

SOLVING EQUATIONS (MULTISTEP)

● WHAT TO LOOK FOR "HOW TO START"

- ① DISTRIBUTE
- ② ADD LIKE TERMS ON SAME SIDE (NO OPPOSITE OPERATIONS)
- ③ MOVE VARIABLES ACROSS THE EQUAL (YES OPPOSITE IF YOU MOVE ACROSS THE EQUAL SIGN)
- ④ SOLVE!

EXAMPLE 1

$$-7(x-6)+7=105$$

$$-7x+42+7=105$$

$$-7x+49=105$$

$$-49 \quad -49$$

$$\begin{array}{r} -7x = 56 \\ -7 \quad -7 \end{array}$$

$$x = -8$$

① DISTRIBUTE

② COMBINE LIKE TERMS. THE NUMBERS ARE ON THE SAME SIDE OF THE EQUAL SIGN

SO ADD LIKE NORMAL! NO OPPOSITES

③ NOW SOLVE! (SUBTRACT AND DIVIDE)

EXAMPLE 2

$$-8x+5(7x+3)=271-5x \quad \text{① DISTRIBUTE!}$$

$$-8x+35x+15=271-5x \quad \text{② LIKE TERMS ON SAME SIDE}$$

$$\begin{array}{r} 27x+15=271-5x \\ +5x \quad \quad +5x \end{array} \quad \text{③ COMBINE X TERMS (MOVE ACROSS EQUAL SIGN SO OPPOSITE!)}$$

$$\begin{array}{r} 32x+15=271 \\ -15 \quad -15 \end{array}$$

④ SOLVE!

$$\begin{array}{r} 32x = 256 \\ 32 \quad 32 \end{array}$$

$$x = 8$$

EXAMPLE 3

$$11 = 3x + 4 - 5x + 3x + 6 \quad \textcircled{1} \text{ 2 SETS OF LIKE TERMS!}$$

$$11 = \underbrace{3x - 5x + 3x} + \underbrace{4 + 6}$$

$3 - 5 + 3 = 1$ $4 + 6 = 10$

$$11 = x + 10$$

-10 -10

② SOLVE!

$$1 = x$$

EXAMPLE 4

$$4x + 5(7x - 3) = 9(x - 5)$$

① DISTRIBUTE ON BOTH SIDES!

$$4x + 35x - 15 = 9x - 45$$

② COMBINE LIKE TERMS ON SAME SIDE

$$39x - 15 = 9x - 45$$

③ MOVE VARIABLE ACROSS THE EQUAL SIGN

$$-9x \quad -9x$$

$$30x - 15 = -45$$

④ SOLVE!

$$+15 \quad +15$$

$$\frac{30x}{30} = \frac{-30}{30}$$

$$x = -1$$