

Gr. 12 Mathematics of
Data Management

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www.ghcimdm4u.weebly.com

<http://www.surveymonkey.com/s/H8T9GGB>

Statistics

One-Variable Statistics

Two-Variable Statistics *

Discrete vs Continuous Variables

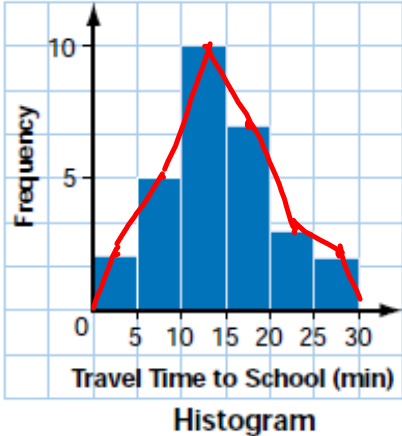
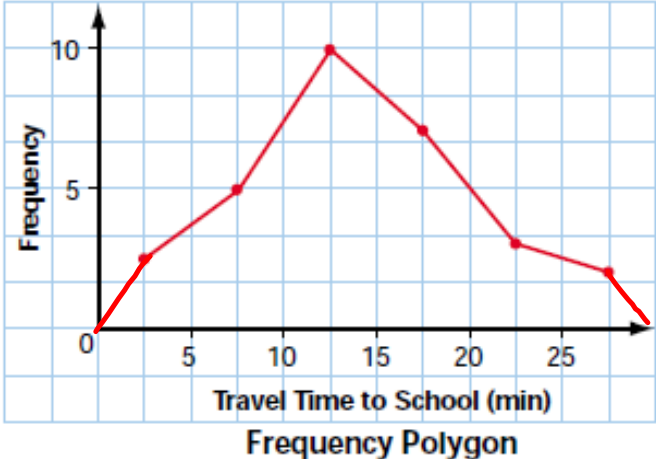
Primary vs Secondary Data

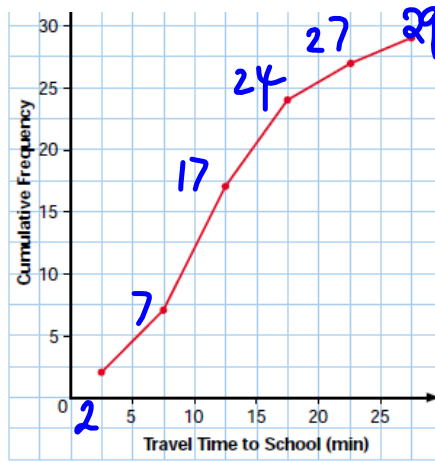
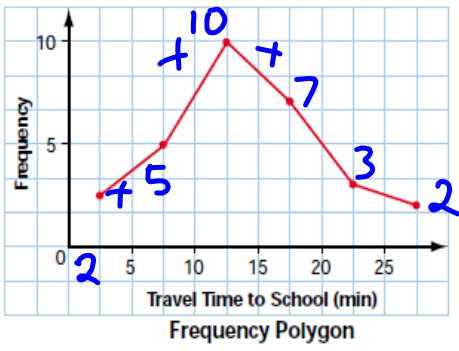
Bar Graph

Histogram

Pie Chart / Circle graph

Frequency Polygon





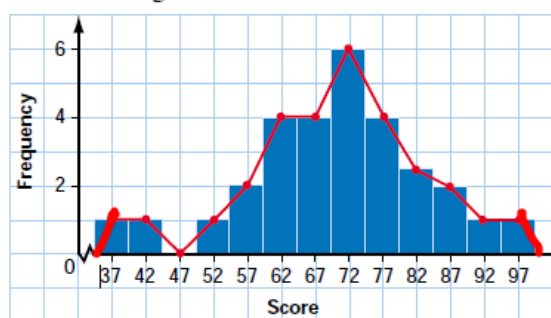
↑ sum of frequencies

| Score (%) | Midpoint | Tally | Frequency | Relative Frequency |
|-----------|----------|-------|-----------|--------------------|
| 34.5-39.5 | 37 | | 1 | 0.033 |
| 39.5-44.5 | 42 | | 1 | 0.033 |
| 44.5-49.5 | 47 | - | 0 | 0 |
| 49.5-54.5 | 52 | | 1 | 0.033 |
| 54.5-59.5 | 57 | | 2 | 0.067 |
| 59.5-64.5 | 62 | | 4 | 0.133 |
| 64.5-69.5 | 67 | | 4 | 0.133 |
| 69.5-74.5 | 72 | | 6 | 0.200 |
| 74.5-79.5 | 77 | | 4 | 0.133 |
| 79.5-84.5 | 82 | | 3 | 0.100 |
| 84.5-89.5 | 87 | | 2 | 0.067 |
| 89.5-94.5 | 92 | | 1 | 0.033 |
| 94.5-99.5 | 97 | | 1 | 0.033 |

$\frac{30}{30}$
 $\frac{\text{frequency}}{\text{total data collected}}$

30
 sum of data

The frequency polygon can be superimposed onto the same grid as the histogram.



1. Explain the problem with the intervals in each of the following tables.

a)

| Age (years) | Frequency |
|-------------|-----------|
| 28–32 | 6 |
| 33–38 | 8 |
| 38–42 | 11 |
| 42–48 | 9 |
| 48–52 | 4 |

- Intervals are not consistent
- 28, 38 and 48 are common in 2 intervals

b)

| Score (%) | Frequency |
|-----------|-----------|
| 61–65 | 5 |
| 66–70 | 11 |
| 71–75 | 7 |
| 76–80 | 4 |
| 91–95 | 1 |

1. a) Some intervals have common endpoints; a 38-year-old could be placed in either of two intervals.
b) The intervals 81–85 and 86–90 are omitted.

2. Would you choose a histogram or a bar graph with separated bars for the data listed below? Explain your choices.
- a) the numbers from 100 rolls of a standard die *Categorical + discrete* *bar*
 - b) the distances 40 athletes throw a shot-put *numerical + continuous* *histogram*
 - c) the ages of all players in a junior lacrosse league *numerical + discrete* *bar*
 - d) the heights of all players in a junior lacrosse league *numerical + continuous* *histogram*

5. The examination scores for a biology class are shown below.

| | | | | | | | | |
|----|----|----|----|----|----|----|----|----|
| 68 | 77 | 91 | 66 | 52 | 58 | 79 | 94 | 81 |
| 60 | 73 | 57 | 44 | 58 | 71 | 78 | 80 | 54 |
| 87 | 43 | 61 | 90 | 41 | 76 | 55 | 75 | 49 |

- Determine the range for these data.
- Determine a reasonable interval size and number of intervals.
- Produce a frequency table for the grouped data.
- Produce a histogram and frequency polygon for the grouped data.
- Produce a relative-frequency polygon for the data.
- Produce a cumulative-frequency polygon for the data.
- What do the frequency polygon, the relative-frequency polygon, and the cumulative-frequency polygon each illustrate best?

5. The examination scores for a biology class are shown below.

| | | | | | | | | |
|----|----|----|----|----|----|----|----|----|
| 68 | 77 | 91 | 66 | 52 | 58 | 79 | 94 | 81 |
| 60 | 73 | 57 | 44 | 58 | 71 | 78 | 80 | 54 |
| 87 | 43 | 61 | 90 | 41 | 76 | 55 | 75 | 49 |

- a) Determine the range for these data. *biggest - smallest*
 $94 - 41 = 53$
- b) Determine a reasonable interval size and number of intervals. *5* \rightarrow *# of intervals*
- c) Produce a frequency table for the grouped data. $= \frac{53}{5} = 10.6 \dots$
 $\div 11$
- d) Produce a histogram and frequency polygon for the grouped data.
- e) Produce a relative-frequency polygon for the data.
- f) Produce a cumulative-frequency polygon for the data.
- g) What do the frequency polygon, the relative-frequency polygon, and the cumulative-frequency polygon each illustrate best?

