SOLVING EQUATIONS

A DEFINITIONS

Definition Solving an Equation

Solving an equation involves finding the values of the variable, called **solutions**, that make the equation true.
In this context, the variable is called the **unknown**.
We often use the letter x to represent the unknown.

Ex: Show that a solution of $3 + x = 5$ is $x = 2$.

Answer: For $x = 2$:

$$\begin{aligned} 3 + (2) &= 5 && \text{(substituting)} \\ 5 &= 5 && \text{(True)} \end{aligned}$$

Ex: Show that $x = 1$ is **not** a solution of $3 + x = 5$.

Answer: For $x = 1$:

$$\begin{aligned} 3 + (1) &= 5 && \text{(substituting)} \\ 4 &= 5 && \text{(False)} \end{aligned}$$

B SOLVING BY TRIAL AND ERROR

Method Trial and Error

The **trial and error method** is a problem-solving strategy used to find a solution to an equation by testing different values for the unknown variable until the correct value is found.

Ex: Consider the equation $2x + 3 = 11$.
Use the trial and error method to find a solution.

Answer:

- Let's try $x = 2$:

$$\begin{aligned} 2 \times (2) + 3 &= 11 && \text{(Substitute)} \\ 4 + 3 &= 11 \\ 7 &= 11 && \text{(False)} \end{aligned}$$

- Let's try $x = 3$:

$$\begin{aligned} 2 \times (3) + 3 &= 11 && \text{(Substitute)} \\ 6 + 3 &= 11 \\ 9 &= 11 && \text{(False)} \end{aligned}$$

- Let's try $x = 4$:

$$\begin{aligned} 2 \times (4) + 3 &= 11 && \text{(Substitute)} \\ 8 + 3 &= 11 \\ 11 &= 11 && \text{(True)} \end{aligned}$$

Therefore, a solution to the equation $2x + 3 = 11$ is $x = 4$.