

Lesson 4.1 Interpreting Statistics

Goal: Use statistical measures and reasoning to interpret statistical data

Recall Measures of Central Tendency (_____, _____, and _____)

_____ : the average (add up all the values and divide by the # of values in the data set)

_____ : the value that lies in the **middle** of **sorted** data

_____ : the value that occurs most frequently within the data

_____ : the highest data value **MINUS** the lowest data value (a measure of spread)

EXAMPLE 1 The 14 students in Jesse’s math class measured their heights to the nearest centimetre.

160 178 167 180 168 157 164 179 153 182 176 165 175 167

- a) Determine the measures of central tendency and the range for this set of data.
- b) What percent of the class is shorter than each measure of central tendency?
- c) Ryan is taller than 65% of the class. How many students are shorter than he is? What is Ryan’s height?

Measures of Spread

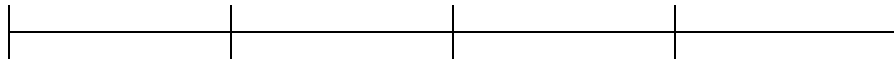
Standard Deviation: measures how _____ the data are centered around the _____

Percentiles: tells what percent of the data are _____ a particular data value

- _____ of the data are less than or equal to the _____ percentile

Quartiles: divide a set of *sorted* data into **four** equal parts

- The **2nd** quartile, Q_2 is the median of _____. It cuts the data set in _____ so it is the same as the _____ percentile
- The **1st** quartile, Q_1 is the median of _____, below Q_2 . It divides the lower half of the data set in half so it is the same as the _____ percentile
- The **3rd** quartile, Q_3 is the median of _____, above Q_2 . It divides the higher half of the data set in half so it is the same as the _____ percentile



Example 2 Here are the hourly pay rates, in dollars, for 17 high-school students with part-time jobs.

11.50	10.50	8.00	8.25	9.00	9.15	9.75	7.50	8.00
12.50	13.00	11.25	10.75	9.50	9.25	9.45	7.75	

a) What are the quartiles for this data set?

b) Damien's pay is in the 85th percentile for this group. What does the percentile mean? What is Damien's hourly pay rate?

Data Reliability – Comparing Data Sources

Decide which data source is more likely to provide reliable data for each research topic described below.

RESEARCH TOPIC	DATA SOURCE #1	DATA SOURCE #2
a) The benefits or adverse effects of drinking milk	A pamphlet from an animal rights group that opposes dairy farming	Canada’s Food Guide produced by Health Canada
b) Effects of logging on the population of a bird species	A pamphlet from a wildlife protection organization	A forestry company advertisement
c) Possible complications of flu shots	A Ministry of Healthy Web site	A Web site run by a group that opposes immunizations

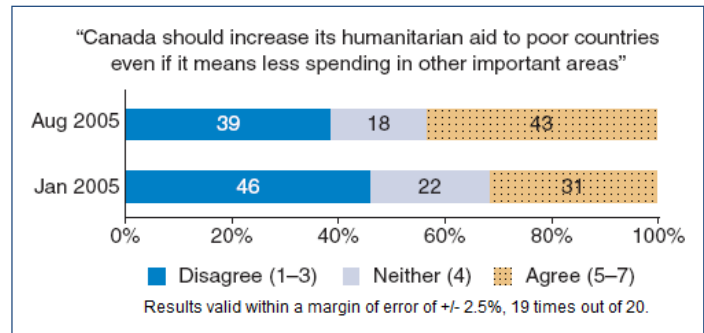
Explain your choices:

a)	
b)	
c)	

Interpreting Poll Results

The results of a poll conducted by EKOS in 2005 are shown.

a) What question were people asked?



b) How did the favourable responses compare in January and August?

c) A line below the graph states that the “**results are valid within a margin of error of plus or minus 2.5 percentage points, 19 times out of 20.**” What does this mean?