

PART I GET STARTED**Today's Mathematics**

We will distribute multiplication and combine like terms.

Essential Question

How can splitting a quantity help us multiply and simplify?

DO NOW

1. Simplify $4 + (n + 6)$.

2. Simplify $5(3x)$.

3. Find 7×20 mentally.

SEE IT

Find 6×23 by splitting 23 into 20 and 3. Record both partial products.

QUICK WRITE — 2 MINUTES

Why must the factor outside parentheses multiply every term inside?

PART II INVESTIGATE

BUILD AND COMPARE

A rectangle is 4 units tall. Split its width into two parts. Calculate the area two ways.

Width split	Sum of small areas	One large area
$5 + 2$		
$8 + 3$		
$10 + 6$		
$x + 3$		

1. What stays the same when the large rectangle is split?

2. Use the same idea to find 5×39 by writing $39 = 40 - 1$.

3. A student writes $3(x + 4) = 3x + 4$. Correct the expression and explain.

PART III MAKE SENSE AND PRACTICE**WHAT WE CAN CONCLUDE**

The Distributive Property gives $a(b + c) = ab + ac$ and $a(b - c) = ab - ac$. Like terms have the same variables with the same exponents. Combine like terms by adding or subtracting coefficients; keep constants together.

WORKED MODEL

$2(x + 5) + 3x = 2x + 10 + 3x = 5x + 10$. Distribute first, then combine like terms. The terms x and x^2 are not like terms.

MUST DO

1. Find 4×29 using $29 = 30 - 1$.

2. Expand $5(x + 3)$.

3. Expand $6(8 - y)$.

4. Simplify $3n + 7 + 2n$.

5. Simplify $2(p + 4) + 3p - 1$.

READY FOR MORE

A rectangle is 5 cm wide and $(x + 2)$ cm long. Write and simplify its area and perimeter.

PART IV PUZZLE PRACTICE

Homework — Crack the code

Simplify each expression. Match to the letter bank. Record the letters in problem order.

No.	Problem	Work and result
1	$2(x + 3)$	
2	$3(x + 4)$	
3	$4(x - 2)$	
4	$5(6 - x)$	
5	$2x + 3x$	
6	$3(x + 2) + x$	
7	$7x - 2x + 1$	
8	$2(x + 5) - 3$	

LETTER BANK

Letter	Expression	Letter	Expression
S	$2x + 6$	P	$3x + 12$
L	$4x - 8$	I	$30 - 5x$
T	$5x$	N	$4x + 6$
O	$5x + 1$	W	$2x + 7$

DECODE

1	2	3	4	5	6	7	8