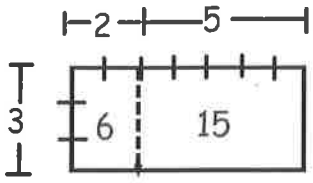
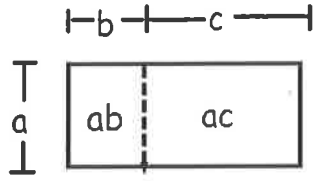
Draw a diagram to represent 3(2+5).



- 3(2+5)
- 3(2) +3(5)
- 6+15
- 21

Draw a diagram to represent a(b+c).



- a(b+c)
- ab+ac

- These diagrams help us understand the distributive property.

How do we use the distributive property to simplify expressions?

a(b + c)	a(b - c)
ab + ac	ab - ac
(b + c)a	(b - c)a
ab + ac	ab - ac

Simplify each expression.

Ex 1: $3(x-5)$

1. $3(x)-3(5)$

$3x-15$

$3x+(-15)$

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

$3(x)+3(-5)$

$3x+(-15)$

Ex 2: $(-3-5x)8$

$(-3+(-5x))8$

$(-3)(8)+(-5x)(8)$

$-24+(-40x)$

$-40x+(-24)$

☆ Standard form of an expression puts the variable term first. Use alphabetical order if there is more than one variable.

Ex 3: $-4(3x-12)$

$-4(3x+(-12))$

$-4(3x)+(-4)(-12)$

$-12x+48$

$-4(3x)-(-4)12$

$-12x-(-48)$

$-12x+48$

Rewrite all "double negatives". ☆

Ex 4: $-2x(3-5x)$

$-2x(3+(-5x))$

$-2x(3)+(-2x)(-5x)$

$-6x+10x^2$

$10x^2+(-6x)$

☆ Standard form is also in descending order.

Combining Like Terms

Like Terms:⟶ Same variable(s) with the same exponent(s)

Coefficient:⟶ The constant that is multiplied with the variable(s)

Like Terms	Not Like Terms
$4a, 12a, -7a$	$x, 2x^2, 3x^3$
$3xy^2, -10xy^2, xy^2$	yz, y^3z
$mn^5, -mn^5, 2mn^5$	abc, abe
$7, 6, -13.2$	$4x, 4x^4$

Name the coefficient of each term.

Ex 1: $2x$

Coef: 2

Ex 2: $-3y^2$

Coef: -3

Ex 3: $\frac{1}{3}xy$

Coeff: $\frac{1}{3}$

Ex 4: $-m$

Coef: -1

Ex 5: $\frac{2x}{5}$

$2x \div 5$

$\frac{2x}{1}\left(\frac{1}{5}\right)$

$\frac{2}{5}x$

Coef: $\frac{2}{5}$

To combine like terms, add their coefficients.

Simplify each expression.

Ex 1: $3x+4-8x+9$

$3x+4+(-8x)+9$

$-5x+13$

Ex 2: $-2(x-5)+6x(2-x)$

$-2(x+(-5))+6x(2+(-x))$

$-2(x)+(-2)(-5)+6x(2)+6x(-x)$

$-2x+10+12x+(-6x^2)$

$-6x^2+10x+10$

More Applications of the Distributive Property

Ex 3: $\dfrac{4x+12}{2}$

$\frac{4x}{2}+\frac{12}{2}$

$2x+6$

why? $\frac{1}{2}(4x+12)$

$\frac{1}{2}(4x)+\frac{1}{2}(12)$

$2x+6$

Ex 4: $\dfrac{30-9x}{-3}$

$\frac{30+(-9x)}{-3}$

$\frac{30}{-3}+\frac{(-9x)}{-3}$

$-10+3x$

$3x+(-10)$

Ex 5: $8x(x-3)-2(x-5)$ ☆

Change subtraction to adding the opposite first!

$8x(x+(-3))+(-2)(x+(-5))$

$8x(x)+8x(-3)+(-2)(x)+(-2)(-5)$

$8x^2+(-24x)+(-2x)+10$

$8x^2+(-26x)+10$

Homework

Finish the Distributive Property Worksheet #1

Assignment #7

Part I:

p. 99 #9-19 odd, 21-26 (only simplify by combining like terms), 31-41

Part II: p. 106 #33-41 odd