Name _____ Date _____

Solving Quadratic Equations By Factoring - Guided Lesson Explanation

Explanation#1

We will write $x^2 + bx + c$ as $(x + r1)(x + r2)$ to factor a quadratic of the form where $c = r1 \times r2$ and $r1 + r2$.

We will solve by factoring.The c term is 6, now we have to find a pair of factors with a product of 6. The b term is -5, and for that we need to find a pair of factors with a sum of -3. We will prepare a list of the possible factors with a product of 6, and then we will find the one with a list of -5.

Factors pairs of c = 6	Sum of factor pairs
1 x -6 = -6	1 + -6 = -5
-1 x 6 = -6	-1 + 6 = 5
-1 x -6 = 6	-1 + -6 = 7
2 x -3 = -6	2 + -3 = -1
-2 x -3 = 6	**-2 + -3 = -5**

Now we can see that the correct factor pair is -2 and -3.

So we will use these numbers to factor $j^2 - 5j + 6 = 0$.

$j^2 - 5j + 6 = 0$

$(j - 2)(j - 3)$

We know that the Zero Product Property states that for all real numbers a and b:

If $ab = 0$, then $a = 0$ or $b = 0$

According to the Zero Product Property, if $(j - 2)(j - 3) = 0$, then $j - 2$ must be 0 or $j - 3$ must be 0. Now we will write two equations and solve j.

$j - 2 = 0$ or $j - 3 = 0$

$j = 2$ or $j = 3$

Name _____ Date _____

Explanation#2

We will solve by factoring.

$x^2 - 18x = 0$

$x(x - 18) = 0$

We know that the Zero Product Property states that for all real numbers a and b:

If ab = 0, then a = 0 or b = 0

According to the Zero Product Property, if x(x – 18) = 0, then x must be 0 or x – 18 must be 0. Now we will write two equations and solve x.

x = 0 or x – 18 = 0

or x = 18

Explanation#3

We will write $x^2 + bx + c$ as (x + r1) (x + r2) to factor a quadratic of the form where c = r1 x r2 and r1 + r2.

We will solve by factoring.The c term is -99, now we have to find a pair of factors with a product of -99. The b term is -2, and for that we need to find a pair of factors with a sum of -2. We will prepare a list of the possible factors with a product of -99, and then we will find the one with a list of -2.

Factors pairs of c = -99	**Sum of factor pairs**
1 x -99 = -99	1 + -99 = -98
-1 x 99 = -99	-1 + 99 = 98
-1 x -99 = 99	-1 + -99 = 100
3 x -33 = -99	3 + -33 = -30
-3 x 33 = -99	-3 + 33 = 30
-3 x -33 = 99	-3 + -33 = 36
-9 x 11 = -99	-9 + 11 = 2
9 x -11 = -99	**9 + -11 = -2**

Name _____ Date _____

Now we can see that the correct factor pair is 9 and -11. So we will use these numbers to factor $k^2 – 2k^2 - 99 = 0$.

$k^2 – 2k^2 - 99 = 0$

$(k + 9) (k – 11)$

Step 4) And we know that the Zero Product Property states that for all real numbers a and b:

If $ab = 0$, then $a = 0$ or $b = 0$

According to the Zero Product Property, if $(k + 9) (k – 11) = 0$, then $k + 9$ must be 0 or $k – 11$ must be 0. Now we will write two equations and solve k.

$K+ 9 = 0$ or $k – 11 = 0$

$K = -9$ or $k = 11$