

Solutions can be written 3 ways Solutions set notation

Unit 9: Factoring Quadratics

**Solving Quadratic Equations in**

**Factored Form** PreAP Homework

Name Key  
Date \_\_\_\_\_ Per \_\_\_\_\_

Solve the following quadratic equations. Factor if necessary (must be in standard form to factor)

1.  $g(g+5) = 0$

1.  $g = 0$   
2.  $g+5 = 0 \quad g = -5$

$(0, 0) \quad (-5, 0)$   
 $\{-5, 0\}$

2.  $x^2 - 36 = 0$

$(x+6)(x-6) = 0$   
 $x = -6 \quad x = 6$   
 $(-6, 0) \quad (6, 0)$

$\{-6, 6\}$

3.  $x^2 - 14 = 5x$

$x^2 - 5x - 14 = 0$   
 $(x-7)(x+2)$   
 $x = 7 \quad x = -2$

$\{-2, 7\}$

4.  $3z^2 = 12z$

$3z^2 - 12z = 0$   
 $3z(z-4) = 0$   
 $3z = 0 \quad z = 0$   
 $z-4 = 0 \quad z = 4$

$\{0, 4\}$

5.  $m^2 - 24m = -144$

$m^2 - 24m + 144 = 0$   
 $(m-12)(m-12) = 0$   
 $(m-12)^2 = 0$   
 $m-12 = 0 \quad m = 12$

$\{12, 0\}$

6.  $(2x-3)(3x-8) = 0$

$2x-3 = 0 \quad 3x-8 = 0$   
 $2x = 3 \quad 3x = 8$   
 $x = \frac{3}{2} \quad x = \frac{8}{3}$   
 $(\frac{3}{2}, 0) \quad (0, \frac{8}{3})$

$\{\frac{3}{2}, \frac{8}{3}\}$

7.  $\frac{x^3}{x} + \frac{2x^2}{x} - \frac{24x}{x} = 0$

$x(x^2 + 2x - 24) = 0$   
 $x(x+6)(x-4) = 0$

1.  $x = 0$   
2.  $x+6 = 0 \quad x = -6$   
3.  $x-4 = 0 \quad x = 4$   
 $\{-6, 0, 4\}$

8.  $a^2 + 13a + 36 = 0$

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

$\{-4, 9\}$

9.  $x^2 + x - 56 = 0$

$(x+8)(x-7) = 0$

1.  $x+8 = 0 \quad x = -8$   
2.  $x-7 = 0 \quad x = 7$

$\{-8, 7\}$

12. Which solution is incorrect? Explain the error.

A.  $x^2 + x - 2 = 0$   
 $(x-1)(x+2) = 0$   
 $x = 1 \text{ or } x = -2$

B.  $x^2 + x - 2 = 0$   
 $(x-1)(x+2) = 0$   
 $x = -1 \text{ or } x = 2$

X-intercepts (solutions) are the opposites of the constant term in each binomial

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Use the diagram to answer problems 13-15.

13. Write a polynomial in standard form to represent the area of the larger rectangle.

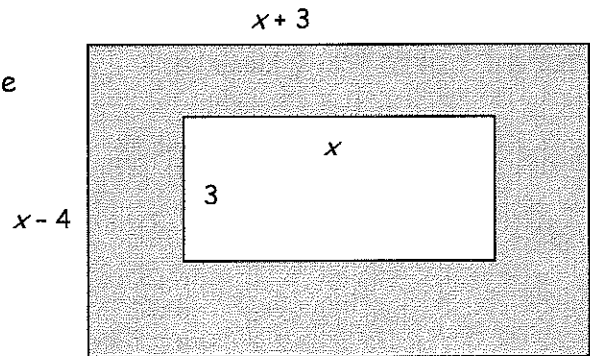
$$A = (x+3)(x-4)$$

F      O      I      L

$$A = x^2 - 4x + 3x - 12$$

                -1x

$$A = x^2 - x - 12$$



14. Write a polynomial in standard form to represent the area of the smaller rectangle.

$$A = lw$$

$$A = 3(x)$$

$$A = 3x$$

15. Write a polynomial in standard form to represent the area of the shaded region. Then solve for  $x$  given that the area of the shaded region is 48 square units.

$$A_{\text{shaded}} = (x^2 - x - 12) - (3x)$$

$$A_{\text{shaded}} = x^2 - 4x - 12$$

$$\begin{array}{r} 48 = x^2 - 4x - 12 \\ -48 \phantom{=} \phantom{=} \phantom{=} \\ \hline 0 = x^2 - 4x - 60 \end{array}$$

$$0 = x^2 - 4x - 60$$

$$(x - 10)(x + 6)$$

$$1. x - 10 = 0 \quad x = 10$$

$$2. x + 6 = 0 \quad x = -6$$

$$\{-6, 10\}$$