

# ★ 3 ways to represent solutions

Unit 9: Factoring  
Solving by Factoring

1) x-intercepts  
(-, 0)

2) zeros  
 $x =$   
 $x =$

3) set notation  
 $\{ \}$

Name: \_\_\_\_\_  
Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Zero Product Property**: For all numbers a and b, if  $ab = 0$ , then  $a = 0$ ,  $b = 0$  or both a and b equal 0.

To solve a quadratic equation, it **MUST** be in standard form.  $ax^2 + bx + c = 0$

Remember with factoring, always factor out **GCF** first. Then continue to factor if you have a trinomial or special binomial left inside parentheses.

Solve each equation (this means find your roots, solutions, zeros, x-intercepts!). Check your solutions using your calculator by looking at your table or your graph.

1.  $x(x - 18) = 0$

1.  $x = 0$   
2.  $x - 18 = 0$   
 $x = 18$   
 $\{0, 18\}$   
 $(0, 0)$   
 $(18, 0)$

2.  $z(z + 3) = 0$

1.  $z = 0$   
2.  $z + 3 = 0$   
 $z = -3$   
 $(0, 0), (-3, 0)$   
 $\{-3, 0\}$

3.  $x(x + 9) = 0$

1.  $x = 0$   
2.  $x + 9 = 0$   
 $x = -9$   
 $(0, 0), (-9, 0)$   
 $\{-9, 0\}$

4.  $x(x - 5) = 0$

1.  $x = 0$   
2.  $x - 5 = 0$   
 $x = 5$   
 $(0, 0), (5, 0)$   
 $\{0, 5\}$

5.  $4x(7 + x) = 0$

1.  $4x = 0$   
 $x = 0$   
2.  $7 + x = 0$   
 $x = -7$   
 $(0, 0)$   
 $(-7, 0)$   
 $\{-7, 0\}$

6.  $2p(9 - p) = 0$

1.  $2p = 0$   
 $p = 0$   
2.  $9 - p = 0$   
 $p = 9$   
 $(0, 0), (9, 0)$   
 $\{0, 9\}$

7.  $(x - 7)(x + 4) = 0$

$x - 7 = 0$   
 $x = 7$   
 $x + 4 = 0$   
 $x = -4$   
 $(7, 0), (-4, 0)$   
 $\{-4, 7\}$

8.  $(3k - 5)(k + 8) = 0$

1.  $3k - 5 = 0$   
 $+5$   
 $3k = 5$   
 $k = \frac{5}{3}$   
2.  $k + 8 = 0$   
 $-8$   
 $k = -8$   
 $\{-8, \frac{5}{3}\}$

9.  $(b+1)(b-1) = 0$

$b+1=0$        $b-1=0$   
 $b=-1$        $b=1$   
 $\{-1, 1\}$

11.  $(y+1)(2y-3) = 0$

$y+1=0$        $2y-3=0$   
 $y=-1$        $+2y \quad +3$   
 $2y=3$   
 $y=\frac{3}{2}$   
 $\{-1, \frac{3}{2}\}$

13.  $(3x-2)(4x-3) = 0$

$3x-2=0$        $4x-3=0$   
 $x=\frac{2}{3}$        $x=\frac{3}{4}$   
 $\{\frac{2}{3}, \frac{3}{4}\}$

10.  $(c+2)(c-9) = 0$

$c+2=0$        $c-9=0$   
 $c=-2$        $c=9$   
 $\{-2, 9\}$

12.  $(2x-3)(5x-8) = 0$

$2x-3=0$        $5x-8=0$   
 $x=\frac{3}{2}$        $x=\frac{8}{5}$   
 $\{\frac{3}{2}, \frac{8}{5}\}$

14.  $(5x+10)(3x-1) = 0$

$5x+10=0$        $3x-1=0$   
 $x=-2$        $x=\frac{1}{3}$   
 $\{-2, \frac{1}{3}\}$

Factor and solve the following equations. (this means find your roots, solutions, zeros, x-intercepts!). Check your solutions using your calculator by looking at your table or your graph.

15.  $x^2 - 9x = 0$

$x(x-9) = 0$   
 1.  $x=0$       2.  $x-9=0$   
 $x=9$   
 $\{0, 9\}$

16.  $w^2 + 7w = 0$

$w(w+7) = 0$   
 1.  $w=0$       2.  $w+7=0$   
 $w=-7$   
 $\{-7, 0\}$

17.  $x^2 - 64 = 0$

$+8 \quad -64$   
 $-8$   
 $(x+8)(x-8) = 0$   
 1.  $x+8=0$       2.  $x-8=0$   
 $x=-8$        $x=8$

18.  $x^3 - 49x = 0$

$x(x^2 - 49) \rightarrow x(x+7)(x-7) = 0$   
 1.  $x=0$       2.  $x+7=0$       3.  $x-7=0$   
 $x=-7$        $x=7$

19.  $x^2 + 13x + 40 = 0$

$+8 \quad 40$   
 $-5$   
 $(x+8)(x+5) = 0$   
 1.  $x+8=0$       2.  $x+5=0$   
 $x=-8$        $x=-5$

20.  $x^2 + 13x + 36 = 0$

$4 \quad 36$   
 $-9$   
 $(x+4)(x+9) = 0$   
 1.  $x+4=0$       2.  $x+9=0$   
 $x=-4$        $x=-9$