## Unit 7 Lesson 6: Rewriting Quadratic Expressions in Factored Form (Part 1)

### 1 Puzzles of Rectangles (Warm up)

#### Student Task Statement

Here are two puzzles that involve side lengths and areas of rectangles. Can you find the missing area in Figure A and the missing length in Figure B? Be prepared to explain your reasoning.

Figure A



​​​​​​

Figure B



### 2 Using Diagrams to Understand Equivalent Expressions

#### Student Task Statement

1. Use a diagram to show that each pair of expressions is equivalent.
* $x(x+3)$ and $x^{2}+3x$
* $x(x+-6)$ and $x^{2}−6x$
* $(x+2)(x+4)$ and $x^{2}+6x+8$
* $(x+4)(x+10)$ and $x^{2}+14x+40$
* $(x+-5)(x+-1)$ and $x^{2}−6x+5$
* $(x−1)(x−7)$ and $x^{2}−8x+7$
1. Observe the pairs of expressions that involve the product of two sums or two differences. How is each expression in factored form related to the equivalent expression in standard form?

### 3 Let’s Rewrite Some Expressions!

#### Student Task Statement

Each row in the table contains a pair of equivalent expressions.

Complete the table with the missing expressions. If you get stuck, consider drawing a diagram.

|  |  |
| --- | --- |
| factored form | standard form |
| $x(x+7)$ |  |
|  | $x^{2}+9x$ |
|  | $x^{2}−8x$ |
| $(x+6)(x+2)$ |  |
|  | $x^{2}+13x+12$ |
| $(x−6)(x−2)$ |  |
|  | $x^{2}−7x+12$ |
|  | $x^{2}+6x+9$ |
|  | $x^{2}+10x+9$ |
|  | $x^{2}−10x+9$ |
|  | $x^{2}−6x+9$ |
|  | $x^{2}+(m+n)x+mn$ |



© CC BY 2019 by Illustrative Mathematics®