# **Logic in Coding Comprehension Check**

For questions 1-4, match each vocabulary term to the correct definition:

|  |  |
| --- | --- |
| 1. Function | a. a command or instruction for the computer |
| 2. Logic | b. the rules of proper reasoning |
| 3. Statement | c. a set of statements that work together to accomplish a specific goal |
| 4. Transistor | d. a tiny device that controls the flow of electric current in a computer chip |

1. Function – c
2. Logic – b
3. Statement – a
4. Transistor – d
5. What are logic gates and how do they work to process binary data?
6. What are truth tables and how do they help us understand the logic used to process data?
7. What are variables? Provide an example to show how variables are used in programming.
8. Describe why an IF-THEN-ELSE statement is considered a condition.
9. What are loops? Why might they be helpful when programming?

1. Why is it important to understand how logic works in computers?

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1. Function – c
2. Logic – b
3. Statement – a
4. Transistor – d
5. What are logic gates and how do they work to process binary data?
   1. Logic gates are the basic parts of an electric circuit. They can receive input information in the form of electric signals and produce a related output. Logic gates help make decisions for computers.
6. What are truth tables and how do they help us understand the logic used to process data?
   1. Truth tables are used to visually show all the possible combinations of inputs and the correct expected outcome of each. Logic tables help us understand all the possible situations that might occur when processing data.
7. What are variables? Provide an example to show how variables are used in programming.
   1. A variable is a value, or piece of information, that can change. Variables are often found in IF-THEN logic statements. For example, when programming a video game, one variable might control how a character moves. IF the right arrow key is pressed, THEN the character moves 1 step to the right.
8. Describe why an IF-THEN-ELSE statement is considered a condition.
   1. An IF-THEN-ELSE statement is an example of a condition because it directs the computer to follow certain steps if and only if a certain condition is met. A condition is a statement that can be true or false. For example, when programming a video game, adding a condition can allow a character to move with more speed. IF the space bar is pressed while the right arrow key is pressed, THEN the character will move 10 steps right, or ELSE the character will only move one step right.
9. What are loops? Why might they be helpful when programming?
   1. A loop is a piece of code that causes part of a program to run over and over again. Loops are quite useful in programming and can either continue forever or have a stopping point. For example, when programming a video game, a loop can be added to continuously move a character. Loops can benefit programmers because they can be used to easily repeat code forever, or for a specific set of time. In addition, programmers can combine their knowledge of loops, conditions, and variables to repeat certain sections of code more easily in certain situations.

1. Why is it important to understand how logic works in computers?
   1. Students’ answers will likely vary.
   2. It is important to understand how logic works in computers because this allows us to design effective programs that will lead to our intended outcomes.