(4x^2 + 24x + 11) & & & & \\ & & \begin{array}{ccc} a & & b & c \end{array} & & & \\ & & / & & \backslash & & \\ \frac{1}{2} & \frac{2}{4} & & \frac{22}{4} & \frac{11}{2} & & \\ & & \backslash & & / & & \\ & & 24 & & 4 & & \end{array}$$

$$2(2x+1)(2x+11)$$

