

LESSON 2-5

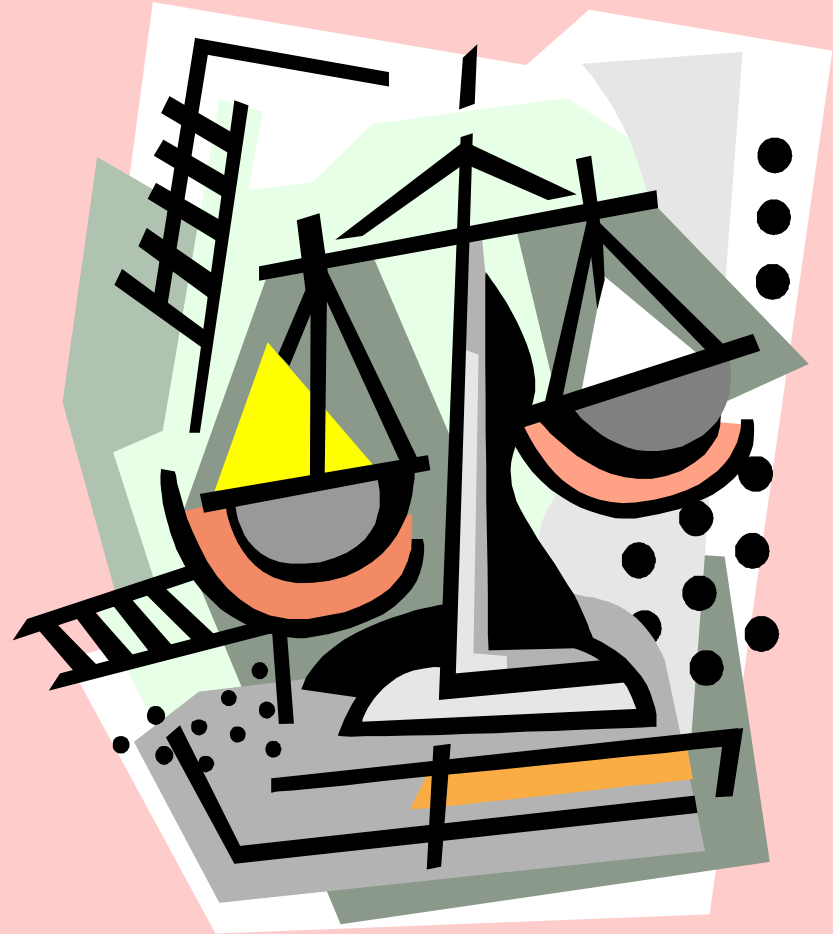
SOLVING EQUATIONS

BY ADDING OR SUBTRACTING

- When you solve an equation, your goal is to get the variable alone on one side of the equal sign. The value on the other side tells you the solution of the original equation.
- You use inverse operations, which undo each other, to get the variable alone.
- Inverse operations:
 - Addition and subtraction are inverse operations

One way to model and solve an equation is to think of a balance scale

- Whatever you do to **one side** of a scale you must also do to the **other side** so that the scale stays in **balance**.
- The same is true for an equation.



Properties of Equality

- **Subtraction Property of Equality:** You can subtract the same number from each side of an addition equation to solve it.

$$\begin{array}{r} x + 5 = 24 \\ -5 \quad -5 \\ \hline \end{array}$$

- **Addition Property of Equality:** You can add the same number to each side of a subtraction equation to solve it.

$$\begin{array}{r} y - 7 = 23 \\ +7 \quad +7 \\ \hline \end{array}$$

Addition Equations

- Addition Equation

- Use **inverse operation** to solve:
- subtraction

$$\begin{array}{r} n + \cancel{17} = 98 \\ \quad \cancel{-17} \quad -17 \\ \hline \boxed{n = 81} \end{array}$$

subtract 17 from both sides
solution

$$81 + 17 = 98$$

check answer

Subtraction Equations

- Subtraction Equation
- Use inverse operation to solve:
 - addition

$$x - \cancel{61} = 78$$

$$\begin{array}{r} + \cancel{61} \quad + 61 \\ \hline \end{array}$$

$$x = 139$$

$$139 - 61 = 78$$

add 61 to both sides

solution

check solution