

Section 16-3: The Histogram

1. 080437a, P.I. A.S.5

The following set of data represents the scores on a mathematics quiz:

58, 79, 81, 99, 68, 92, 76, 84, 53, 57, 81, 91,
77, 50, 65, 57, 51, 72, 84, 89

Complete the frequency table below and, on the accompanying grid, draw and label a frequency histogram of these scores.

Mathematics Quiz Scores

Interval	Tally	Frequency
50–59		
60–69		
70–79		
80–89		
90–99		

A full-page sheet of white graph paper with a light gray grid. The grid consists of small squares, approximately 1 cm by 1 cm each, covering the entire area of the page. There are no margins or other markings on the paper.

2. 060033a, P.I. A.S.5

The scores on a mathematics test were 70, 55, 61, 80, 85, 72, 65, 40, 74, 68, and 84.

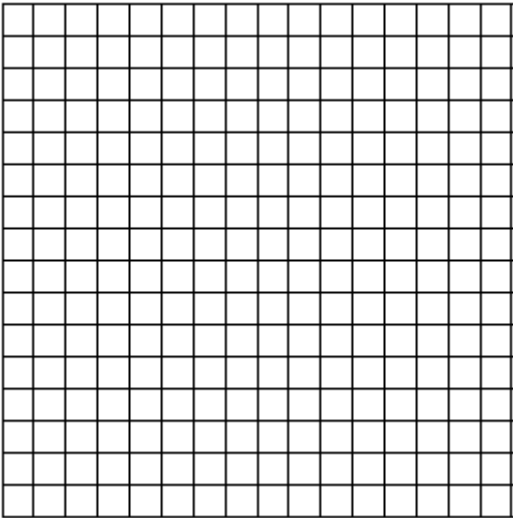
Complete the accompanying table, and use the table to construct a frequency histogram for these scores.

Score	Tally	Frequency
40–49		
50–59		
60–69		
70–79		
80–89		

3. 010032a, P.I. A.S.5
- In the time trials for the 400-meter run at the state sectionals, the 15 runners recorded the times shown in the table below.

400-Meter Run	
Time (sec)	Frequency
50.0–50.9	
51.0–51.9	II
52.0–52.9	
53.0–53.9	III
54.0–54.9	IIII

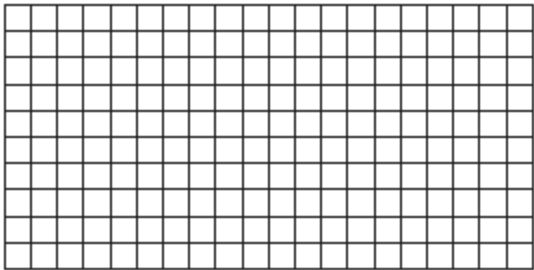
a Using the data from the frequency column, draw a frequency histogram on the grid provided below.



b What percent of the runners completed the time trial between 52.0 and 53.9 seconds?

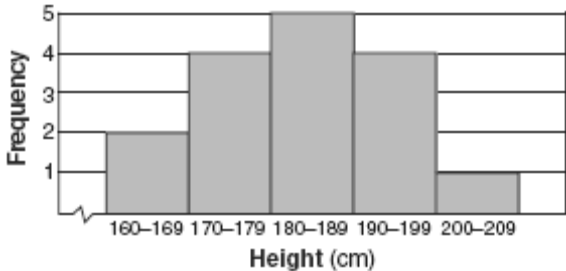
4. 010334a, P.I. A.S.5
- Sarah's mathematics grades for one marking period were 85, 72, 97, 81, 77, 93, 100, 75, 86, 70, 96, and 80.
- a Complete the tally sheet and frequency table below, and construct and label a frequency histogram for Sarah's grades using the accompanying grid.

Interval (grades)	Tally	Frequency
61–70		
71–80		
81–90		
91–100		



b Which interval contains the 75th percentile (upper quartile)?

5. 010504a, P.I. A.S.9
- The accompanying histogram shows the heights of the students in Kyra's health class.



What is the total number of students in the class?

- [A] 209 [B] 15 [C] 16 [D] 5

[3] The frequency table is completed correctly, showing frequencies of 6, 2, 4, 5, and 3, and a frequency histogram is drawn and labeled correctly.

[2] The frequency table is completed correctly, but one graphing error is made, such as not labeling the axes, having nonequal intervals, or starting the x -axis at 50.

or [2] The frequency table is completed incorrectly, but an appropriate frequency histogram is drawn.

or [2] The frequency histogram is drawn and labeled correctly, but the frequency table is not completed.

[1] The frequency table is completed correctly, but two or more graphing errors are made.

or [1] The frequency table is completed correctly, but no frequency histogram is drawn or a bar graph is drawn.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[1] incorrect procedure.

[4] A correct table and histogram with appropriate labels and scales are shown, such as

the table below.

SCORE	TALLY	FREQUENCY
40-49	/	1
50-59	/	1
60-69	///	3
70-79	///	3
80-89	///	3

[3] An incorrect table is shown, but the histogram is appropriate, based on this table.

or [3] A correct table is shown, but one error is made on the histogram, such as using incorrect labels or no labels.

or [3] An incomplete table is shown, but the histogram is correct.

[2] An incomplete table is shown, and the histogram is partially correct.

or [2] A correct table is shown, and a correct bar graph is made.

[1] A correct table is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[2] incorrect procedure.

a [2] An appropriate histogram is drawn with both axes labeled with a correct numerical scale.

[1] A correct bar graph is drawn.

or [1] The parts of the histogram are not labeled.

or [1] Equal interval scales are not shown.

or [1] One error on frequency calculation is made.

[0] Two or more mistakes on frequency calculation are made.

b [2] 60% and an appropriate explanation is given.

[1] An appropriate method to find percent is shown, but a mistake is made in reading the

chart, such as $\frac{6}{15} = 40\%$ or $\frac{9}{15}$ is shown but

not given as a percent answer.

or [1] 60% and no explanation is given.

a and *b*

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[3] incorrect procedure.

a [3] The frequency table is completed correctly, and a histogram is drawn with a correct scale and is labeled correctly.

[2] One or two errors are made in the frequency table, but an appropriate histogram is drawn.

or [2] The frequency table is completed correctly, but one error is made in drawing the histogram.

[1] A correct histogram is drawn, but the frequency table is not completed.

b [1] The interval 91-100 is identified as containing the 75th percentile.

or [1] The appropriate interval is identified, based on an incorrect frequency table in part *a*.

a and *b*

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[4] incorrect procedure.

[5] C