

# Binary Numbers — Practice Quiz

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

This is a *practice* quiz to help you get ready — it mirrors the real quiz with different numbers. Choose the best answer for multiple-choice questions; write your answer on the line for *fill-in* questions. One question asks you to select *two* answers. Target time: 10 minutes.

1. A base-2 (**binary**) number system represents every value using how many different digits?

- (A) Two
- (B) Ten
- (C) Eight
- (D) Sixteen

2. A single **bit** can represent which of the following?

- (A) One of two possible states, such as 0 or 1
- (B) Any decimal number from 0 to 9
- (C) Exactly one letter of the alphabet
- (D) A full color image

3. How many **bits** are contained in 4 bytes?

- (A) 4
- (B) 16
- (C) 32
- (D) 64

4. *Fill in:* Convert the binary number 11010 to decimal (base 10). \_\_\_\_\_

5. *Fill in:* Convert the decimal number 19 to binary. Write all 5 bits. \_\_\_\_\_

6. *Fill in:* What is the **largest** decimal value that can be stored using 4 bits? \_\_\_\_\_

7. How many *different* values can be represented using 6 bits?

- (A) 12
- (B) 36
- (C) 63
- (D) 64

8. Which of the following binary numbers has the **largest** value?

- (A) 0110
- (B) 1001
- (C) 1011
- (D) 0111

9. An 8-bit counter currently displays 11111111 and the program adds 1. What happens?

- (A) An overflow error occurs, because 256 cannot be represented in only 8 bits
- (B) The counter safely displays 100000000
- (C) The value is rounded down to keep 8 bits
- (D) Nothing changes; 11111111 is not the maximum

10. Which **two** statements about binary and place value are true?

*(Select two answers.)*

- (A) Binary is a base-2 number system.
- (B) With  $n$  bits you can represent  $2^n$  different values.
- (C) In a binary number, the rightmost bit has the largest place value.
- (D) A byte is smaller than a single bit.