# Data Representation

## 1.3 Data Representation

1. All data in the computer is stored as _____.
2. Compare analog data to digital data.

3. Other than a thermometer, give an example of an analog device.

4. List two reasons why modern computers use binary number system to represent information.

## 1.4 Numeric Data

5. Define bit.
   Define byte.

6. Write the decimal number 19 as a 2 byte binary number.

7. What is the technique used by most computers to represent negative binary numbers?

8. Convert the following decimal numbers to two's complement binary numbers.

   a. 2 b. 13

9. What is the smallest and largest numbers that can be represented in one byte using two's complement binary numbers?

10. _____ is a numbering scheme for real numbers where the number is a fixed length and the radix point floats up and down the number.

11. What is the drawback to representing numbers using floating-point?

12. Convert the decimal number .25 to binary.

## 1.5 Representing Text

13. What is the ASCII value (in decimal) for the characters 'A', 'a', and '5'?

14. Why was the Unicode character set developed?

15. How did the designers of the Unicode system accommodate ASCII?

## 1.6 Representing Audio Data

16. How does a computer store sound?

17. How is data stored on a CD?

18. What is currently the most popular audio format?

## 1.7 Representing Images and Graphics

19. How many colors can be represented using 24 bits (3 bytes) to store the RGB values?

20. How many colors could be represented by a computer that only used 8 bits (1 byte) to store the RGB values?

21. Approximately how many different colors can the human see?

22. What is image resolution?

23. What raster-graphics file format is best for storing photographic images?

24. How does vector-graphics differ from raster-graphics?

25. What is currently the most popular vector graphics format?

## 1.8 Representing Video

26. Why do computers use codecs to store video data?