

4.1 INTERPRETING STATISTICS

A **percentile**: tells approximately what percent of the data is LOWER than a particular data value.

Quartiles : The values that split the data into FOUR equal parts

Example 1: Given the data : 1, 2, ~~3~~, 4, 5, ~~6~~, 7, ~~8~~, 9, 10

$$Q_1 = 3 \quad Q_2 = 5.5 \quad Q_3 = 8$$

- The second quartile is the median (cuts the data set in half) -- 50th percentile
- The first quartile is the median of the LOWER HALF of the data. -- 25th percentile.
- The third quartile is the median of the UPPER HALF of the data -- 75th percentile.

Example: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

$$Q_1 = 3 \quad Q_2 = \frac{5+6}{2} \quad Q_3 = 8$$

$$Q_2 = 5.5$$

Example 1

Here are the hourly pay rates of the students in Jim's class:

\$12.00, \$7.50, \$9.00, \$9.50, \$8.75, \$10.25, \$9.50,
\$7.75, \$8.75 (9 pieces of data)

a) Find the quartiles for the data:

Step 1--order the data from least to greatest

Step 2--find the median (Q_2)

Step 3--find the median of the lower half (Q_1)

Step 4--find the median of the upper half (Q_3)

\$7.50, \$7.75, \$8.75, \$8.75, \$9.00, \$9.50, \$9.50, \$10.25, \$12.00

$$\begin{array}{ccc}
 \begin{array}{c} \downarrow \\ \text{Q}_1 \\ \frac{7.75 + 8.75}{2} = 8.25 \end{array} & \begin{array}{c} \uparrow \\ \text{Q}_2 = 9.00 \end{array} & \begin{array}{c} \downarrow \\ \text{Q}_3 \\ \frac{9.50 + 10.25}{2} = 9.88 \end{array}
 \end{array}$$

b) Jagdeep's pay is in the 85th percentile, what is his pay?

Step 1: Determine how many pieces of data there are (9) -- put in order from least to greatest

Step 2: Find 85% of the number of pieces of data

$$0.85 \times 9 = 7.65$$

Step 3: Round DOWN to the nearest whole number to find the number of students earning LESS than Jagdeep.

7 students earn LESS than Jagdeeps. Therefore, Jagdeep is data #8 which is \$10.25/hr.

c) Jennifer's pay is in the 40th percentile.
What is her pay rate?

$$0.40 \times 9 = 3.6$$

Therefore 3 students earn LESS than her.
Her's is the 4th piece of data which is \$8.75

Read together examples 2 and 3 from p. 199
and 200 in textbook and discuss.

Homework: p. 201 #1-4,7-12,14