Crash Course Computer Science #3: Boolean Logic and Logic Gates

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| Name: |  | Date: |  |

# Instructions

Watch *Crash Course Computer Science #3: Boolean Logic and Logic Gates* on YouTube first. Then answer the following questions. Try to answer the question without looking at the video, but re-watch the video or parts of it if you cannot remember the answer.

1. The most basic values in computing can be represented by:
2. On and Off
3. True and False
4. 0 and 1
5. All the above
6. Computer scientists settled on “binary” logic for computing; why not ternary (3) or more states instead?

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1. The area of mathematics that deals with binary logic is called:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What are the 3 fundamental truth circuits we can build with transistors?
   1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Complete the following Truth Table for the NOT gate:

|  |  |
| --- | --- |
| INPUT | OUTPUT |
|  |  |
|  |  |

1. What do we call each of these logical circuits?
   1. Switch
   2. Choice
   3. Gate
   4. Flip-Flop
2. Complete the Truth Table for AND:

|  |  |  |
| --- | --- | --- |
| INPUT A | INPUT B | OUTPUT |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

1. Complete the Truth Table for OR:

|  |  |  |
| --- | --- | --- |
| INPUT A | INPUT B | OUTPUT |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

1. Complete the Truth Table for XOR:

|  |  |  |
| --- | --- | --- |
| INPUT A | INPUT B | OUTPUT |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

1. What is “XOR” short for? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the word that means, “using ideas to represent lower layers of detail”?

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1. Why is the concept of #11 important in Computer Science?

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