Students will be able to:
use tables, equations, and graphs to describe the relationships.

Key Vocabulary:
- Solutions to an equation with two variables
- Ordered Pair
- Equation
- Inductive Reasoning
- Table
- Graph
SOLUTION OF AN EQUATION containing two variables, $x$ and $y$, is any ordered pair $(x, y)$ that makes the equation true.

ORDERED PAIR – is a set of numbers or coordinates written in the form $(x, y)$. It can be used to show the position on a graph, where the $x$ (horizontal) value is first, and the $y$ (vertical) value is second.
Sample Problem 1: Tell whether the given order pair is a solution of each equation.

A. Is \((30, 3)\) a solution of the equation \(x - 14 = 5y\)?

B. Is \((12, 5)\) a solution of the equation \(4x + 2 = 10y\)?

C. Is \((7, 1)\) a solution of the equation \(8x - 6 = 50y\)?
Sample Problem 1: Tell whether the given order pair is a solution of each equation.

A. Is (30, 3) a solution of the equation $x - 14 = 5y$?

$$30 - 14 = 5(3) \rightarrow 30 - 14 = 15 \rightarrow 16 \neq 15$$

B. Is (12, 5) a solution of the equation $4x + 2 = 10y$?

$$4(12) + 2 = 10(5) \rightarrow 48 + 2 = 50 \rightarrow 50 = 50$$

C. Is (7, 1) a solution of the equation $8x - 6 = 50y$?

$$8(7) - 6 = 50(1) \rightarrow 56 - 6 = 50 \rightarrow 50 = 50$$
There are various ways to show the relationship between two variables:

A. Create a **TABLE** to show the corresponding values of $x$ and $y$,

**Example**: John is three years younger than his brother Matthew. Construct a table that represents their age.

<table>
<thead>
<tr>
<th>John</th>
<th>Matthew</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>
B. Write an **EQUATION**, or.

**Example:** John is three years younger than his brother Matthew. Write an equation that represents their age.

Let: $J = \text{John’s age}$

$M = \text{Matthew’s age}$

$$J + 3 = M$$
C. Draw a **GRAPH**.

**COORDINATE SYSTEM** is a two-dimensional number line. This is a typical coordinate system: The horizontal axis is called the \( x \) –axis and the vertical axis is called the \( y \) –axis.
C. Draw a **GRAPH**.

**Example:** John is three years younger than his brother Matthew. Draw a graph that represents their age.

![Graph representing John and Matthew's ages](https://image.pollinations.ai/prompt/graph%20representing%20John%20and%20Matthew's%20ages)
Sample Problem 2: Use a table, an equation, and a graph to represent the relationship of Mary’s and Ann’s age.

Mary is 2 years older than Ann.
Sample Problem 2: Use a table, an equation, and a graph to represent the relationship of Mary’s and Ann’s age.

Mary is 2 years older than Ann.

<table>
<thead>
<tr>
<th>Mary</th>
<th>Ann</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

Let: $J =$John’s age  
$M =$Mary’s age  

$A + 2 = M$
INDUCTIVE REASONING is the process of reaching a conclusion based on an observed pattern. It is used to predict values.

**Example 4:** Predict the next figure in the given sequence.
**INDUCTIVE REASONING** is the process of reaching a conclusion based on an observed pattern. It is used to predict values.

**Example 4:** Predict the next figure in the given sequence.
Sample Problem 3: Predict the next figure in the each sequence.

A.

1. 
2. 
3. 
4. 

B.

1. 
2. 
3. 
4. 

C.

1. 
2. 
3. 
4.
Sample Problem 3: Predict the next figure in the each sequence.

A.

B.

C.