Solving One-Step EQUATIONS – Addition/Subtraction

- An equation is a math sentence that **DOES** contain an _____ .

- The goal of solving an equation is to **<u>find the value of the variable.</u>**

  o We do this by **<u>isolating</u>** the variable on one side of the equation using **<u>Inverse Operations!</u>**

    ▪ **<u>Inverse operations</u>** "undo" each other!

      Inverse of addition?   _____

      Inverse of subtraction?   _____

      Inverse of multiplication?   _____

      Inverse of division?   _____

<u>Examples</u>:

John has x apples. If he adds 5 apples to his pile, he will have 8 apples.
What is the value of x?

Write an equation: $x + 5 = 8$
$- 5 = -5$
_____
$\mathbf{x = 3}$

Answer: John had 3 apples before he added to his pile.

Check: $3 + 5 = 8$

Maddie has *x* dollars. After spending $90 on a purse, she will have $45. What is the value of *x*?

Write an equation: $x - 90 = 45$
$+ 90 = +90$
_____
$\mathbf{x = 135}$

Answer: Maddie had $135 before she bought the purse.

Check: $135 - 90 = 45$

<u>Let's Practice!</u>

1. $x + 2 = 10$

    ☐ ☐
    _____
    $x + 0 = $ ☐

Check:

2. $y - 8 = 15$

    ☐ ☐
    _____
    $y - 0 = $ ☐

Check:

3. $a + 9 = 2$

    ☐ ☐
    _____
    $a + 0 = $ ☐

Check:

Solving One-Step Equations – Multiplication & Division (SOL 6.18 & 7.14)

- **Remember**: The **GOAL** of solving equations: _____

  o   To do this you need to _____ the variable, using _____

State the <u>INVERSE OPERATIONS</u>

o   Add 23   _____

o   Subtract 18   _____

o   **Multiply by –15** _____

o   **Divide by 8**   _____

Example 1:   Solve 8x = 56.

Solution:

$8x = 56$

$\dfrac{8x}{\Box} = \dfrac{56}{\Box}$

$x = $ _____

Where is the variable?
What is done to it?
How can I undo that?
Apply to both sides.
Solve/Simplify

Example 2:   Solve $\dfrac{a}{5} = 12$

Solution:

$\dfrac{a}{5} = 12$

$\boxed{} \bullet \dfrac{a}{5} = 12 \bullet \boxed{}$

$a = $ _____

Check:

$8x = 56$

$8(\underline{}) \overset{?}{=} 56$

_____ $= 56\checkmark$

Write original equation.
Substitute for variable.
Is it true?

Check:

$\dfrac{a}{5} = 12$

$\dfrac{()}{5} = 12$

_____ $= 12$

Solve each equation. Check your answer by plugging it back in. Use INVERSE operations!

4 + m = 12	g + 24 = 52	k + 13.02 = 27.6
r − 6 = 22	26 = 8 + v	n − 9 = 16
x − 8 = 24	27 = 3b	$w + 7\frac{1}{3} = 13\frac{5}{6}$
$25 = \frac{x}{5}$	c − 3 = 4	5z = 15
95 = e + 36	143 = n − 27	$4 = \frac{a}{12}$
$\frac{t}{5} = 25$	7m=28	$\frac{m}{6} = 7$

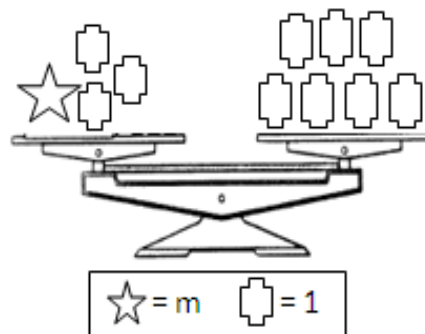**Select the equation that best represents each model below.**

☆ = m   ▢ = 1
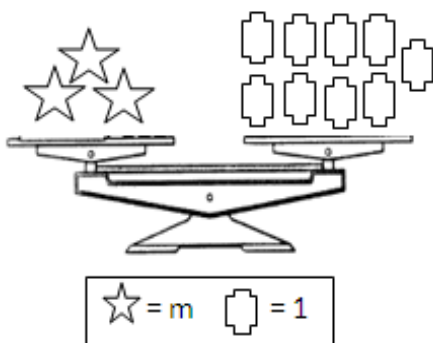
A) 3 + m = 9

B) 3 + 3m = 9

C) 3m = 9

D) 3 - m = 9

☆ = m   ▢ = 1

A) 3m = 7

B) 3 + 3m = 10

C) 3m + 3 = 7

D) 3 + m = 7