Lesson 8: Multiplying Expressions

- Let's explore multiplication strategies.

8.1: Math Talk: Combining the Similar Numbers

Evaluate mentally.

$100 \cdot 100$

$\text{-}3 \cdot 3$

$\text{-}300 + 300$

$1{,}279 + \text{-}1{,}279$

8.2: A Method for Multiplying

Here is a method for multiplying 97 and 103:

97 is $100 - 3$

103 is $100 + 3$

So $97 \cdot 103 = (100 - 3)(100 + 3)$

	100	-3
100	10,000	-300
3	300	-9

1. Explain how this diagram is used to compute $97 \cdot 103 = 9{,}991$.

2. Draw a similar diagram that helps you mentally compute $(30 + 1)(30 - 1)$. What is the result? What multiplication problem did you just solve?

3. Use this method to compute:
   a. $7 \cdot 13$

   b. $102 \cdot 98$

   c. $995 \cdot 1,005$

4. Create a challenge problem for your partner, that could use this method. Create a diagram that shows the answer before giving the problem to your partner.

8.3: Find the Missing Pieces

Complete each diagram. Write some equivalent expressions based on the diagram.

1.

	10	5
10	100	
		45

2.

		7
10		
-7	-70	

3.

	x	8
x		
-8		

4.

	a	-9
		$-9a$
9		

5.

	b	$\frac{1}{2}$
b	b^2	
		$-\frac{1}{4}$

6.

	7	
c		$-c^2$
7	49	