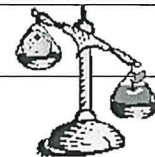


## COMBINING LIKE TERMS



*“You can’t compare apples to oranges.”*

**Examples:**

1. 2 apples + 3 apples

= 5 apples

2. 14 oranges + 7 oranges – 5 oranges

= 16 oranges

3. 8 apples + 6 oranges + 4 apples + 10 oranges

= 12 apples + 16 oranges

4. 8a + 6g + 4a + 10g

= 12a + 16g

**A Typical TERM:**

$\boxed{-8} \boxed{x}$   
 numerical coefficient      variable

**Remember:**



1. LIKE TERMS have the same variable (s) and exponent (s)

2. The NUMERICAL COEFFICIENT may be different between like terms

3. We care about like terms because you CAN only combine LIKE TERMS!!

**Circle the LIKE TERMS:**

Example 1:     $\textcircled{7x}$      $-5y$      $\textcircled{4x}$      $9x^2$      $-3xy$      $11$      $x^3$

Example 2:     $2y$      $\textcircled{4xy}$      $-9y^2$      $8$      $x^4$      $\textcircled{7xy}$      $x$

**Examples:**

1.  $7a + 1a = 8a$

2.  $9p - 1p = 8p$

3.  $7x - 10y - 3x - (-6y)$

= 7x - 10y - 3x + 6y

=  $4x - 4y$

4.  $9x^2$  -  $1xy$  +  $11y$  -  $6x^2$  +  $8xy$  +  $9y$

=  $3x^2 + 7xy + 10y$

## COLLECT LIKE TERMS AND SIMPLIFY

$\begin{aligned} -3x+9x \\ = 6x \end{aligned}$	$\begin{aligned} 2y-10y \\ = -8y \end{aligned}$	$\begin{aligned} -6xy+xy \\ = -5xy \end{aligned}$	$\begin{aligned} 12y-y+3 \\ = 11y+3 \end{aligned}$
$\begin{aligned} -2y+7y+4 \\ = 5y+4 \end{aligned}$	$\begin{aligned} 5x+7+x-9x \\ = -3x+7 \end{aligned}$	$\begin{aligned} -8y-2y-4-4y \\ = -14y-4 \end{aligned}$	$\begin{aligned} 8y-(-8y)+4x \\ = 8y+8y+4x \\ = 16y+4x \end{aligned}$
$\begin{aligned} 4x+2y+4x-5y \\ = 8x-3y \end{aligned}$	$\begin{aligned} 9-3x-(-8y)+9x-y \\ = 9-3x+8y+9x-y \\ = 6x+7y+9 \end{aligned}$	$\begin{aligned} xy+2x+3xy-2y \\ = 2x+4xy-2y \end{aligned}$	$\begin{aligned} -x^2+7-7x+2x^2-3x-1 \\ = x^2-10x+6 \end{aligned}$

# EXPANDING

**Examples:**

1. double 7

$$\begin{aligned} &= 2(7) \\ &= 14 \end{aligned}$$

2. double  $(5x + 3)$

$$\begin{aligned} &= 2(5x+3) \\ &= 10x+6 \end{aligned}$$

3.  $2(7x - 5)$

$$= 14x - 10$$

When EXPANDING, use the **DISTRIBUTIVE PROPERTY** – the RAINBOW RULE

\*\*Multiply EACH TERM inside the bracket by the TERM outside the bracket\*\*

4.  $3(5xy - 2x)$

$$= 15xy - 6x$$

5.  $4(3x - 5) + 6(9x + 2)$

$$\begin{aligned} &= 12x - 20 + 54x + 12 \\ &= 66x - 8 \end{aligned}$$

6.  $8(4 - p) - 3(2p + 5)$

$$\begin{aligned} &= 32 - 8p - 6p - 15 \\ &= -14p + 17 \end{aligned}$$