

Key Ideas/Vocabulary:

1) **Like Terms**

- ❖ Terms that have the same variables raised to the same exponents
- ❖ Include constant terms (a term w/o variables), too

Like Terms	Unlike Terms
3 and -4	x and 5
-2x and 7x	2x and -6y

2) **Simplest Form**

- ❖ An algebraic expression that have no like terms and parentheses.

3) **Distributive Property**

- ❖ To multiply a sum or difference by a number, multiply each number in the sum or difference by the number on the outside of the parentheses.

The Meaning of a Word ● **Distribute**

When you **distribute** something to each person in a group. you give that thing to each person in the group.

4)	Commutative Property The order in which numbers are added or multiplied does not change the sum or product. Examples	$6 + 7 = 7 + 6$ $3 \cdot 8 = 8 \cdot 3$	$a + b = b + a$ $a \cdot b = b \cdot a$
5)	Associative Property The way in which numbers are grouped when added or multiplied does not change the sum or product. Examples	$(2 + 7) + 4 = 2 + (7 + 4)$ $(3 \cdot 4) \cdot 5 = 3 \cdot (4 \cdot 5)$	$(a + b) + c = a + (b + c)$ $(a \cdot b) \cdot c = a \cdot (b \cdot c)$
6)	Inverse Property of Addition says that any number added to its opposite will equal zero.		$a + (-a) = (-a) + a = 0$ $5 + (-5) = -5 + 5 = 0$ $-3 + 3 = 0$
7)	Inverse Property of Multiplication says that any number multiplied by its reciprocal is equal to one.		$a \cdot \frac{1}{a} = \frac{1}{a} \cdot a = 1$ $\frac{5}{1} \cdot \frac{1}{5} = \frac{5}{5} = 1$ $\frac{1}{-3} \cdot -3 = 1$
8)	Multiplicative Identity The product of any number and 1 is the number. Examples	$3 \cdot 1 = 3$	$a \cdot 1 = a$
9)	Additive Identity The sum of any number and 0 is the number. Examples	$7 + 0 = 7$	$a + 0 = a$

27. How can you manipulate division to be multiplication? Show by solving this expression $15 \div \frac{3}{7}$

28. How can you manipulate subtraction to be addition? For instance, $7 - 4$ is the same as 7 plus what?

Simplify by combining like terms.	
29. $9x - 2 + 7 - x$	30. $6 + 5z - 3z + z$

Making Compatible Numbers

Frequently, taking a large number and breaking it down into parts, then using the distributive property will aid computations.

Use mental math to solve with the distributive property.		
31. 9×19	32. $5(94)$	33. $3(10.5)$
34. $7(112)$	35. $8(3.9)$	36. $6(354)$
37. $\left(4\frac{2}{3}\right)6$	38. If you buy 7 packs of socks at \$5.60, how much will it cost?	

Simplify the expression by distributing.		
39. $4(x+6)$	40. $3(-8+7p)$	41. $7(3x-4)$
42. $\frac{3}{4}\left(-2n+\frac{5}{6}\right)$	43. $-10(-9+7n)$	44. $-\frac{1}{2}\left(a+\frac{2}{3}\right)$

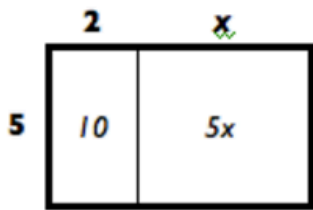
45. **Distribution** is simply repeated addition. Solve $4(3x-2)$ in two ways.

Method 1:
Adding up $3x-2$ four times.

Method 2:
Multiplying the 4 to each term in the parenthesis.

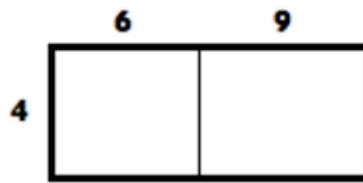
46.

Write the **area** of each **dark-bordered** rectangle in two ways. *The first is done as an example.*



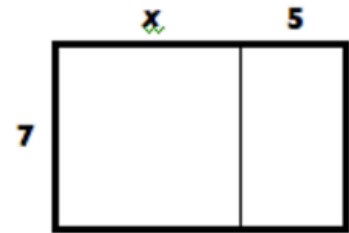
Product of sides: $5(2 + x)$

Sum of areas: $10 + 5x$



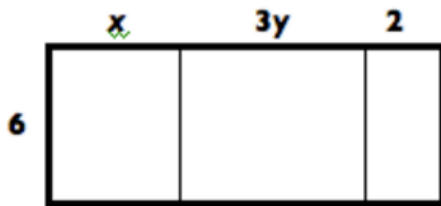
Product of sides:

Sum of areas:



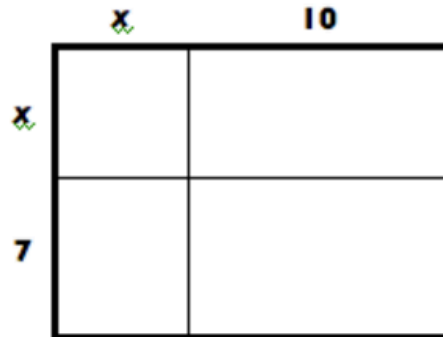
Product of sides:

Sum of areas:



Product of sides:

Sum of areas:



Product of sides:

Sum of areas:

Use mental math to solve with the distributive property.		
47. $\frac{352}{2}$	48. $\frac{764}{5}$	49. $\frac{80x-12}{4}$
50. $\frac{-72x+24}{-36}$	51. $\frac{12x-5}{-3}$	
Simplify the expression.		
52. $-7 + 2(-n - 4)$	53. $-3(x + 4) - 3x$	54. $9(-4v - 3) - 3v$
55. $4(2x + 15y) - 3(x - 4y)$		56. $-2(x - 11y + 5) + 6(2x - 4 + y)$