# **Numbers Comprehension Check**

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

|  |  |
| --- | --- |
| 1. Base Ten | a. a number written with only two digits: 1 and 0 |
| 2. Place Value | b. a number system that uses 10 basic symbols; the value of these symbols depends on the place they occupy in the number |
| 3. Number System | c. the value of a digit as determined by its place in a number |
| 4. Binary Number | d. a way of writing numbers |

1. Base Ten – B
2. Place Value – C
3. Number System – D
4. Binary Number – A
5. Describe how humans used numbers even before they began writing them.
6. Not all ancient number systems were the same. Choose and describe two ancient number systems highlighted in the text.
7. What is an abacus and how is it used?
8. Explain how the numerals we use today relate to ancient Hindu numerals from around A.D. 100.
9. Describe how an abacus’s columns relate to what you already know about numbers and place value.
10. Who was Hypatia and what was her claim to fame?

# **Numbers Comprehension Check Answer Key**

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1. Base Ten – B
2. Place Value – C
3. Number System – D
4. Binary Number - A
5. Describe how humans used numbers even before they began writing them.
   1. Humans used and thought about numbers before they found a way to write and record them. Humans likely counted on their fingers and toes. Humans also grouped things together. Over time people began using tally marks to represent those groups. All of this occurred before humans developed names for numbers and counting!
6. Not all ancient number systems were the same. Choose and describe two ancient number systems highlighted in the text.
   1. Students’ answers will vary but may cover the following: The ancient Egyptians, Greeks, and Chinese all used number systems based on groups of 10. They also all represented their digits with different symbols. However, not all ancient groups used a base ten number system. For example, the Maya used groups of twenty, whereas the Babylonians used groups of 60. Students might mention that the ancient Romans also used a number system based on groups of ten as well as other mathematical concepts, such as one more or one less. Order of the digits began to matter here, which relates to what we know about place value in the base ten number system we use today.
7. What is an abacus and how is it used?
   1. An abacus is a tool mathematicians used in ancient times. Today, many students use it to learn about numbers, too! It contains a frame with rows of counters or beads. Each row represents a new place value. An abacus can be used to represent numbers as well as complete arithmetic, such as adding.
8. Explain how the numerals we use today relate to ancient Hindu numerals from around A.D. 100.
   1. The numerals (1-9) we use today look quite similar to the ones used by ancient Hindus around A.D. 100. Our digits have evolved over time. The Arabs began using these Hindu numbers. When they conquered Spain, they brought this numeral system to Europe. People in Europe began to adopt the Arabic numerals instead of using Roman numerals because they are easier to understand and can be more efficient. Arabic numerals rely on place value and so do we!
9. Describe how an abacus’s columns relate to what you already know about numbers and place value.
   1. Each row on an abacus represents a specific place value. One row represents ones, another represents tens, another represents hundreds, and so on. An abacus can be used to help us understand regrouping to a new place value by showing visually how a group of ten ones can become a ten, a group of ten tens can become a hundred, and so on.
10. Who was Hypatia and what was her claim to fame?
    1. Hypatia was born in Alexandria, Egypt, in 370. She lectured on math and astronomy and was the first noted woman in mathematics!