Continuing Education Course #288
Engineering Methods in Microsoft Excel
Part 3: Data Analysis in Excel

1. Engineering data analysis involves
- ○ a. optimizing statistical models
- ○ b. organizing, summarizing, analyzing, and interpreting data.
- ○ c. All of the above.

2. The following are classifications of data, EXCEPT
- ○ a. Quantitative, qualitative
- ○ b. Parameters, statistics
- ○ c. Discreet, continuous

3. The number of times a value occurs in the data may be expressed as its
- ○ a. class midpoint, lower bound of the interval
- ○ b. class mark, total frequency
- ○ c. frequency, cumulative, frequency, relative frequency

4. The following are examples of frequency diagrams.
- ○ a. stem-and-leaf diagram and dot-plot
- ○ b. ogive and polar chart
- ○ c. moment diagram and histogram

5. The *Excel Data Analysis Tools* Add-in provides additional tools for
- ○ a. Calculus and Pattern recognition computations
- ○ b. Probability and statistical analyses and calculations
- ○ c. Optimization and numerical analysis methods

Use the Speed data in the *Excel* file provided with this test to answer Question 6 through Question 10

6. Using a bin size of 10, the frequency table for the speed data is
- ○ a.

Bin	Frequency
0- 19.999	1
20- 39.999	10
40- 49.999	138
50- 59.999	291
60- 69.999	1059
70- 79.999	221
80- 89.999	1
90- 99.999	1

○ b.

Bin	Frequency
0 - 9.999	1
10 - 19.999	10
20 - 29.999	138
30 - 39.999	291
40 - 49.999	1059
50 - 59.999	221
60 - 69.999	1
70 - 79.999	1

○ c.

Bin	Frequency
4.99	0
9.99	1
14.99	3
19.99	7
24.99	45
29.99	93
34.99	111
39.99	180
44.99	476
49.99	583
54.99	185
59.99	36
64.99	1
69.99	0
74.99	1
79.99	0

7. The cumulative frequency table for the speed data is

○ a.

Bin	Cum. Freq.
0 - 9.99	1
10 - 19.99	11
20 - 29.99	149
30 - 39.99	440
40 - 49.99	1499
50 - 59.99	1720
60 - 69.99	1721
70 - 79.99	1722

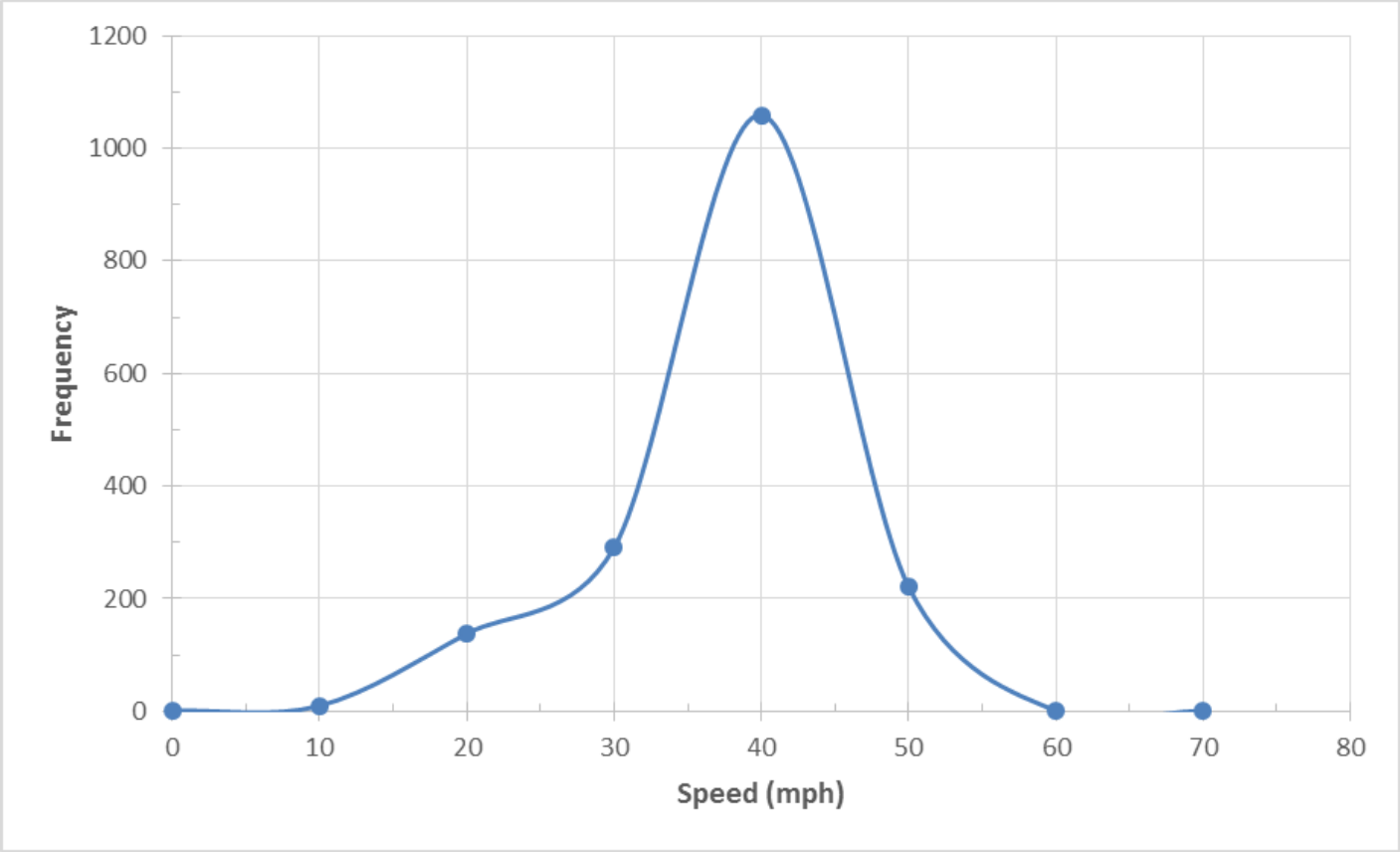
○ b.

Bin	Cum. Freq.
0- 9.99	1722
10- 19.99	1721
20- 29.99	1711
30- 39.99	1573
40- 49.99	1282
50- 59.99	223
60- 69.99	2
70- 79.99	1

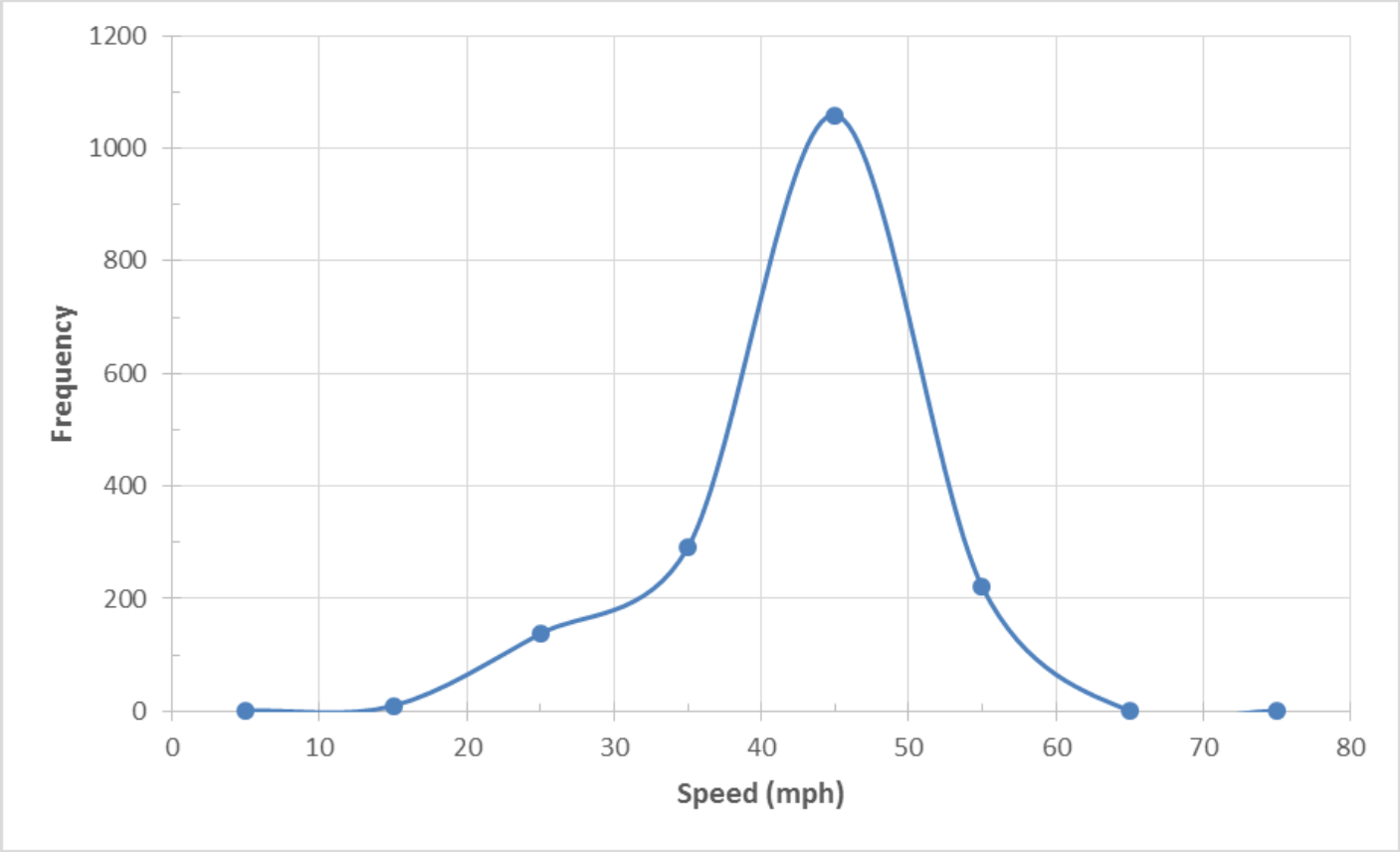
○ c. All of the above

8. Using a bin size of 10, the frequency polygon for the speed data is

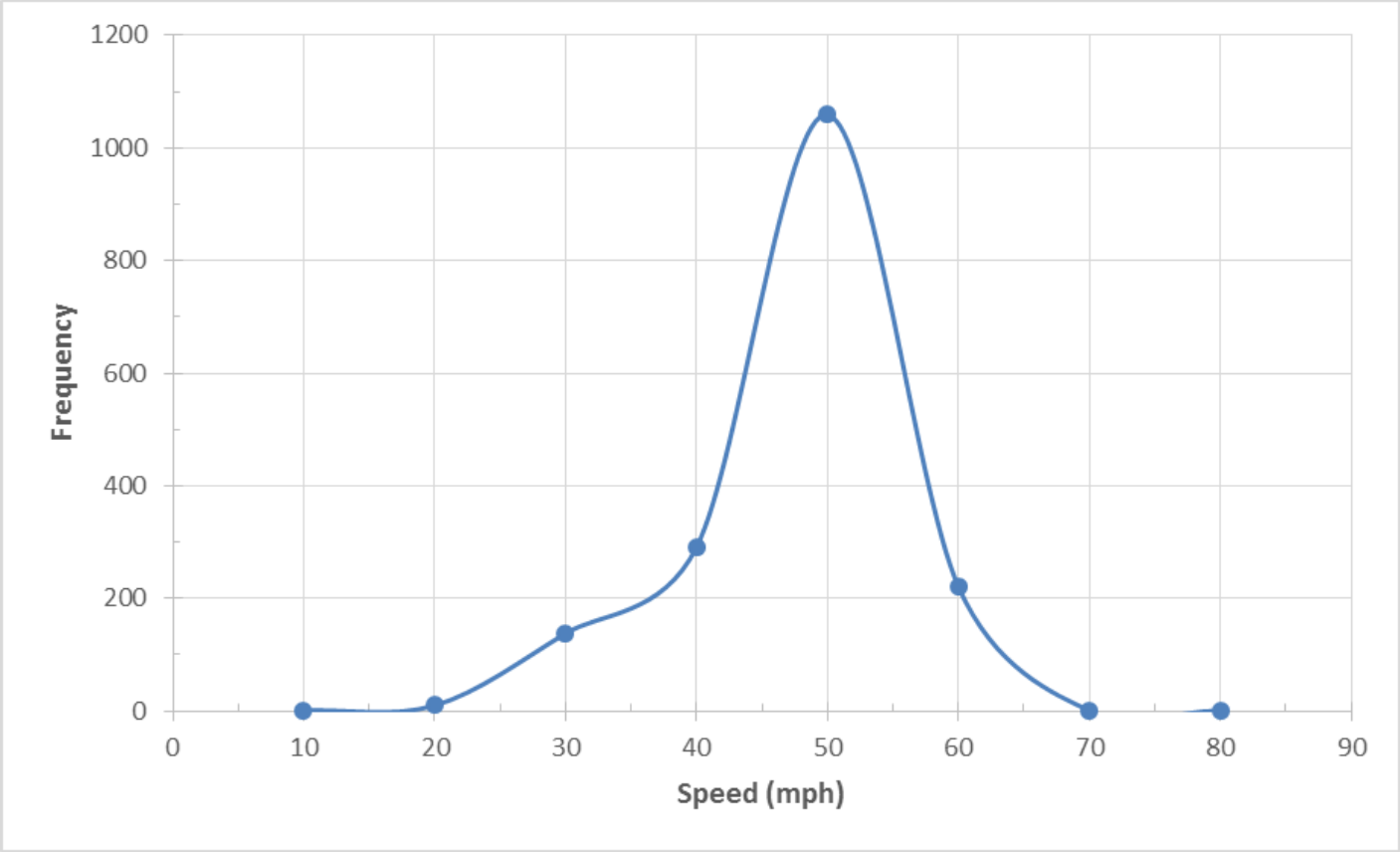
○ a.



○ b.

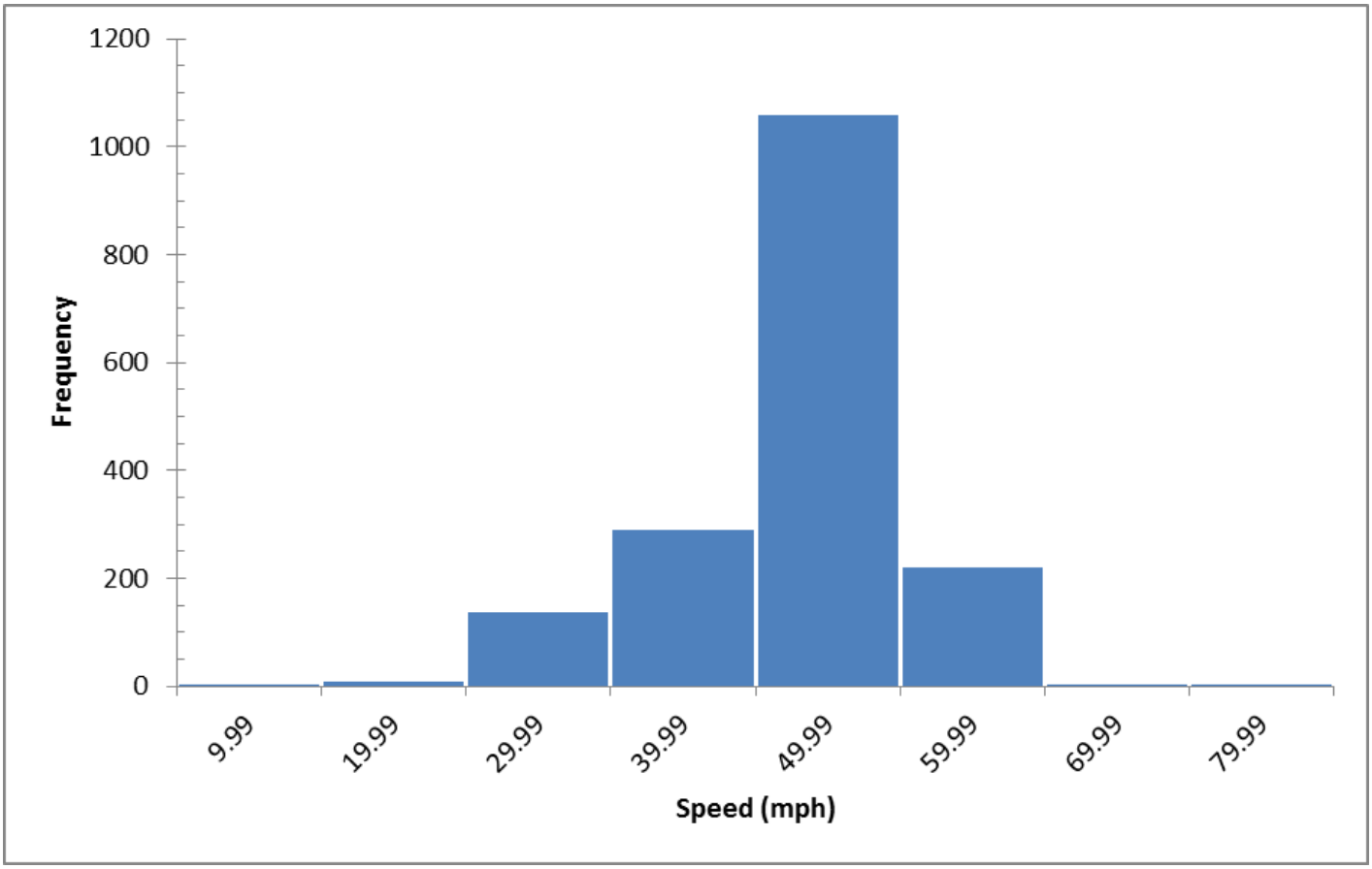


○ c.

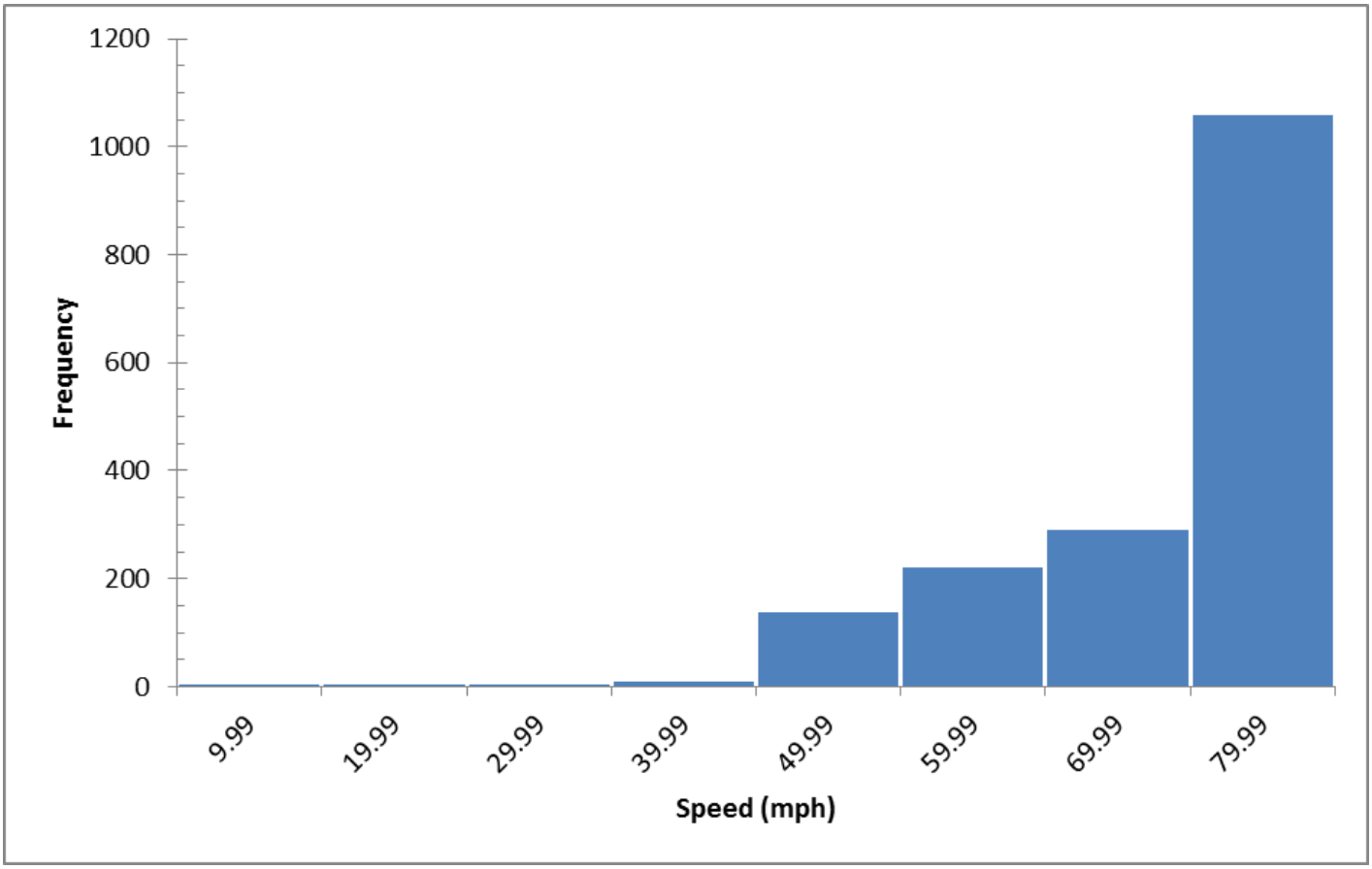


9. Using a bin size of 10, the histogram for the speed data is

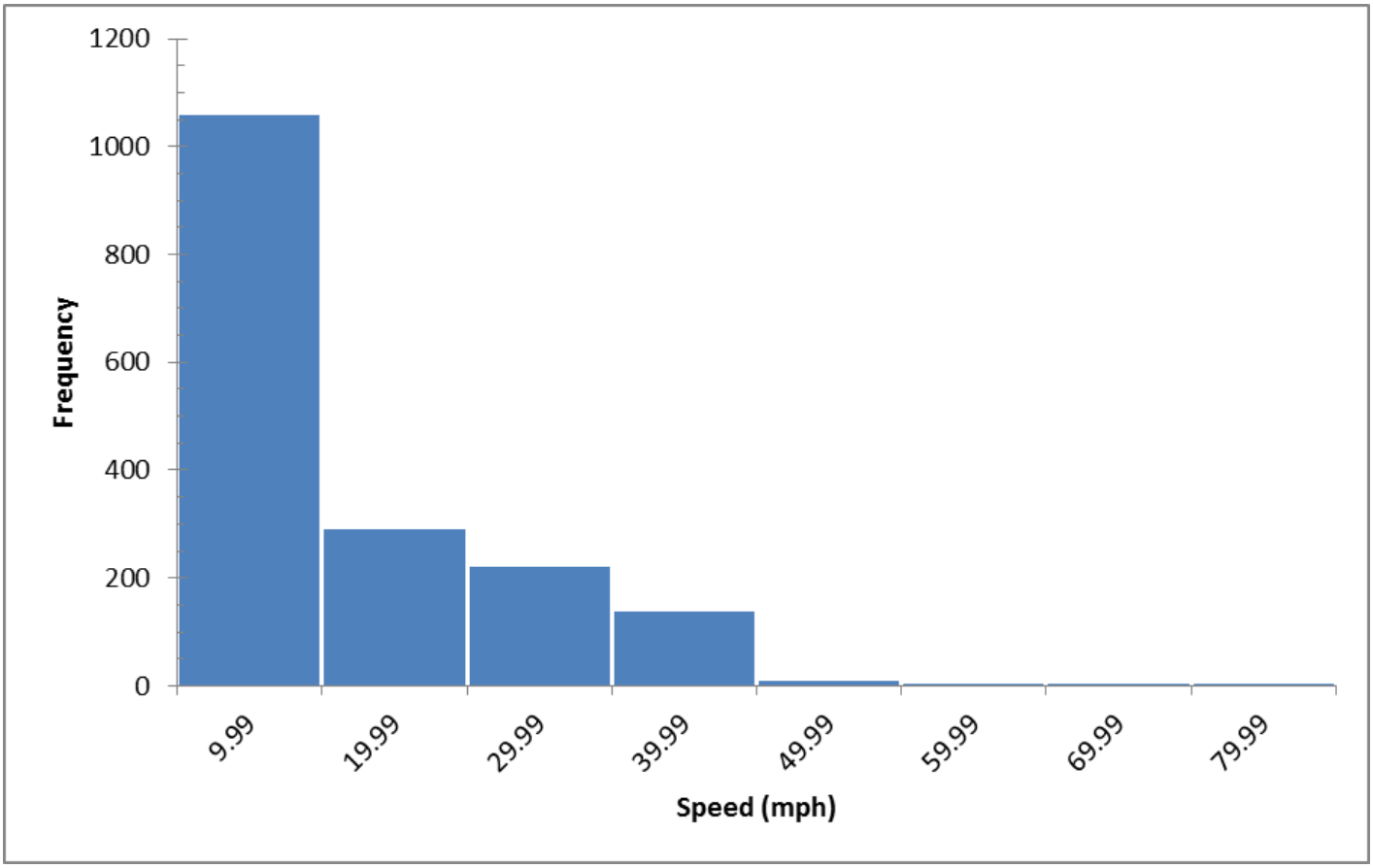
○ a.


1200
1000
800
600
400
200
0
Frequency
9.99
19.99
29.99
39.99
49.99
59.99
69.99
79.99
Speed (mph)

○ b.

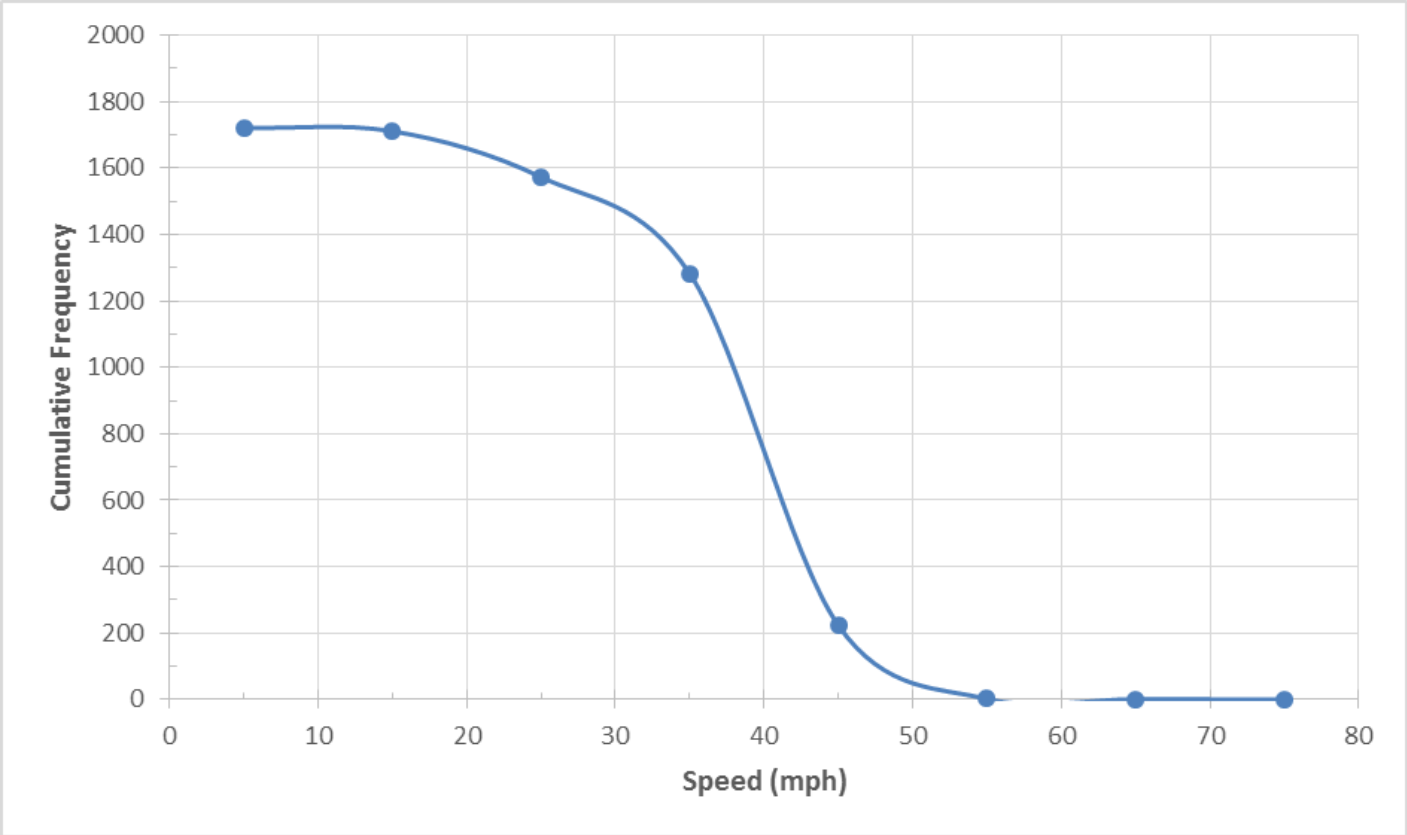

1200
1000
800
600
400
200
0
Frequency
9.99
19.99
29.99
39.99
49.99
59.99
69.99
79.99
Speed (mph)

○ c.

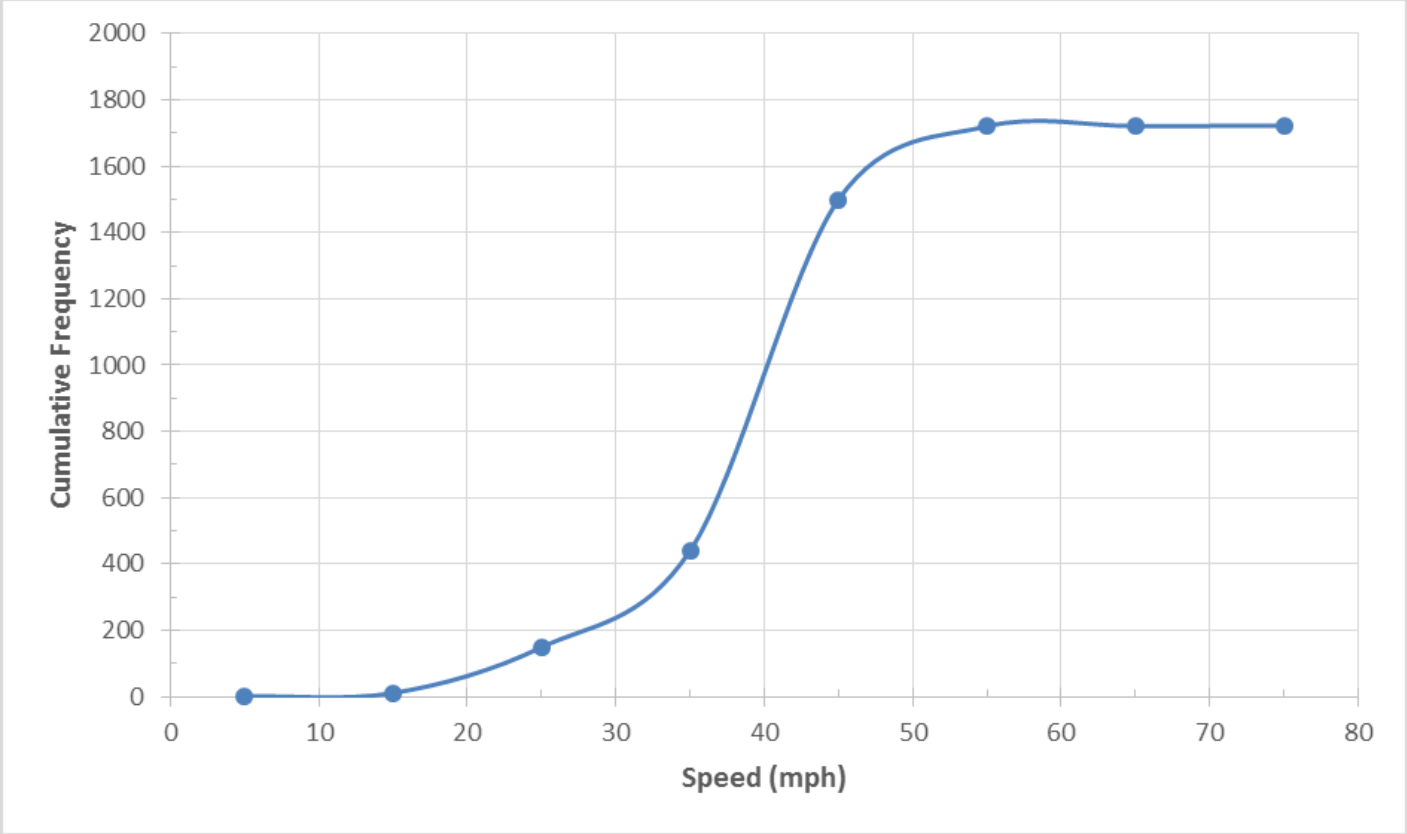

1200
1000
800
600
400
200
0
Frequency
9.99
19.99
29.99
39.99
49.99
59.99
69.99
79.99
Speed (mph)

10. Using a bin size of 10, the ogive for the speed data is

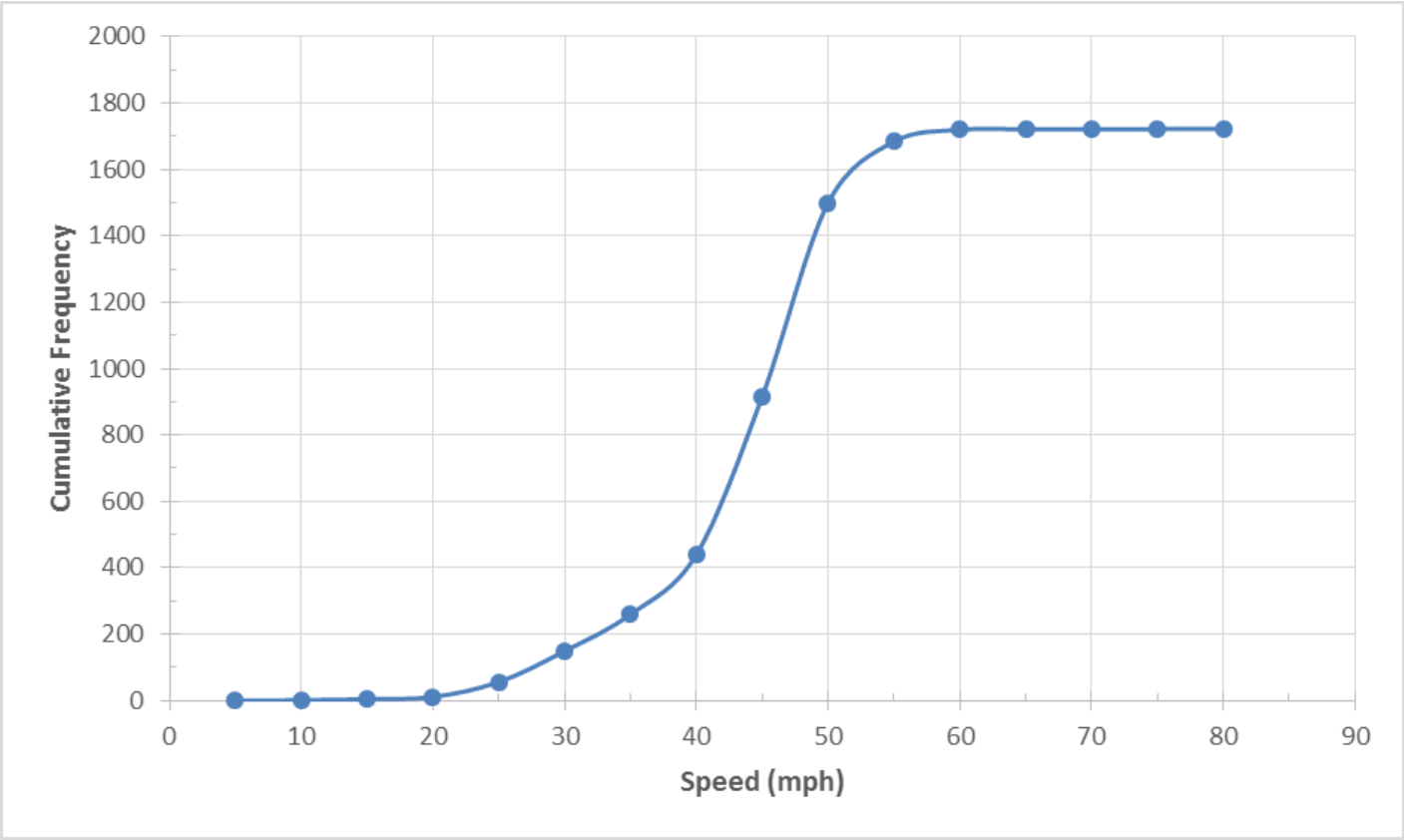
○ a.



○ b.



○ c.



Use the Truck traffic data in the *Excel* file provided with this test to answer Question 11 through Question 23

11. Using a bin size of 10, the dot plot for the daily truck volume data is

○ a.

		###	###########	##		
Frequency	2	5	11	4	2	1
Bin	0-9.999	10-19.999	20-29.999	30-39.999	40-49.999	50-59.999

○ b.

	###########	###	##			
Frequency	11	5	4	2	2	1
Bin	0-9.999	10-19.999	20-29.999	30-39.999	40-49.999	50-59.999

○ c.

				# #	# # #	# # # # # # # # # #
Frequency	1	2	2	4	5	11
Bin	0-9.999	10-19.999	20-29.999	30-39.999	40-49.999	50-59.999

12. The stem-and-leaf plot for the truck volume data is

○ a.

stem		leaf	
0	7 3		
1	9 5 5 2 1		
2	9 7 6 6 3 3 2 2 2 2 0		
3	4 3 2 0		
4	3 0		
5	0		

○ b.

stem		leaf	
0	3 7		
1	1 2 5 5 9		
2	0 2 2 2 2 3 3 6 6 7 9		
3	0 2 3 4		
4	0 3		
5	0		

○ c. Both of the above.

13. The range of the truck volume data is

○ a. 50
○ b. 47
○ c. 10

14. The mode of the data is

○ a. 26
○ b. 23
○ c. 22

15. The median of the data is

○ a. 23
○ b. 23.5
○ c. 26

16. The mean of the data is

○ a. 22.0
○ b. 23.5
○ c. 24.2

17. The sample variance is

○ a. 129.24
○ b. 119.94
○ c. 99.94

18. The sample standard deviation is
○ a. 10.95
○ b. 29.95
○ c. 119.94

19. The lower quartile is
○ a. 19
○ b. 22
○ c. 30

20. The upper quartile is
○ a. 30
○ b. 22
○ c. 19

21. The interquartile range is
○ a. 30
○ b. 19
○ c. 11

22. The following values in the data are outliers.
○ a. 3 and 50
○ b. 50 only
○ c. 43 and 50

23. The 85th percentile truck volume is approximately.
○ a. 34
○ b. 43
○ c. 50

Use the Speed data in the *Excel* file provided with this test to answer Question 24 through Question 35

24. The range of the speed data is
○ a. 45.5 mph
○ b. 62.6 mph
○ c. 71.0 mph

25. The mode of the data is
○ a. 42.4 mph
○ b. 44.5 mph
○ c. 45.5 mph

26. The median speed is
○ a. 44.5 mph
○ b. 71.0 mph
○ c. 79.9 mph

27. The mean speed

- ○ a. 71.0 mph
- ○ b. 45.5 mph
- ○ c. 42.8 mph

28. The sample variance is
- ○ a. 29.24 $(\text{mph})^2$
- ○ b. 45.50 $(\text{mph})^2$
- ○ c. 58.53 $(\text{mph})^2$

29. The sample standard deviation is
- ○ a. 62.6 mph
- ○ b. 58.53 mph
- ○ c. 7.65 mph

30. The lower quartile is
- ○ a. 47.7 mph
- ○ b. 44.5 mph
- ○ c. 39.7 mph

31. The upper quartile is
- ○ a. 39.7 mph
- ○ b. 45.4 mph
- ○ c. 47.7 mph

32. The interquartile range is
- ○ a. 46.6 mph
- ○ b. 19 mph
- ○ c. 8 mph

33. The following values in the data are outliers.
- ○ a. 16.9 mph, 21.6 mph
- ○ b. 61.2 mph, 71.0 mph
- ○ c. All of the above
- ○ d. There are no outliers in this data

34. The 85th percentile speed is approximately.
- ○ a. 50 mph
- ○ b. 55 mph
- ○ c. 60 mph

35. The *Data Analysis Tools* -**Descriptive Statistics** can be used to determine quartiles and percentiles.
- ○ a. True
- ○ b. False