

$$4x^2 - 3x - 1$$

$A \times C = -4$	$B = -3$	works?
-4 and 1	-3	✓

# Polynomials

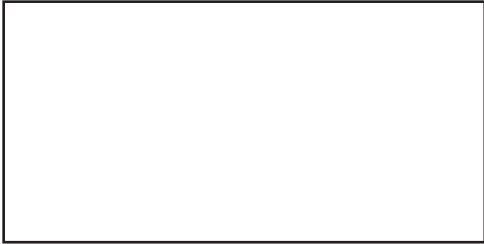
## LESSON THREE - *Factoring Trinomials*

### Lesson Notes

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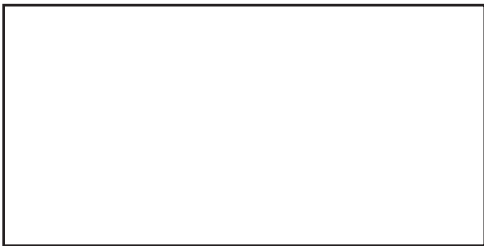
#### Introduction

a) Multiply 23 and 46 using an area model.



d) What generalizations can be made by comparing the area model from part b with the tile grid in part c?

b) Expand  $(x + 1)(3x - 2)$  using an area model.



e) Factor  $3x^2 + x - 2$  using algebra tiles.



c) Expand  $(x + 1)(3x - 2)$  using algebra tiles.



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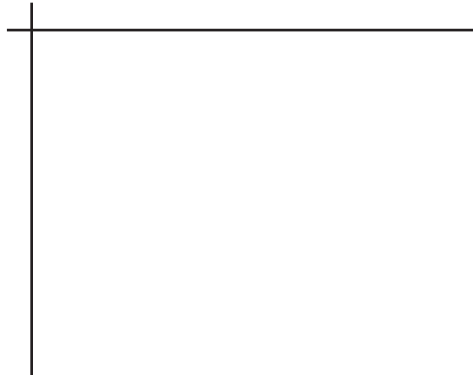
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#### Example 1

If possible, factor each trinomial using algebra tiles.



a)  $2x^2 + 7x + 6$



b)  $2x^2 + 3x - 9$



c)  $x^2 - 8x + 4$



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### Example 2

If possible, factor each trinomial using decomposition.

*Note: In this example, we are factoring the trinomials from Example 1 algebraically.*

a)  $2x^2 + 7x + 6$

$A \times C =$ <input type="text"/>	$B =$ <input type="text"/>	works?

b)  $2x^2 + 3x - 9$

$A \times C =$ <input type="text"/>	$B =$ <input type="text"/>	works?

c)  $x^2 - 8x + 4$

$A \times C =$ <input type="text"/>	$B =$ <input type="text"/>	works?

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### Example 3

Factor each trinomial using the indicated method.

a)  $x^2 - 8x + 12$

$A \times C =$ <input type="text"/>	$B =$ <input type="text"/>	works?

i) shortcut

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ii) decomposition

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b)  $x^2 - x - 20$

$A \times C =$ <input type="text"/>	$B =$ <input type="text"/>	works?

i) shortcut

--

ii) decomposition

--

$$4x^2 - 3x - 1$$

$A \times C = -4$	$B = -3$	works?
-4 and 1	-3	✓

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#### Example 4

Factor each trinomial using the indicated method.

a)  $6a - 4a^2 - 2a^3$

$A \times C =$ <input type="text"/>	$B =$ <input type="text"/>	works?

i) shortcut

ii) decomposition

b)  $x^2y^2 - 5xy + 6$

$A \times C =$ <input type="text"/>	$B =$ <input type="text"/>	works?

i) shortcut

ii) decomposition

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$$4x^2 - 3x - 1$$

$A \times C = -4$	$B = -3$	works?
-4 and 1	-3	✓

#### Example 5

Factor each trinomial using decomposition.

a)  $10a^2 - 17a + 3$

b)  $24x^2 - 72x + 54$

$$4x^2 - 3x - 1$$

$A \times C = -4$	$B = -3$	works?
-4 and 1	-3	✓

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#### Example 6

Factor each trinomial using decomposition.

a)  $12 + 21x - 6x^2$

b)  $8a^2 - 10ab - 12b^2$

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$A \times C = -4$	$B = -3$	works?
-4 and 1	-3	✓

#### Example 7

Find up to three integers that can be used to replace  $k$  so each trinomial can be factored.

a)  $3x^2 + kx - 10$

b)  $x^2 + 4x + k$

c)  $3x^2 - 8x + k$



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### Example 8

Factor each expression to find the dimensions.

a) rectangle

$$A = 2x^2 + 3x - 9$$

b) rectangular prism

$$V = 4x^3 - 40x^2 + 36x$$