

Digital Information — Progress Check

Name: _____ Period: _____ Date: _____

Choose the best answer for each question. One question asks you to select *two* answers.

1. What is the decimal (base 10) value of the binary number 1101?

- (A) 11
- (B) 14
- (C) 26
- (D) 13

2. Which 8-bit binary number represents the decimal value 37?

- (A) 01001010
- (B) 00011101
- (C) 00100101
- (D) 00101001

3. How many bits are used to store 3 bytes of data?

- (A) 16
- (B) 3
- (C) 24
- (D) 256

4. A single sequence of bits such as 01000001 can represent a number, a character, or part of a color. What determines which type of data it represents?

- (A) The speed of the processor
- (B) Whether the first bit is a 0 or a 1
- (C) The number of bits in the sequence
- (D) The context in which the bits are used

5. Which of the following best describes *sampling*?

- (A) Measuring the value of an analog signal at regular intervals
- (B) Removing redundant data to shrink a file
- (C) Storing a number using a fixed number of bits
- (D) Converting a decimal number to binary

6. An 8-bit counter currently stores its maximum value, 255. The program adds 1 to it. What happens?

- (A) An overflow error occurs because 256 cannot fit in 8 bits
- (B) A round-off error occurs
- (C) The program automatically switches to 16 bits
- (D) The value becomes 256, stored normally

7. Which statement about lossless compression is true?

- (A) It can only be used on text, never on images
- (B) The original data can be reconstructed exactly
- (C) It always produces a smaller file than lossy compression
- (D) Some information is always permanently discarded

8. A developer must stream video over a slow connection where small file size matters more than perfect image quality. Which compression should they choose?

- (A) Lossless, because quality must be preserved
- (B) Lossy, because minimizing size and transmission time is most important
- (C) No compression, to avoid any errors
- (D) It makes no difference which is used

9. Which two of the following are true when comparing lossless and lossy compression?

(Select two answers.)

- (A) Lossy compression allows complete reconstruction of the original data
- (B) Lossless compression allows complete reconstruction of the original data
- (C) Lossy compression can usually reduce size more than lossless
- (D) Lossless compression always produces a smaller file than lossy

10. Which of the following lets a creator legally give others the right to share, use, and build upon their work?

- (A) An overflow error
- (B) A Creative Commons license
- (C) Plagiarism
- (D) Sampling