

## 2 Frequency Tables, Histograms, and Polygons

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FOM 11

### 5.2 Frequency Tables, Histograms and Frequency Polygons

A **frequency distribution** is a set of intervals (table or graph) into which **raw data** is organized; each interval is associated with a frequency that indicates the number of measurements in this **interval**.

→ like a bar chart but the bars touch

A **histogram** is the **graph of a frequency distribution**, in which equal intervals of values are marked on the horizontal axis and the frequencies associated with these intervals are indicated by the areas of the rectangles drawn for these intervals.

A **frequency polygon** is the graph of a frequency distribution, produced by joining the **midpoints** of the **intervals using straight lines**.

**Example 1:** The following is a set of test scores out of 100.

<del>45</del>	68	94	76	89	99
<del>53</del>	79	61	61	98	72
<del>61</del>	80	98	59	91	68
72	32	57	69	42	78
48	87	78	74	93	71

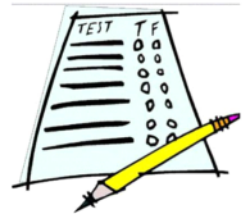
Tally marks

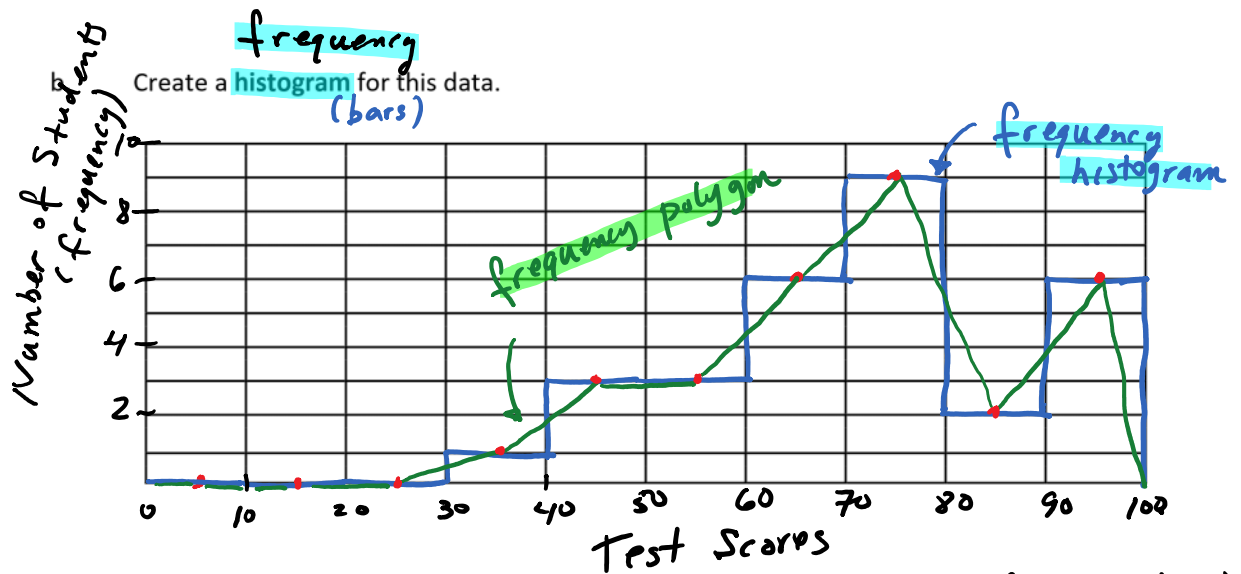
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a. Create a **frequency table**.

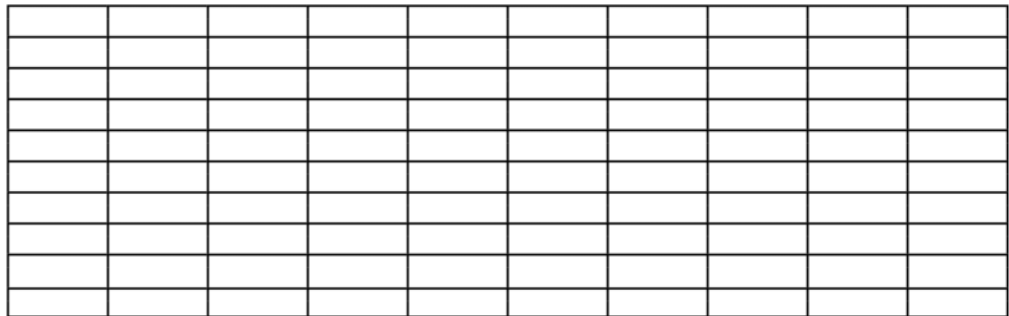
Score	Tally	Frequency
0-10		0
10-20		0
20-30		0
30-40		1
40-50		3
50-60		3
60-70		6
70-80		9
80-90		2
90-100		6

QQ 10-20 → includes 20 but not 10! Total: 30  
⇒ (10, 20]

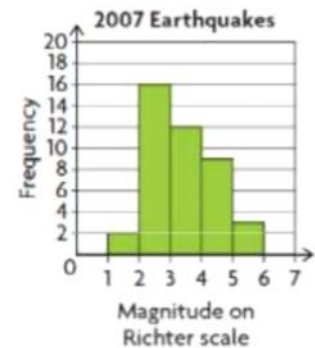
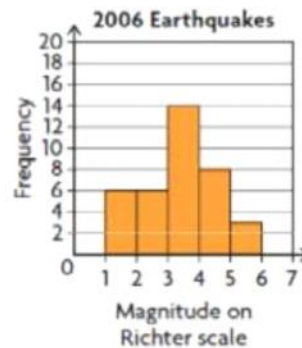
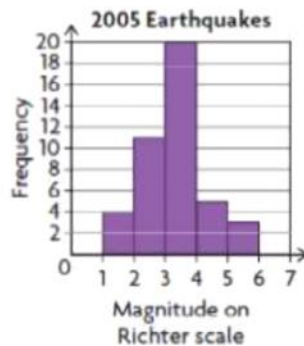




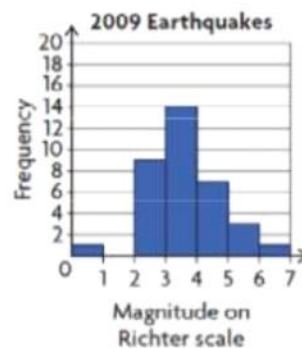
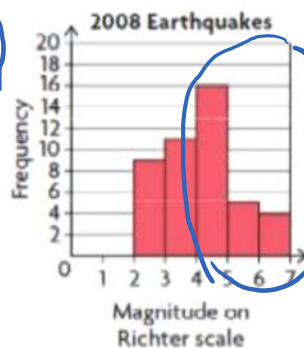
- c. Create a frequency polygon of this data. → connect midpoint top of each interval



**Example 2** (pg. 218): The magnitude of an earthquake is measured using the **Richter scale**. Examine the **histograms for the frequency of earthquake** magnitudes in Canada from 2005-2009. Which of these years could have had the **most damage from earthquakes**?



Probably worst!



National Research Council Canada

#### Understanding the Richter Scale\*

Magnitude	Effects
less than 3.0	recorded by seismographs; not felt
3.0-3.9	feels like a passing truck; no damage
4.0-4.9	felt by nearly everyone; movement of unstable objects
5.0-5.9	felt by all; considerable damage to weak buildings
6.0-6.9	difficult to stand; partial collapse of ordinary buildings
7.0-7.9	loss of life; destruction of ordinary buildings
more than 7.9	widespread loss of life and destruction

\*Every unit increase on the Richter scale represents an **earthquake 10 times more powerful**. For example, an earthquake measuring 5.6 is 10 times more powerful than an earthquake measuring 4.6.

**Assignment:** Frequency Tables, Histograms & Frequency Polygons Worksheet