Unit 1

Lesson 1

Equation Basics

Essential Question: How can you check the solution to an equation? Answer on your response card.

To solve an equation, means to find the value of the variable that makes the equation true. The process for solving an equation involves isolating the variable.

Step 1: Use the distributive property to remove any parenthesis.

Step 2: Simplify the expression on each side of the equal sign.

Step 3: Use addition or subtraction to get the variable on one side and the constant on the other side.

Step 4: Use multiplication or division to solve.

Solve each equation. Check your solution.

1. $5x + 2 = 27$

$-2 \quad -2$

$\frac{5x}{5} = \frac{25}{5}$

$x = 5$

$\checkmark: 5(5) + 2 = 27$

$25 + 2 = 27$

$27 = 27$

2. $3x + 3x + 4 + 5 = 27$

$6x + 9 = 27$

$-9 \quad -9$

$\frac{6x}{6} = \frac{18}{6}$

$x = 3$

3. $3(x + 1) + 6 = -9$

$3x + 3 + 6 = -9$

$3x + 9 = -9$

$-9 \quad -9$

$\frac{3x}{3} = \frac{-18}{3}$

$x = -6$

4. $\frac{7}{8}p - 4 = 10$

$+4 \quad +4$

$8 \cdot \frac{7}{8}p = 14 \cdot 8$

$\frac{7p}{7} = \frac{112}{7}$

$p = 16$

$14 \times 8 = 112$

$7 \overline{)112}$ 16, $7 \downarrow$, 42

5. $8 = -12 + \frac{k}{-4}$

$+12 \quad +12$

$(-4)20 = \frac{k}{-4}(-4)$

$-80 = k$

When solving word problems, it's helpful to identify a variable **and then write and solve your equation.**

1. A number is divided by 3, and then 4 is added to the quotient. The result is 8. Find the number.

$\frac{x}{3} + 4 = 8$

$-4 \quad -4$

$3 \cdot \frac{x}{3} = 4 \cdot 3$

$x = 12$

x

2. **TEMPERATURE** The formula for converting a Fahrenheit temperature to a Celsius temperature is $C = \frac{F - 32^\circ}{1.8}$. Find the equivalent Fahrenheit temperature for 30°C.

C

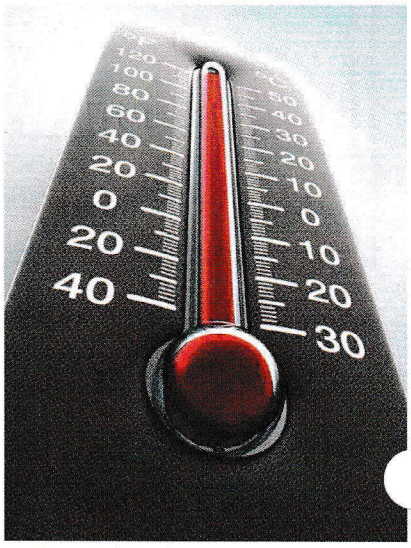
$1.8 \cdot 30 = \frac{F - 32}{1.8} \cdot 1.8$

30
· 1.8
240
300
54.0

$54 = F - 32$

$+32 \quad +32$

$86^\circ = F$



Practice STAAR Question

Which of the equation(s) below are true when $n = -4$?

- $-4n + 6 = 22$ ✓
- $3n - 15 = -3$
- $-6n + 1 = -9$
- $\frac{n}{-2} - 8 = 6$
- $3 - n = 7$ ✓