Review 1

Use the given data to construct a frequency distribution.

1) Kevin asked some of his friends how many hours they had worked during the previous week at their after-school jobs. The results are shown below. 1) _____

6 6 6 3 6 6 9 8 6 3 8 6
6 8 6 6 8 6 6 8 6 8 8 3

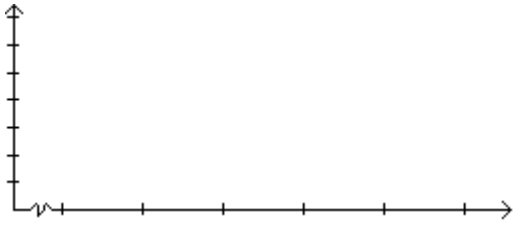
Construct a frequency table. Use 4 classes, a class width of 2 hours, and a lower limit of 3 for class 1.

Hours	Frequency

Solve the problem.

2) In a survey, 20 people were asked how many magazines they had purchased during the previous year. The results are shown below. Construct a histogram to represent the data. Use 4 classes with a class width of 10, and begin with a lower class limit of -0.5. What is the approximate amount at the center? 2) _____

6 15 3 36 25 18 12 18 5 30
24 7 0 22 33 24 19 4 12 9



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the mode(s) for the given sample data.

3) 98, 69, 32, 69, 29, 98 3) _____

A) 98 B) 69 C) 65.8 D) 98, 69

Find the mean for the given sample data.

4) The normal monthly precipitation (in inches) for August is listed for 20 different U.S. cities. Find the mean of the data. 4) _____

3.5 1.6 2.4 3.7 4.1
3.9 1.0 3.6 4.2 3.4
3.7 2.2 1.5 4.2 3.4
2.7 0.4 3.7 2.0 3.6

A) 3.09 in. B) 2.94 in. C) 2.80 in. D) 3.27 in.

Find the median for the given sample data.

5) The weights (in ounces) of 21 cookies are shown. Find the median weight. 5) _____

0.67 1.42 0.83 1.62 0.75 0.82 1.03
1.42 1.53 0.93 0.67 1.21 1.04 0.83
0.47 1.21 0.82 1.04 1.72 0.75 0.56

A) 0.83 ounces B) 0.93 ounces C) 0.88 ounces D) 1.42 ounces

Find the standard deviation for the given data. Round your answer to one more decimal place than the original data.

6) The manager of an electrical supply store measured the diameters of the rolls of wire in the inventory. The diameters of the rolls (in m) are listed below. Compute the standard deviation s. 6) _____

0.189 0.518 0.665 0.568 0.149 0.573 0.202

A) 1.1718 B) 1.4602 C) 0.2193 D) 0.568

Use the empirical rule to solve the problem.

7) The systolic blood pressure of 18-year-old women is normally distributed with a mean of 120 mmHg and a standard deviation of 12 mmHg. What percentage of 18-year-old women have a systolic blood pressure between 96 mmHg and 144 mmHg? 7) _____

A) 99.7% B) 68% C) 95% D) 99.99%

Solve the problem.

8) The heights of the adults in one town have a mean of 67.5 inches and a standard deviation of 3.4 inches. What can you conclude from Chebyshev's theorem about the percentage of adults in the town whose heights are between 60.7 and 74.3 inches? 8) _____

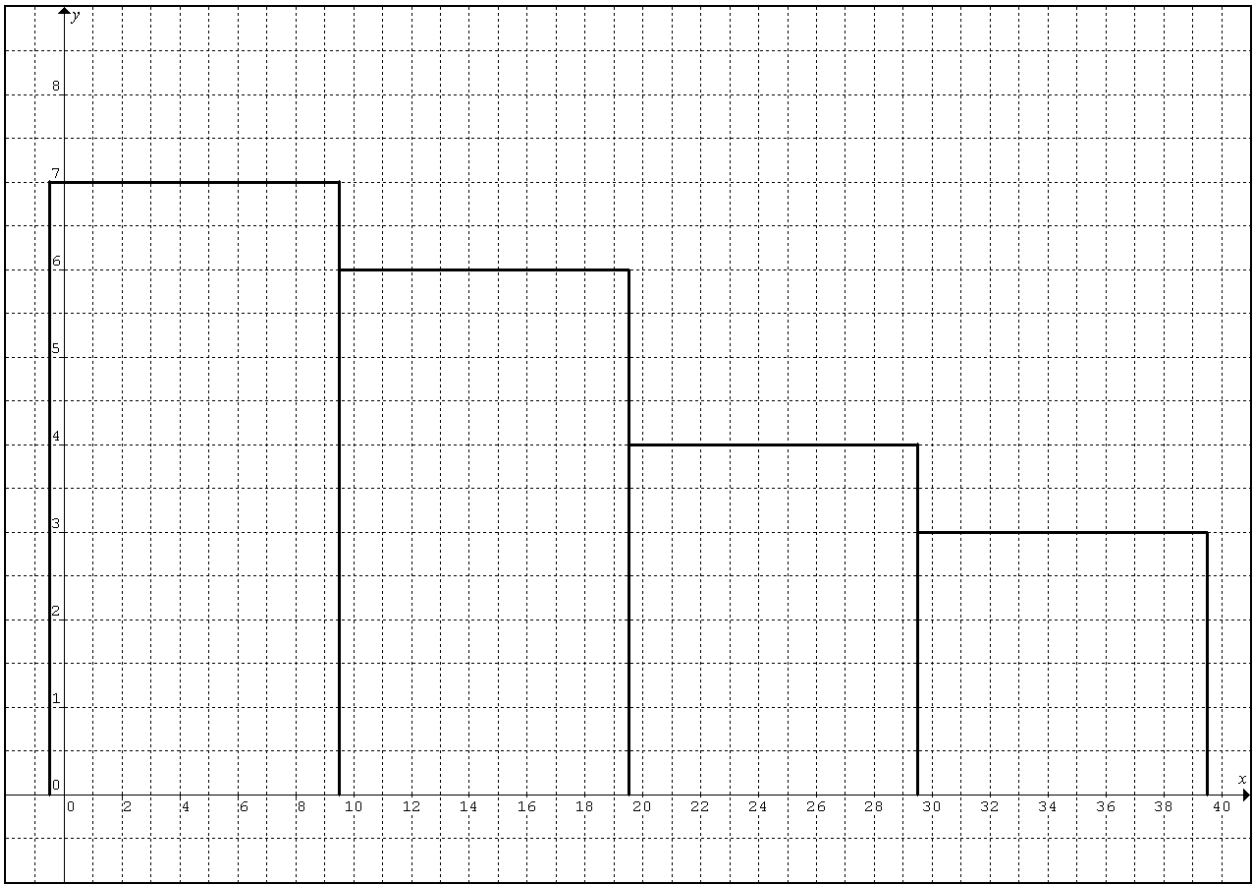
A) The percentage is at least 75% B) The percentage is at most 95%
C) The percentage is at most 75% D) The percentage is at least 95%

SOLUTIONS

Problem 1

Hours	Frequency
3 – 4.9	3
5 – 7.9	13
7 – 8.9	7
9 – 10.9	1

Problem 2



The approximate amount at the center of the histogram (point 19.5) is

$$\frac{4+6}{2} = 5.$$

Problem 3

Items 69 and 98 have frequency 2 whilst other items have frequency 1. Therefore the data is bimodal and the modes are 69 and 98. The correct answer is "D".

Problem 4

The mean of the data is

$$\frac{3.5+1.6+2.4+3.7+4.1+3.9+1.0+3.6+4.2+3.4+3.7+2.2+1.5+4.2+3.4+2.7+0.4+3.7+2.0+3.6}{20}$$

$$=\frac{58.8}{20}=2.94$$

The correct answer is "B".

Problem 5

We write the data items in the increasing order.

0.47, 0.56, 0.67, 0.67, 0.75, 0.75, 0.82, 0.82, 0.83, 0.83, 0.93, 1.03, 1.04, 1.04, 1.21, 1.21, 1.42, 1.42, 1.53, 1.62, 1.72.

Because the number of items is odd, 21, the median coincides with the item number 11, which is 0.93.

The correct answer is "B".

Problem 6

We will use formula 3-5 on page 94 (you can also use formula 3-4).

$$s=\sqrt{\frac{n\sum(x^2)-(\sum x)^2}{n(n-1)}}$$

We start with computing the sum of data items

$$\sum x = 0.189 + 0.518 + 0.665 + 0.568 + 0.149 + 0.573 + 0.202 = 2.864.$$

Next

$$\sum (x^2) = 0.189^2 + 0.518^2 + 0.665^2 + 0.568^2 + 0.149^2 + 0.573^2 + 0.202^2 \approx 1.4602.$$

Finally

$$s = \sqrt{\frac{7 \cdot 1.4602 - 2.864^2}{7 \cdot 6}} \approx .2192$$

The correct answer is "C"

Problem 7

We notice that $144 - 120 = 120 - 96 = 24 = 2s$**. According to the Empirical Rule (page 100) the percentage of data items in the interval** $[\overline{x} - 2s, \overline{x} + 2s]$ **is approximately 95%. The correct answer is "C".**

Problem 8

Like in the previous problem we notice that $74.3 - 67.5 = 67.5 - 60.7 = 6.8 = 2s$**. By the Chebyshev's Theorem (page 101) at least 75% of all data items are in the interval** $[\overline{x} - 2s, \overline{x} + 2s]$**. The correct answer is "A".**