

# Algebra I

## Factor Review

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Use the following notes from UNIT 6 to review different methods of factoring. In the next lesson of Unit 7, we will be using factoring as another method to solve quadratic equations.

1. U6L4: Factor each trinomial with a leading coefficient of 1

a.  $n^2 - 4n - 21$

$$(n-7)(n+3)$$

b.  $h^2 + 7h - 18$

$$(h+9)(h-2)$$

c.  $p^2 - 11p + 28$

$$(p-7)(p-4)$$

2. U6L5: Use the a\*c method to factor each trinomial (leading coefficient not 1)

$-4a^2$

$\cancel{20} + \cancel{-3} = 17$

a.  $4a^2 + 17a - 15$

$$(4a^2 + 20a) + (3a - 15)$$

$$4a(a+5) - 3(a+5)$$

$$\boxed{(a+5)(4a-3)}$$

b.  $2y^2 - 9y - 5$

$$2y^2 - 10y + y - 5$$

$$2y(y-5) + 1(y-5)$$

$$\boxed{(y-5)(2y+1)}$$

$-10$

$\cancel{-10} + \cancel{1} = -9$

c.  $16x^2 - 46x - 35$

$$16x^2 - 56x + 10x - 35 - 56 + 10 = -41$$

$$8x(2x-7) + 5(2x-7)$$

$$\boxed{(2x-7)(8x+5)}$$

$-560$

$\cancel{1}$

3. U6L6: Use the special cases to factor each polynomial

### Difference of Two Squares

a.  $x^2 - 225$

$a = \sqrt{x^2} = x$

$b = \sqrt{225} = 15$

$$\boxed{(x-15)(x+15)}$$

Perfect Square Trinomial

b.  $y^2 - 625$

$a = \sqrt{y^2} = y$

$b = \sqrt{625} = 25$

$$\boxed{(y+25)(y-25)}$$

c.  $49 - 100k^2$

$a = \sqrt{49} = 7$

$b = \sqrt{100k^2} = 10k$

$$\boxed{(7+10k)(7-10k)}$$

a.  $a^2 - 10a + 25$

$a = \sqrt{a^2} = a$

$b = \sqrt{25} = 5$

$2ab = 2(a)(5) = 10a$

$$\boxed{(a-5)^2}$$

b.  $f^2 + 16f + 64$

$a = \sqrt{f^2} = f$

$b = \sqrt{64} = 8$

$2ab = 2(f)(8) = 16f$

$$\boxed{(f+8)^2}$$

c.  $25c^2 - 40c + 16$

$a = \sqrt{25c^2} = 5c$

$b = \sqrt{16} = 4$

$2ab = 2(5c)(4) = 40c$

$$\boxed{(5c-4)^2}$$

4. Factor out the GCF first! Then, use one of the methods in the previous sections to finish factoring what is left inside the parentheses.

a.  $3k^3 - 18k^2 + 15k$

$$3k(k^2 - 6k + 5)$$

$$\boxed{3k(k-5)(k-1)}$$

b.  $24x^2 + 70x + 16$

$$2(12x^2 + 35x + 8)$$

$$2(12x^2 + 32x + 3x + 8)$$

$$2(4x(3x+8) + 1(3x+8))$$

$$\boxed{2(3x+8)(4x+1)}$$

c.  $12e^2 - 27$

$$3(4e^2 - 9)$$

$$a = \sqrt{4e^2} = 2e$$

$$b = \sqrt{9} = 3$$

$$\boxed{3(2e+3)(2e-3)}$$

d.  $2d^3 - 18d$

$$2d(d^2 - 9)$$

$$\boxed{2d(d+3)(d-3)}$$

$$a = \sqrt{d^2} = d$$

$$b = \sqrt{9} = 3$$

e.  $5x^2 + 50x + 125$

$$5(x^2 + 10x + 25)$$

$$\boxed{5(x+5)^2}$$

$$a = \sqrt{x^2} = x$$

$$b = \sqrt{25} = 5$$

$$2ab = 2(1)(15) = 10x$$