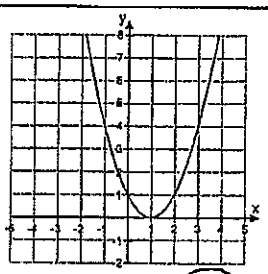
Name_____ Date_____

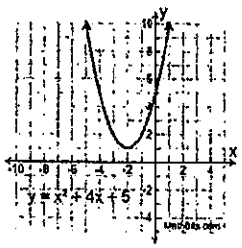
UNIT 8 **LESSON 13**

Do Now:



a) Identify the roots: {1 3}

b) Describe the nature of the roots: equal



(a) Identify the roots: none

(b) Describe the nature of the roots: imaginary/unreal

AIM: SOLVING WORD PROBLEMS USING QUADRATIC EQUATIONS (Day 2)

1. The length of a rectangle is 5 more than the width. If the area of the rectangle is 150, what are the dimensions of the rectangle?

Let x = width = 10

Let x + 5 = length = 15

$A = L \cdot W$

$150 = x(x+5)$

$150 = x^2 + 5x$

$-150 \quad -150$

$x^2 + 5x - 150 = 0$

$(x+15)(x-10) = 0$

$x + 15 = 0 \quad | \quad x - 10 = 0$

$-15 \quad -15 \quad | \quad +10 \quad +10$

$x = -15 \quad | \quad x = 10$

reject b/c (-)

Step 1: Write a legend from the question.

Step 2: Write area formula.

Step 3: Substitute in terms of "x" from your legend into the area formula.

Step 4: Distribute.

Step 5: Quadratic Equation must be in standard form. Set equation equal to zero.

Step 6: Factor

Step 7: T-Bar

Step 8: Decide whether to reject a solution.

Step 9: Plug solution into legend

Step 10: Check

Check

$A = L \cdot W$

$150 = 15(10)$

$150 = 150$ ✓

2. The width of a rectangle is 4 feet less than the length. If the area of the rectangle is 32 square feet, find the width of the rectangle.

Let x = length = 8

Let $x-4$ = width = 4

$A = L \cdot w$

$32 = x(x-4)$

$32 = x^2 - 4x$

$-32 \quad -32$

$0 = x^2 - 4x - 32$

$(x-8)(x+4) = 0$

$x - 8 = 0$ | $x + 4 = 0$

$+8 \quad +8$ | $-4 \quad -4$

$x = 8$ | $x \neq -4$

reject b/c (-)

check:

$A = L \cdot w$

$32 = 8(4)$

$32 = 32 \checkmark$

Step 1: Write a legend from the question.
Step 2: Write area formula.
Step 3: Substitute in terms of "x" from your legend into the area formula.
Step 4: Distribute.
Step 5: Quadratic Equation must be in standard form. Set equation equal to zero.
Step 6: Factor
Step 7: T-Bar
Step 8: Decide whether to reject a solution.
Step 9: Plug solution into legend
Step 10: Check

3. The width of Danielle's rectangular notebook is 5 inches shorter than the length if the area of her notebook is 24 square inches, what is the length and width of her notebook?

Let x = length = 8

Let $x-5$ = width = 3

$A = L \cdot W$

$24 = x(x-5)$

$24 = x^2 - 5x$

$-24 \quad -24$

$0 = x^2 - 5x - 24$

$(x-8)(x+3) = 0$

$x - 8 = 0$ | $x + 3 = 0$

$+8 \quad +8$ | $-3 \quad -3$

$x = 8$ | $x = -3$ neg not p/c (-)

Step 1: Write a legend from the question.
Step 2: Write area formula.
Step 3: Substitute in terms of "x" from your legend into the area formula.
Step 4: Distribute.
Step 5: Quadratic Equation must be in standard form. Set equation equal to zero.
Step 6: Factor
Step 7: T-Bar
Step 8: Decide whether to reject a solution.
Step 9: Plug solution into legend
Step 10: Check

check

$A = L \cdot W$

$24 = 8(3)$

$24 = 24 \checkmark$

4. Robby's poster project has a length that is 3 inches longer than its width. If the poster is 40 square inches, how long is the length and width?

Let x = width = 5

Let x+3 = length = 8

$A = L \cdot W$

$40 = x(x+3)$

$40 = x^2 + 3x$

$-40 \quad -40$

$0 = x^2 + 3x - 40$

$(x+8)(x-5) = 0$

$x+8=0$	$x-5=0$
$-8 \quad -8$	$+5 \quad +5$
$x = -8$	$x = 5$
reject	

n/c it is (-)

Step 1: Write a legend from the question.
Step 2: Write area formula.
Step 3: Substitute in terms of "x" from your legend into the area formula.
Step 4: Distribute.
Step 5: Quadratic Equation must be in standard form. Set equation equal to zero.
Step 6: Factor
Step 7: T-Bar
Step 8: Decide whether to reject a solution.
Step 9: Plug solution into legend
Step 10: Check