DATA QUESTIONS

DIRECTIONS: Each of the questions or incomplete statements below is followed by four suggested answers or completions. Select the one that is best in each case.

1. Computers are described as processing data iteratively. In what order will the computer process the following program?

   Line 1: $a \leftarrow 38$
   Line 2: $b \leftarrow 54$
   Line 3: $a \leftarrow b + a$
   Line 4: DISPLAY$(a + b)$

   (A) A computer will process all lines of code at once.
   (B) A computer will process the metadata before the pure data.
   (C) A computer will process data one step at a time in the given 1, 2, 3, 4 order.
   (D) A computer will display the value 92 while processing lines 1, 2, 3, and 4 at the same time.

2. An Alaskan biologist is tracking a pod (group) of whales using tracking collars. For the whales, the following geolocation data are collected at frequent intervals:

   - Time
   - Date
   - Geographical location of the sea mammals

   Which of the following questions about a whale could **NOT** be answered using only the data collected from the tracking collars?

   (A) Approximately how many miles did the animal travel in one week?
   (B) Does the animal travel in groups with other tracked animals?
   (C) Do the movement patterns of the animal vary according to the weather?
   (D) In what geographic location does the animal typically travel?

3. Large data sets are useful in finding patterns in the data that can predict future usage. Which of the following is used to predict future usage?

   (A) Calculating the monthly bill charged
   (B) Using past purchases to recommend products for possible purchase
   (C) Identifying the largest-spending addresses
   (D) Identifying the time at which most purchases are made

4. Suppose that a company is creating an algorithm that matches people to advertisements in which they might have an interest. The company is basing its algorithm on a data source accumulated from data bought from social media. Which of the following sources would be useful for the algorithm?

   (A) Information about a person's video-watching preferences (whether they watch viral videos, reviews, animations, etc.)
   (B) A social network's information on what sites a person likes and follows
   (C) Information on a person's previous purchases
   (D) All of the above

5. A short message service (SMS) can be sent from one phone to another phone. Once the message is converted into binary form, it is sent by radio waves to the control tower. Once the SMS travels through the control tower, it arrives at the short message service center to be stored or sent immediately. In addition to sending the SMS, the cell phone carrier sends metadata.

   Which of the following is **NOT** metadata?

   (A) The time the message was sent and received
   (B) The content of the SMS
   (C) The geographic location of both the sender and the receiver
   (D) The phone number of both the sender and the receiver

6. Spotify is a music-streaming service that uses collected metadata to suggest future playlists. The metadata contain the album name, the genre, the tags describing the music, the mood of the music, and the time and date the music was played.

   Which of the following **CANNOT** be determined using only the information contained in the metadata?

   (A) The most popular current album
   (B) The time when the streaming service is used
   (C) Whether the streaming service is used more during the celebration parade for the Mets winning the World Series
   (D) The least common mood of the audience

7. An online e-commerce site maintains a database containing the following information:

   - Price
   - Colors
   - Quantity available
   - Customer comments from the purchasing public

   Using only the database, which of the following **CANNOT** be determined?

   (A) How some of the buying public feel about their purchases
   (B) The popularity of a color depending on the season
   (C) What color sold the most product
   (D) The average price paid for each color

8. Google Trends is a website by Google that analyzes the popularity of top search queries in Google Search across various regions and languages. The large number of searches make Google Trends one of the world's largest real-time data sets. Which of the following is Trends data most likely to answer?

   (A) Whether the public is concerned about the celebration parade for the Jets winning the Superbowl
   (B) What date is the cheapest date to book a hotel room
   (C) The cost of a gas-powered chainsaw
   (D) The length of the Iditarod (a popular sled dog race in Alaska) in meters

9. In 2000, the Chicago Public Schools set up a computing algorithm to detect teachers who had changed their students' answers on standardized tests. The algorithm looked at students' answers, with letters representing correct answers, a 0 representing a blank answer, and other numbers representing an incorrect answer. Which of the following is a way that the algorithm could have used this data?

   (A) To look for consecutive answer patterns shared by students in the same class
   (B) To look at the number of correct answers on harder questions
   (C) To look for consecutive correct answers shared by students in the same class
   (D) To look at the percentage of students who passed the test

10. A large data set contains information on students about to take the College Board's SAT test, including the following:

   - The student's parents' highest education level
   - The student's grade point average (GPA)
   - The student's intended college major
   - The college that the student is interested in attending
   - The student's current address
   - The student's high school name and location

   Which of the following could **NOT** be answered by analyzing only information in the student data set?

   (A) The number of students accepted to a college
   (B) The number of students interested in a particular college major
   (C) The average GPA for students with an intended college major
   (D) The college with the most interest from a particular high school

11. Suppose a team is creating a program that contains several different data-based algorithms. Which of the following would be the most effective strategy for creating algorithms?

   (A) Each algorithm is created by the entire group before the next one is started.
   (B) Each algorithm is created by a different member, and one member tries to implement the different algorithms as they are completed.
   (C) Each algorithm is created by a different member and is implemented by the entire group after all algorithms are completed.
   (D) Each algorithm is created by a different member based on strengths and experiences that the group agrees on at the start of programming.

12. Why might it be more beneficial to create processing algorithms with a team rather than alone? **Select two answers.**

    (A) Different team members will have different understandings of the concepts used, which can create stronger algorithms through their incorporation.

    (B) Team coding guarantees that all team members will do an equal share of work and perform at a high level.

    (C) Team members will compete with each other, resulting in an increase in trust between partners and eliminating the need for personal conflict resolution.

    (D) Different team members will be skilled in different areas, so each part of the algorithm can be made by the most skilled in the necessary area.

13. What predictions can be made by using only the data provided in the following table?

Mass of object (kg)	Time it takes an object to fall one meter in a vacuum (s)
2	4.9
4	4.9
8	4.9
16	4.9
32	4.9
64	4.9

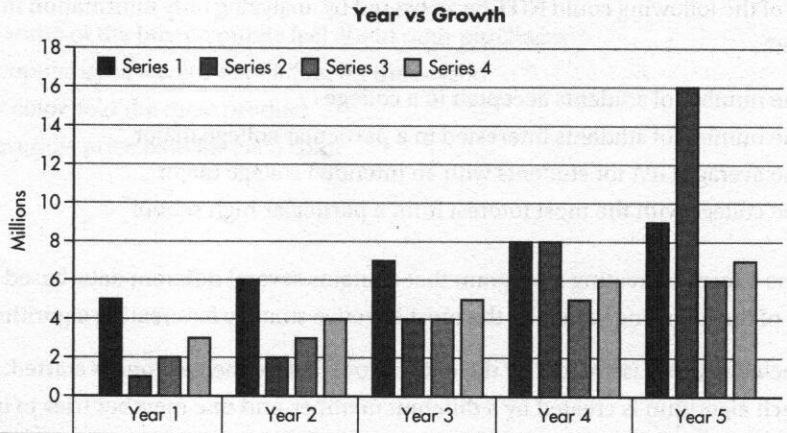
    (A) Doubling the mass results in half the time required to fall 1 meter.

    (B) Doubling the mass results in twice the time required to fall 1 meter.

    (C) Mass has no effect on time for an object to fall 1 meter in a vacuum.

    (D) Increasing the mass results in increasing the time to fall 1 meter in a vacuum.

14. The following data show growth of companies (series 1 to series 4) versus time.



	Year 1	Year 2	Year 3	Year 4	Year 5
Series 1	5	6	7	8	9
Series 2	1	2	4	16	256
Series 3	2	3	4	5	6
Series 4	3	4	5	6	7

Which of the following series would most likely be predicted to show the greatest growth in year 6?

(A) Series 1
(B) Series 2
(C) Series 3
(D) Series 4

15. The following table contains types of cakes sold in cities for a date. Which of the following **CANNOT** be determined using only the information in the database?

Date	Types of Cake	City	Number of Times Purchased
02/01/2015	Chocolate	New York City, New York	3
02/01/2015	Vanilla	Houston, Texas	2
02/01/2015	Marbled	Chicago, Illinois	4
02/01/2015	Red Velvet	Wichita, Kansas	1
02/03/2015	Chocolate	Orlando, Florida	2

(A) The date when a certain type of cake was purchased most
(B) The total number of times chocolate cake was purchased
(C) The total number of times a bakery sold a certain type of cake
(D) Which city, Orlando or New York City, sold more chocolate cake on 02/01/2015

16. A programmer is writing a program that is intended to process large amounts of data. Which of the following is likely to affect the ability of the program to process larger data sets?

(A) How well the program is documented
(B) The order in which the data are put into the data set
(C) How much memory the program requires to run
(D) How many program statements the program contains

17. The following table details the date and location of rented movies. Which of the following **CANNOT** be found using the provided table?

Date	Movie Title	State	Number of Times Rented
May 1, 2018	Movie A	Florida	10
June 15, 2018	Movie B	New York	11
August 15, 2018	Movie C	California	12
April 7, 2018	Movie A	Georgia	10
June 23, 2018	Movie C	Illinois	13
August 27, 2018	Movie B	Washington	14
July 3, 2018	Movie B	Maine	13
September 19, 2018	Movie A	Michigan	12

(A) The average number of rented movies for a given month
(B) The movie that was rented the most overall for all time periods
(C) The number of times an individual person rented a movie
(D) The movies that were rented more than 12 times for any time period

18. Some computer science companies have certain rules that employees must meet face-to-face or over video chat a certain amount of times per week. What is the importance of these face-to-face meetings?

(A) Face-to-face interactions make it easier to share and discuss information used in the project, compared to impersonal methods such as messaging.
(B) Face-to-face interactions are more convenient than any other form of communication.
(C) Impersonal methods such as messaging are more expensive than face-to-face methods.
(D) Face-to-face methods are more time efficient than impersonal methods.

19. Why do most data-analyzing programs include options for creating graphs?

(A) Graphs are less taxing on the computer's graphics card than a plain spreadsheet.
(B) Graphs make it easier to interpret data values, trends, and proportions, so they are an incredibly useful feature.
(C) It is easier to code a graph-based data analyzer than a spreadsheet-based one.
(D) It is harder to make spreadsheets properly display because the resulting file is not an image.

20. When the findings from a project are presented, they are typically presented using a graph as opposed to a table or raw data. Why might this be? **Select two answers.**

(A) Graphs can be easily placed into a slideshow or document, while tables cannot.
(B) Graphs can show trends that might not be easily seen with raw data.
(C) Graphs are able to show all the details necessary to understand data.
(D) Graphs are easier to read and interpret at a glance.

21. Google's website Trends provides information about the frequency of searches made using the search engine. Why might this be more useful than a similar tool offered by less popular search engines? **Select two answers.**

    (A) Google is the largest search engine, so its results are guaranteed to be accurate.
    (B) Google is a more popular search engine; therefore, it will have a larger data set, creating more accurate data.
    (C) The less popular search engines might primarily be used by certain demographics (scholars, politicians, etc.), distorting the data in comparison to the broad reach of Google.
    (D) Google tracks the popularity of websites present in its search results, so it can show more accurate data about its responses.

22. Which of the following is a uniquely useful feature of search engines?

    (A) The ability to distinguish among different versions of something (e.g., differentiating a 1984 film from its 2005 remake)
    (B) The ability to find and filter information from a large variety of sites
    (C) The ability to find basic information, such as creators or release dates
    (D) The ability to find information originally released in print form

23. Suppose that a team was creating an online registry of the books in a library system. The purpose of the registry is to make it easier to find a certain book by using both filters and searches. Which of the following would **NOT** be a useful way for a user to filter the entries?

    (A) The genre of the book
    (B) The library/libraries in the system that have a copy of the book
    (C) The author of the book
    (D) The number of letters in the book's title

24. A small business needed a way to keep track of its profit and expenses daily. The following are features of the spreadsheet application. Which of the following would be of most use to the business? **Select two answers.**

    (A) The ability to create a graph of the data easily
    (B) The ability to create and add map charts
    (C) The ability to have specified rows (such as total profit) update automatically
    (D) An error checker that finds errors in advanced formulas

25. Which of the following is an example of metadata that serves to be descriptive of the content of a file?

    (A) User-selected tags (e.g., "vacation" and "personal work")
    (B) File size
    (C) Date created
    (D) Program used to read the file

26. Which of the following are ways the use of metadata improves the use of actual data?

(A) Files can be sorted by date of creation to make finding an old file easier.
(B) The "author" and "organization" fields in documents can be used to keep track of the source of a document.
(C) The length of a set of videos can be used to determine the way that those videos should be presented.
(D) All of the above

27. Why might it be far harder for companies to maintain the privacy of larger data sets than smaller ones? **Select two answers.**

(A) Larger data sets are less secure simply by nature of their size.
(B) Larger data sets might have more opportunities for attacks because they tend to have more access channels.
(C) Larger data sets are bigger targets for hackers, so they are more likely to receive attacks more sophisticated than security protocols can handle.
(D) Larger data sets are easier for thieves to navigate.

28. Why is it important that online systems with large data sets be scalable?

(A) If the workload placed on the system increases, the resulting decrease in performance can be mitigated.
(B) If the workload placed on the system increases, the resulting increase in performance can be mitigated.
(C) If a system is scalable, all future programs will run faster.
(D) If a system is scalable, all future programs are guaranteed to run properly.

29. Which of the following is an example of a way to improve the transmission of large data sets?

(A) Encryption—it uses a public key to scramble the code and requires a specific private key for the code to be reassembled properly.
(B) Compression—files are made smaller by utilizing an algorithm and then must be uncompressed by the receiver.
(C) Ping—a client and server periodically send small messages to each other to ensure that the connection between them has not been severed.
(D) Emulation—a computer runs a program that allows the computer to behave like another machine.

30. Which of the following is an inherent trade-off from the ease of handling a file when using lossy compression?

(A) Smaller file size (bytes)
(B) Speed of transmitting file
(C) Image quality
(D) Image size (number of pixels)

31. Which of the following is a way to protect data containing personal information?

    (A) Encryption—it uses a public key to scramble the code and requires a specific private key for the code to be reassembled properly.
    (B) Compression—files are made smaller by utilizing an algorithm and then must be uncompressed by the receiver.
    (C) Ping—a client and server periodically send small messages to each other to ensure that the connection between them has not been severed.
    (D) Emulation—a computer runs a program that allows the computer to behave like another machine.

32. Convert 100001_{BIN} to a decimal number.

    (A) 29
    (B) 31
    (C) 33
    (D) 63

33. Convert 111111_{BIN} to a decimal number.

    (A) 29
    (B) 31
    (C) 33
    (D) 63

34. Convert 3_{DEC} to a binary number.

    (A) 10_{BIN}
    (B) 11_{BIN}
    (C) 110_{BIN}
    (D) 111_{BIN}

35. Convert 7_{DEC} to a binary number.

    (A) 10_{BIN}
    (B) 11_{BIN}
    (C) 110_{BIN}
    (D) 111_{BIN}

36. Convert 10_{DEC} to a binary number.

    (A) 1000_{BIN}
    (B) 1010_{BIN}
    (C) 1100_{BIN}
    (D) 1111_{BIN}

37. Convert 30_{DEC} to a binary number.

    (A) 10000_{BIN}
    (B) 11000_{BIN}
    (C) 11010_{BIN}
    (D) 11110_{BIN}

38. Convert 32_{DEC} to a binary number.

(A) 100000_{BIN}
(B) 110000_{BIN}
(C) 110100_{BIN}
(D) 111000_{BIN}

39. Convert 48_{DEC} to a binary number.

(A) 100000_{BIN}
(B) 110000_{BIN}
(C) 110011_{BIN}
(D) 111000_{BIN}

40. Convert 97_{DEC} to a binary number.

(A) 1000000_{BIN}
(B) 1100001_{BIN}
(C) 1100111_{BIN}
(D) 1110001_{BIN}

41. Convert 10100001_{BIN} to a decimal number.

(A) 29_{DEC}
(B) 47_{DEC}
(C) 161_{DEC}
(D) 178_{DEC}

42. Convert 101111_{BIN} to a decimal number.

(A) 29_{DEC}
(B) 47_{DEC}
(C) 161_{DEC}
(D) 178_{DEC}

43. What is the value in binary of $1100_{BIN} + 1_{DEC}$?

(A) 1101_{BIN}
(B) 1110_{BIN}
(C) 1111_{BIN}
(D) 10000_{BIN}

44. What is the value in binary of $1101_{BIN} + 1_{DEC}$?

(A) 1101_{BIN}
(B) 1110_{BIN}
(C) 1111_{BIN}
(D) 10000_{BIN}

45. What is the value in binary of $1111_{BIN} + 1_{DEC}$?

(A) 1101_{BIN}
(B) 1110_{BIN}
(C) 1111_{BIN}
(D) 10000_{BIN}

46. What is the value in binary of $11001_{BIN} + 2_{DEC}$?

(A) 11111_{BIN}
(B) 11101_{BIN}
(C) 11100_{BIN}
(D) 11011_{BIN}

47. What is the value in binary of $11001_{BIN} + 100_{BIN}$?

(A) 11111_{BIN}
(B) 11101_{BIN}
(C) 11100_{BIN}
(D) 11011_{BIN}

48. Convert 48_{DEC} to a binary number.

(A) 110000_{BIN}
(B) 110001_{BIN}
(C) 110111_{BIN}
(D) 111111_{BIN}

49. Convert 63_{DEC} to a binary number.

(A) 110000_{BIN}
(B) 110001_{BIN}
(C) 110111_{BIN}
(D) 111111_{BIN}

50. Convert 17_{DEC} to a binary number.

(A) 1111_{BIN}
(B) 10001_{BIN}
(C) 10111_{BIN}
(D) 11111_{BIN}

51. What is the smallest number of bits needed to store the decimal number 7?

(A) 1
(B) 2
(C) 3
(D) 4

52.

Text:
`RANDOM (a,b)`
Block:
`RANDOM [a,b]`
	Evaluates to a random integer from `a` to `b`, including `a` and `b`.
	
	For example, `RANDOM(1,3)` could evaluate to `1`, `2`, or `3`.

Text:
`DISPLAY (expression)`
Block:
`DISPLAY [a,b]`
	Displays the value of `expression`, followed by a space.

Which of the following is **NOT** a possible displayed value using the RANDOM(*a*, *b*) and DISPLAY(expression) abstractions?

`DISPLAY [RANDOM [2,5]]`

(A) 2
(B) 4
(C) 5
(D) 6

53. Which of the following is **NOT** a possible displayed value using the RANDOM(*a*, *b*) and DISPLAY(expression) abstractions?

`DISPLAY [RANDOM [1,4] + RANDOM [2,5]]`

(A) 9
(B) 6
(C) 5
(D) 1

54. Which number will result in an overflow error in a 3-bit system?

(A) 3
(B) 4
(C) 6
(D) 8

55. Which of the following will result in an overflow error in a 4-bit system?

(A) 6
(B) 9
(C) 15
(D) 16

56. Which of the following is the largest number that will **NOT** result in an overflow error in a 5-bit system?

(A) 30
(B) 32
(C) 33
(D) 34

57. Which math calculation could result in a roundoff error?

(A) 1/3
(B) 2 * 6
(C) 6 − 2
(D) 3 + 5

58. Many older computers were designed to handle only 8-bit systems, meaning that all numbers that the computers used could not exceed 8 bits in length. Which of the following numbers would **NOT** be viable in an 8-bit system?

(A) 14_{DEC}
(B) 34_{DEC}
(C) 255_{DEC}
(D) 256_{DEC}

59. Many computing languages store an integer in 4 bytes, limiting the range of numbers to from 2,147,483,648 to −2,147,483,647. Given that numbers can be of infinite size, why is this limitation put in place? **Select two answers.**

(A) Programmers need numbers to be as small as possible because that limits overflow errors.
(B) Most computed numbers are within this range, so 4 bytes is a reasonable size for most purposes.
(C) Making a very large, almost infinite integer would require so much space that it would be impractical for most uses.
(D) No programmer ever needs a number outside of this range, so there's no point in extending the limit.

60. A programmer working for an architect needs to create a program to describe several properties with given names, areas, and images. Assume that the properties behave in an identical manner. What would be a benefit of creating an abstraction that uses these three parameters?

(A) The parameters would allow all the objects to hold their own properties without requiring each to be coded separately.
(B) The abstraction would be able to account for every difference in the way the objects behave.
(C) The abstraction would make them harder to include in the code, which makes stealing and editing the program code more difficult.
(D) The use of an abstraction would ensure that each object's files can be edited.

61. Find the error in the following low-level programming code.

```
10111001 11010010 0000011 100001001 00001110 00000000 00000000
10111001 11100001 00010000 10001001 00001110 00000010 00000000
10100001 00000000 00000000 1001011 00011110 00000010 00000000
00000011 11000011 10100011 00000100 00000000 100001001 00001110
00000000 00000000 10111001 11100001 00010000 10001001 00001110
00000010 00000000 10100001 00000000 00000000 1001011 00011110
00000010 00000000 00000011 11000011 10100011
```

(A) The 17th 1 needs to be changed to a 0.
(B) This is too difficult. To determine errors, it would be considerably easier to use an upper-level language.
(C) The 34th 0 should be a 1.
(D) The 84th digit should be a 1.

62. Which of the following phrases would have the highest lossless compression rate?

(A) She loves you, yeah, yeah, yeah.
(B) The quick brown fox jumps over the lazy dog.
(C) Sphinx of black quartz, judge my vow.
(D) How razorback-jumping frogs can level six piqued gymnasts!

63. Using the following abbreviation table, reconstruct the lossless compression to its original form.

1	2	3
shark	doo	baby

3 1 2 2 2 2 2 2

(A) shark doo baby
(B) baby shark doo 6
(C) baby shark doo doo doo doo doo doo
(D) baby shark doo

64. Why is it usually easier to read code written in a high-level language than code written in a low-level language?

(A) High-level languages tend to be written by smarter people.
(B) High-level languages tend to be closer to basic computer code, which makes them easier to translate.
(C) High-level languages tend to be written for more experienced programmers to use, which implicitly makes them easier to read.
(D) High-level languages tend to be closer to natural language by utilizing simplified abstractions with descriptive names.

65. The abstraction Draw(magnitude, direction) is used to draw line segments at a given magnitude and direction (north, south, east, or west) starting at the tip of the first vector and ending at the tail of the second vector. Consider the following program, where the vector starts in the upper-left corner of a grid of dots.

Draw(2, south)

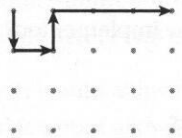
Draw(1, east)

Draw(2, east)

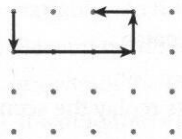
Draw(1, north)

Which of the following represents the figure that is drawn by the program?

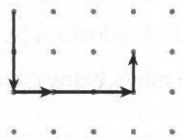
(A)



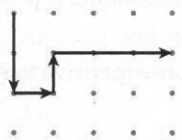
(B)



(C)



(D)



66. When taken as a whole, is a physical computer low-level or high-level abstraction?

(A) Low level, because the computer processes the lowest-level form of software.
(B) High level, because the computer contains many low-level components, such as the CPU.
(C) High level, because the computer is capable of utilizing high-level programming languages.
(D) Neither, as a computer is not software.

67. Logic gates are physical hardware that are used to determine Boolean functions such as AND and OR. Given this, are Boolean functions abstractions?

(A) Yes, they represent the activity of these gates in a manner that can be coded.
(B) Yes, they represent the physical presence of the gates.
(C) No, they are performed by processors; logic gates are merely a way to visualize this.
(D) No, they are not abstractions because they deal with things at the bit level.

68. A theme park wants to create a simulation to determine how long it should expect the wait time at its most popular ride. Which of the following characteristics for the virtual patrons would be most useful? **Select two answers.**

    (A) Ride preference—denotes whether a patron prefers roller coasters, other thrill rides, gentle rides, or no rides.
    (B) Walking preference—denotes how far a patron is willing to walk in between rides.
    (C) Food preference—denotes the type of food that a patron prefers to eat (e.g., chicken, burgers, salads).
    (D) Ticket type—denotes whether the patron has a single-day pass, a multiday pass, or an annual pass.

69. A programmer has created a program that models the growth of foxes and rabbits. Which of the following potential aspects of the simulation does **NOT** need to be implemented?

    (A) Grass that rabbits must eat frequently to survive is represented.
    (B) Each rabbit may have only a certain number of children per litter.
    (C) Each fox must eat a rabbit frequently to survive.
    (D) Each rabbit can live only to a certain age, assuming that it is not eaten.

70. When the FAA investigates plane crashes, it often has high-level pilots replay the scenario to see if the situation could have been avoided. This is typically done using a moving simulator as opposed to an actual airplane. Why?

    (A) A simulator is much clumsier to pilot than a real airplane, so the pilots being successful is proof that an amateur pilot would be successful as well.
    (B) A simulator is much easier to pilot than a real airplane, so the pilots failing is proof that any pilot would be unsuccessful.
    (C) If the crash could not be properly avoided, it would be much more expensive to replace a simulator than an actual airplane.
    (D) If the crash could not be properly avoided, using an actual airplane would put the pilots (and potentially others) in mortal danger.

71. The heavy use of chemicals called chlorofluorocarbons (CFCs) has caused damage to Earth's ozone layer, creating a noticeable hole over Antarctica. A scientist created a simulation of the hole in the layer using a computer, which models the growth of the hole over many years. Which of the following could be useful information that the simulation could produce?

    (A) The approximate length of time until the hole would be refilled (due to various atmospheric processes)
    (B) The exact size of the hole at any given point in time
    (C) The exact length of time until the hole would be refilled (due to various atmospheric processes)
    (D) The exact depth of the hole at any point in time

72. Suppose that an environmentalist wanted to understand the spread of invasive species. What would be a benefit of doing this with a simulation rather than in real life?

(A) The species used in the simulation could be designed to mimic many different species at once.
(B) The species created could be quickly tested in multiple environments to understand better how its spread is affected by environmental factors.
(C) The simulation could be run much more quickly than in real life.
(D) All of the above.

73. A program is being created to simulate the growth of a brain based on randomly determined environmental factors. The developer plans to add a feature that lets the user quickly run several hundred simulations with any number of factors kept constant. Why would this be useful? **Select two answers.**

(A) It would allow the user to gather data without taxing the computer's hardware.
(B) It would allow the user to see the effect of specific variables by ensuring that the other variables do not change.
(C) Several hundred simulations would guarantee the simulation will accurately model the growth of the brain.
(D) It would make simulations more detailed.

74. What is displayed using the following DISPLAY(expression) abstractions?

```
List1 ← [11, 35, 6]
DISPLAY(List1[2])
```

(A) An error message is produced, and the program will terminate.
(B) 35
(C) 11
(D) 6

75. What is displayed using the following DISPLAY(expression) abstractions?

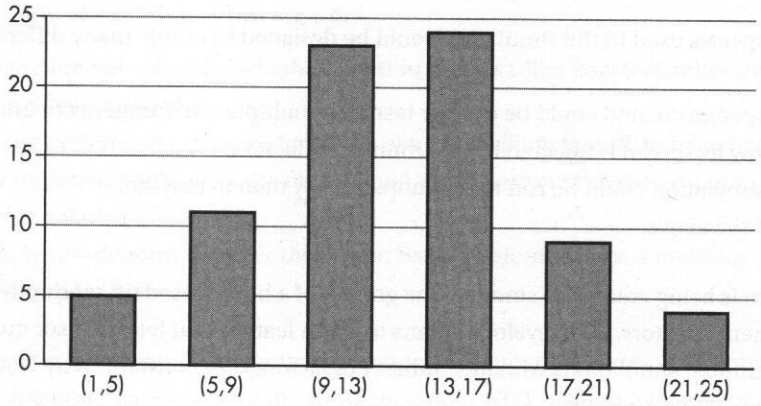
```
List1 ← [11, 35, 6]
DISPLAY(List1[0])
```

(A) An error message is produced, and the program will terminate.
(B) 35
(C) 11
(D) 6

76. Which of the following characteristics does **NOT** represent digital data?

(A) A constant stream of smoothly changing data
(B) Discrete levels that represent the size of the data
(C) Samples of the data at regular intervals
(D) Digital data approximately representing the analog signal but not exactly

77. The signal below is an example of what type of signal?



(A) Analog signal
(B) Digital signal
(C) Static signal
(D) Random signal

78. What signal can be represented using a digital signal without losing any data?

(A) The human voice in air
(B) The varying temperature during the day
(C) Volume due to a train honking its horn
(D) The varying grades of a student during the school year