Virtual Learning

Essential Math 4

Unit 10 Lesson 6: Solving by Factoring

April 30, 2020

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Lesson 6: April 30, 2020

Learning Target:
I can solve algebraic equations by factoring.

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You will explore the use of area models to factor algebraic expressions and solve for the zeros.

Directions:

1. Click through the slides.
2. Watch all videos on slides.
3. Do what each slide asks on a separate sheet of paper.

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Algebraic Habits of Mind: Seeking and Using Structure

Factoring can help solve equations. If we know $x^2 - 8x - 33 = 0$ and we factor: $x^2 - 8x - 33 = (x - 11)(x + 3)$, we can write $(x - 11)(x + 3) = 0$ instead. Since either $x - 11 = 0$ or $x + 3 = 0$, we know $x = 11$ and $x = -3$ are solutions.

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Bell Work
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Complete the area model:

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	x^2	$2x$
	$10x$	20

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Bell Work Key
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⑧

	x	2
x	x^2	$2x$
10	$10x$	20

$$\frac{x^2+12x+20}{x+2} = x+10$$

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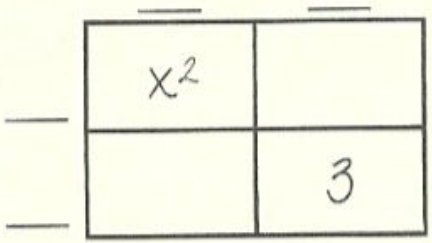
Practice Problems: Unit 10 Lesson 6 page 30, 9-10

Solve each equation. You will need to factor.

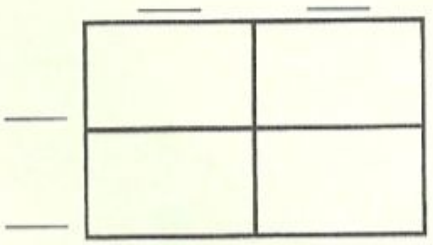
(9) $x^2 + 4x + 3 = 0$



( )( ) = 0

$x =$ _____ or _____

(10) $w^2 - 11w + 30 = 0$



( )( ) = 0

$w =$ _____ or _____

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Answer Key:

Once you have completed the problems, check your answers for page 30 here.

Solve each equation. You will need to factor.

(9) $x^2 + 4x + 3 = 0$

	x	3
x	x^2	3x
1	x	3

Factor Pairs of 3	Sum
1, 3	4
-1, -3	-4

$(x + 3)(x + 1) = 0$

$x =$ -3 or -1

(10) $w^2 - 11w + 30 = 0$

	w	-6
w	w^2	-6w
-5	-5w	30

$(w - 6)(w - 5) = 0$

$w =$ 6 or 5

Factor Pairs of 30	Sum
1, 30	31
-1, -30	-31
2, 15	17
-2, -15	-17
3, 10	13
-3, -10	-13
5, 6	11
-5, -6	-11

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Practice Problems:
Unit 10
Lesson 6
page 30, 11-12

(11) $j^2 + 6j - 7 = 0$

$j =$ _____ or _____

(12) $p^2 + 5p - 24 = 0$

$p =$ _____ or _____

Answer Key:

Once you have completed the problems, check your answers for page 30 here.

(11) $j^2 + 6j - 7 = 0$

	j	7
j	j^2	$7j$
-1	$-j$	-7

Factor Pairs of -7	Sum
1, -7	-6
-1, 7	6

$(j + 7)(j - 1) = 0$

$j =$ -7 or 1

(12) $p^2 + 5p - 24 = 0$

	p	8
p	p^2	$8p$
-3	$-3p$	-24

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

$p =$ -8 or 3

Factor Pairs of -24	Sum
-1, 24	23
1, -24	-23
-2, 12	10
2, -12	-10
-3, 8	5
3, -8	-5
-4, 6	2
4, -6	-2

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Practice Problems:
Unit 10
Lesson 6
page 30, 13-14

(13) $n^2 + 7n + 10 = 0$

$n =$ _____ or _____

(14) $s^2 + 6s + 9 = 0$

$s =$ _____ or _____

Answer Key:

Once you have completed the problems, check your answers for page 30 here.

13 $n^2 + 7n + 10 = 0$

	n	2
n	n^2	2n
5	5n	10

Factor Pairs of 10	Sum
1, 10	11
-1, -10	-11
2, 5	7
-2, -5	-7

$(n + 2)(n + 5) = 0$

$n =$ -2 or -5

14 $s^2 + 6s + 9 = 0$

	s	3
s	s^2	3s
3	3s	3

Factor Pairs of 9	Sum
1, 9	10
-1, -9	-10
3, 3	6
-3, -3	-6

$(s + 3)(s + 3) = 0$

$s =$ -3 or -3

Sometimes both solutions can have the same value.

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Just for fun!

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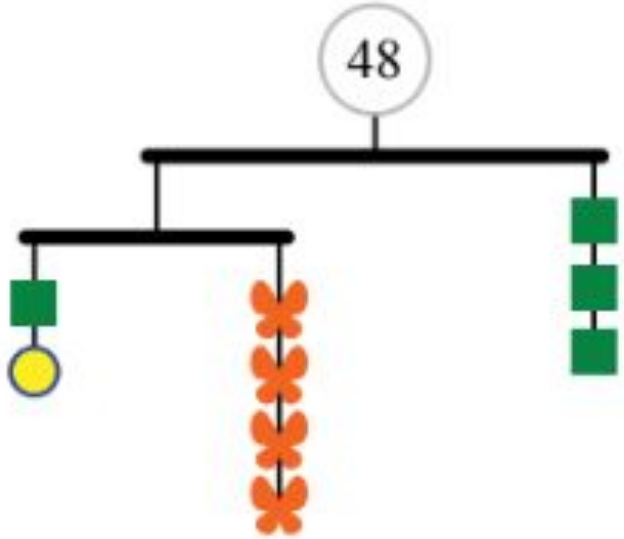

= _____ = _____ = _____

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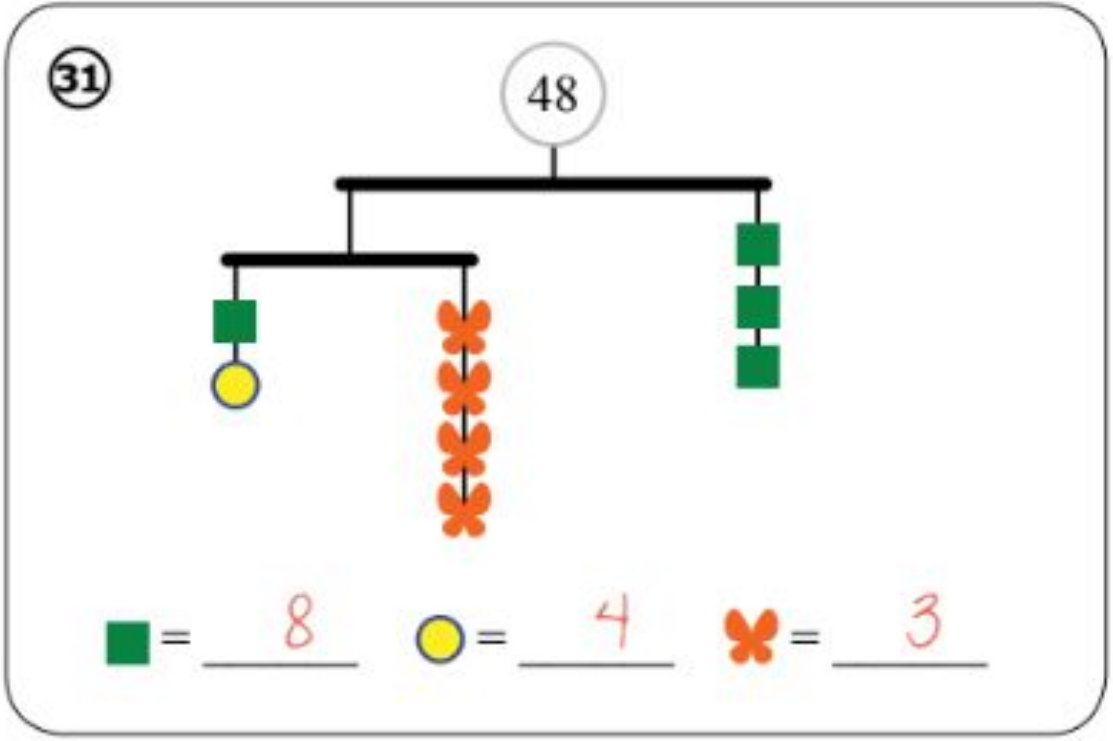
Just for fun!

Key



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