

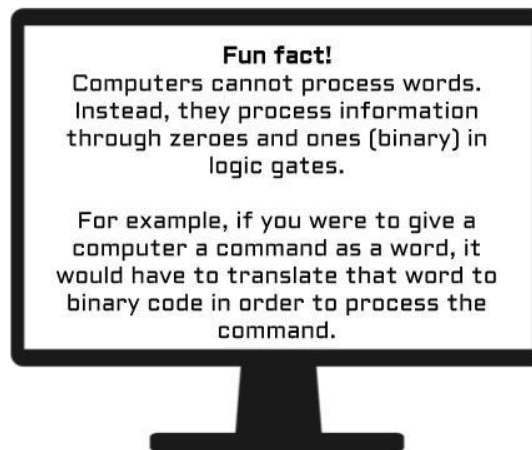
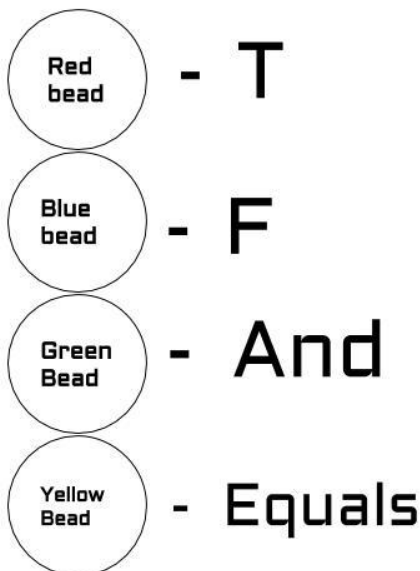
Boolean Algebra

Boolean Algebra is the mathematics we use to analyze digital gates and circuits. It uses a set of laws and rules to define the operation of a digital logic circuit. The logic systems 0 and 1 are used to represent a digital input or output. We can use Boolean Algebra to create truth tables with true denoted as 1 and false denoted as 0.

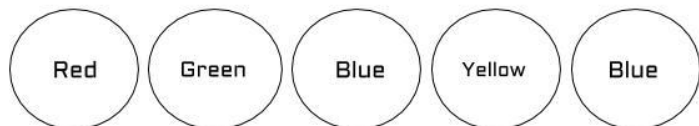
Activity

In this activity, you will create visual truth tables by using strings and colored beads. We will cover the different types of Boolean equations that are used and then create the beaded strings. Boolean variables are represented by the colored beads. You will string them in a specific order depending on your answers from the table below.

Binary Beads



T And F = F →



Question:	True	False
Do you have a cat?		
Do you have a pet?		

- If you have a cat, you have a pet, so both statements are true!
- If you have a pet, that doesn't necessarily mean you have a cat, so it's true and false!
- If you don't have a pet, you don't have a cat, so both statements are false!

Applications

Boolean logic is used in nearly every programming language. It allows us to translate real world problems into computer code. Boolean algebra is a way to simplify digital circuits. Logic gates are a main digital component that performs simple logical calculations.