

## Section 5.2 Frequency Tables, Histograms and Frequency Polygons

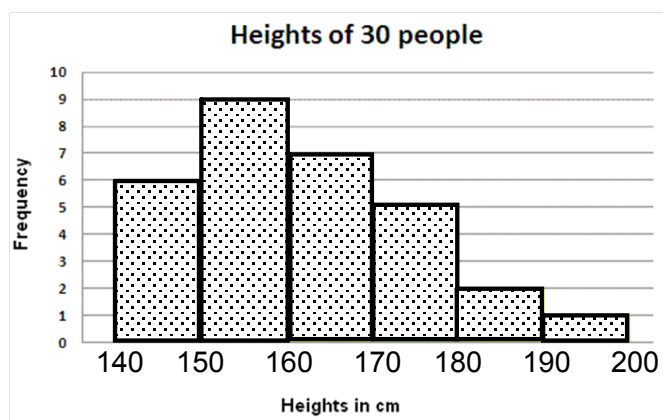
### Frequency distribution

- ↳ a set of intervals that can be displayed in a table, histogram or frequency polygon.
- ↳ Each interval is associated with a number that tells how often (frequent) numbers in that interval appear.

| Heights in cm | Tally | Frequency |
|---------------|-------|-----------|
| 140 - 150     |       | 6         |
| 150 - 160     |       | 9         |
| 160 - 170     |       | 7         |
| 170 - 180     |       | 5         |
| 180 - 190     |       | 2         |
| 190 - 200     |       | 1         |

### Histogram

- ↳ the graph of a frequency distribution.
- ↳ Equal intervals of values are marked along the horizontal axis and the frequencies associated with each interval are graphed by the areas of rectangles drawn for these intervals.

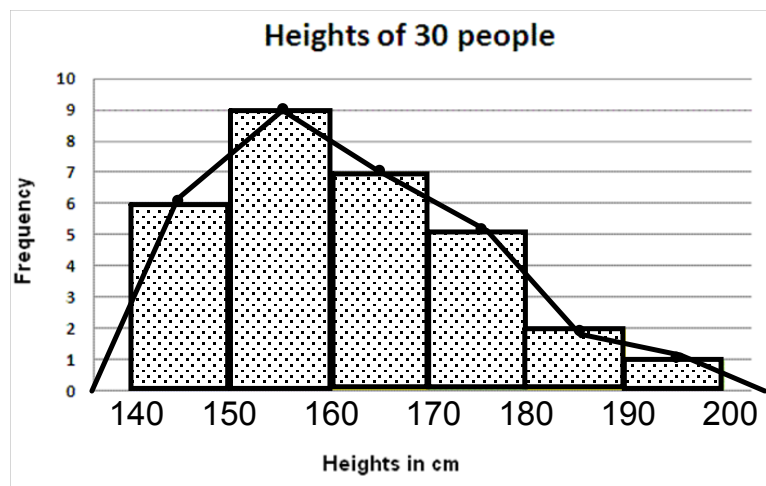


#### Note:

Unlike a bar graph, there are NO spaces between the bars in a histogram.

**Frequency polygon:**

↳ the graph of a frequency distribution made when the midpoints of the intervals using straight lines.

***Key Things to Remember about Frequency Polygons:***

- Start at the origin.
- Connect to the midpoint of each interval.
- It starts and ends on the x-axis.
- To close the frequency polygon go to the center of the "next" interval on the x-axis.

**Example 1:**

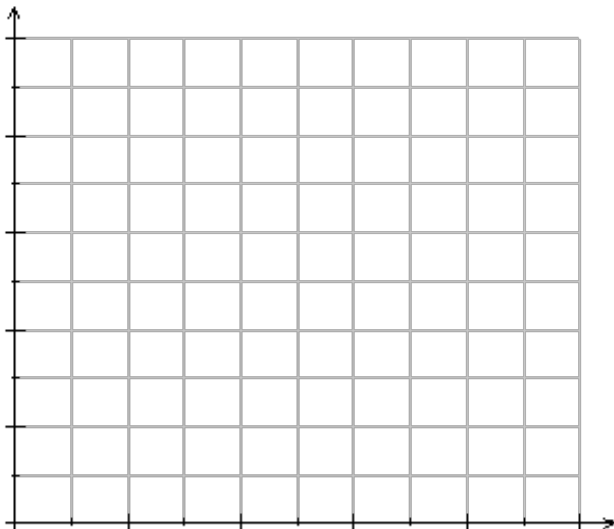
The marks earned on a 10 question Grade 11 assignment for a class of 20 students are given below.

7 6 7 5 7 7 8 7 6 9  
8 4 10 6 8 8 9 5 6 4

a) Construct a frequency table.

| Mark | Tally | Frequency |
|------|-------|-----------|
| 4    |       |           |
| 5    |       |           |
| 6    |       |           |
| 7    |       |           |
| 8    |       |           |
| 9    |       |           |
| 10   |       |           |

b) Display the data on a histogram. How is the data distributed?

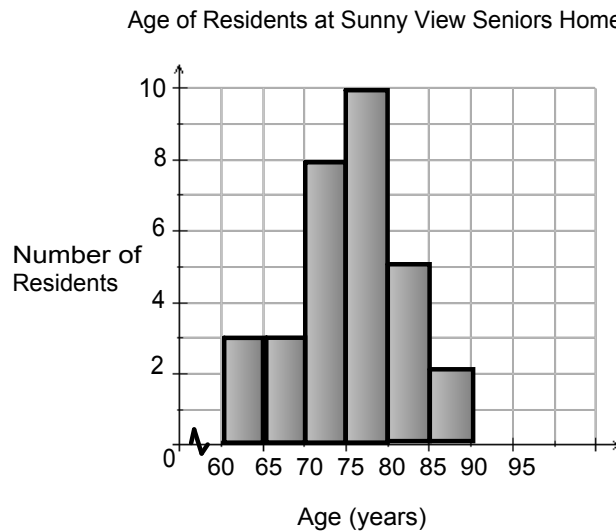
**Note:**

Make sure to label each axis correctly and provide a title to any graph.

c) Construct a frequency polygon.

## Example 2:

Refer to the histogram below and answer the following questions.



- How does the above histogram differ from a bar graph?
- How many residents are between the age of 60 and 70?
- How many residents are between the age of 70 and 75?
- How many residents are at Sunny View Seniors Home in total?
- Which interval would include someone who is exactly 80?

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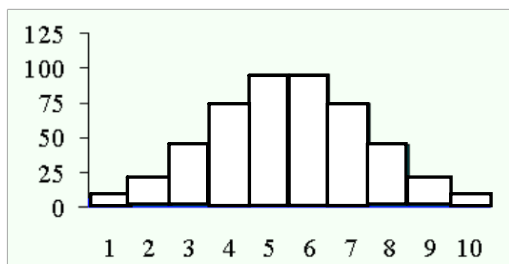
## Dispersion

- A measure that describes how spread out the data is.
- A dispersion of zero means all the data in the set are identical.
- The dispersion increases as the data becomes more spread out.
- Range and standard deviation are measures of dispersion.

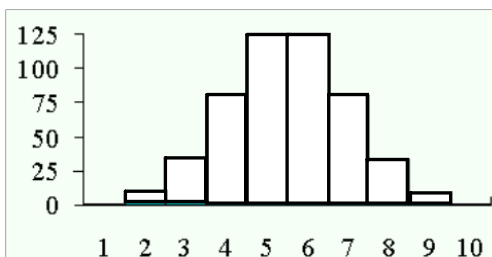
### Example 3:

Which of the distribution of scores has the larger dispersion?  
Justify your answer.

Data Set A



Data Set B



→

## Example 4:

Jason does a survey at the local dog park. He asks owners how long it takes to walk their dog to the park. The responses (in mins) are given below.

7 32 13 27 9 27 17 12 12 26 23 16 25  
 16 17 19 10 20 24 20 25 28 18 19 18 14  
 19 13 3 19 22 21 22 20 19 12 18 19

a) Construct a frequency table for the data above.

| Time<br>(in minutes) | Tally | Frequency |
|----------------------|-------|-----------|
|                      |       |           |
|                      |       |           |
|                      |       |           |
|                      |       |           |
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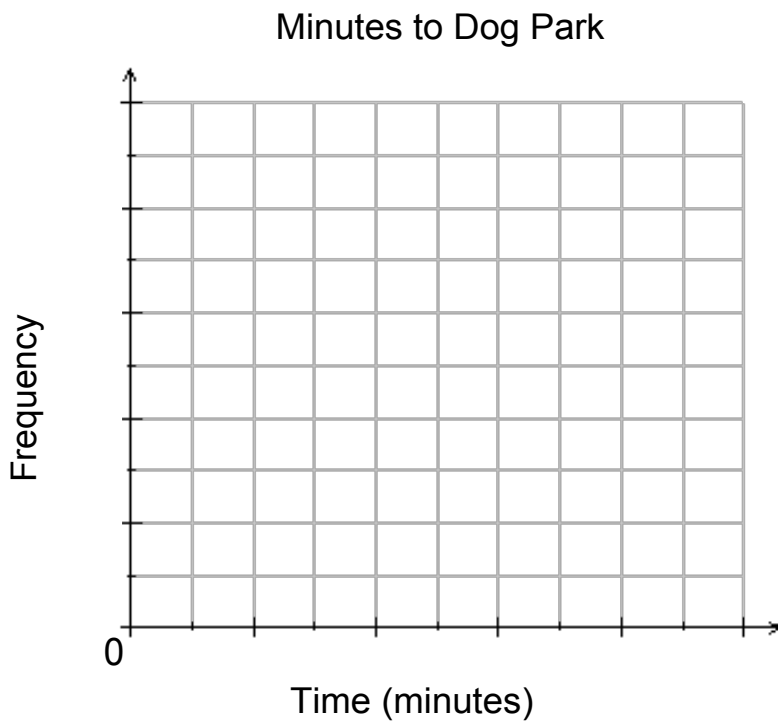
**Note:**

Most tables have between 5 to 12 intervals. To decide how many intervals consider the range.



b) Construct a frequency polygon to display the data.

| Time<br>(in minutes) | Midpoint<br>(add the boundaries<br>and divide by 2) | Frequency |
|----------------------|---|-----------|
|                      |   |           |
|                      |   |           |
|                      |   |           |
|                      |   |           |
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|                      |   |           |



## Attachments

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5s2e2.mp4