**Math 10 – Collecting and grouping raw data**          **Answers** (gw02)

**(example using my data – your answers will differ)**

1. Ask 20 different students what city they live in and the time it takes (in minutes) to get to De Anza from their home or work. Record the information here:

| CITY | time | CITY | time | CITY | time |
|------|------|------|------|------|------|
| San Jose | 20 | San Jose | 30 | San Jose | 35 |
| San Jose | 25 | San Jose | 25 | Santa Clara | 35 |
| Cupertino | 10 | Santa Clara | 80 | San Jose | 15 |
| San Jose | 34 | San Jose | 44 | Santa Clara | 25 |
| Cupertino | 15 | Campbell | 31 | San Jose | 20 |
| San Jose | 45 | San Jose | 13 | San Jose | 26 |
| Santa Clara | 35 | Milpitas | 50 | | |

2. Group the **City** data into categories. Use the blank lines for additional cities (you probably won't need all the lines). Calculate the frequency and relative frequency.

| City | Frequency | Relative Frequency |
|------|-----------|-------------------|
| Campbell | 1 | 0.05 |
| Cupertino | 2 | 0.10 |
| Milpitas | 1 | 0.05 |
| San José | 12 | 0.60 |
| Santa Clara | 4 | 0.20 |
| | | |
| Total | 20 | 1.00 |

3. Create a relative frequency **bar graph** of the City data.
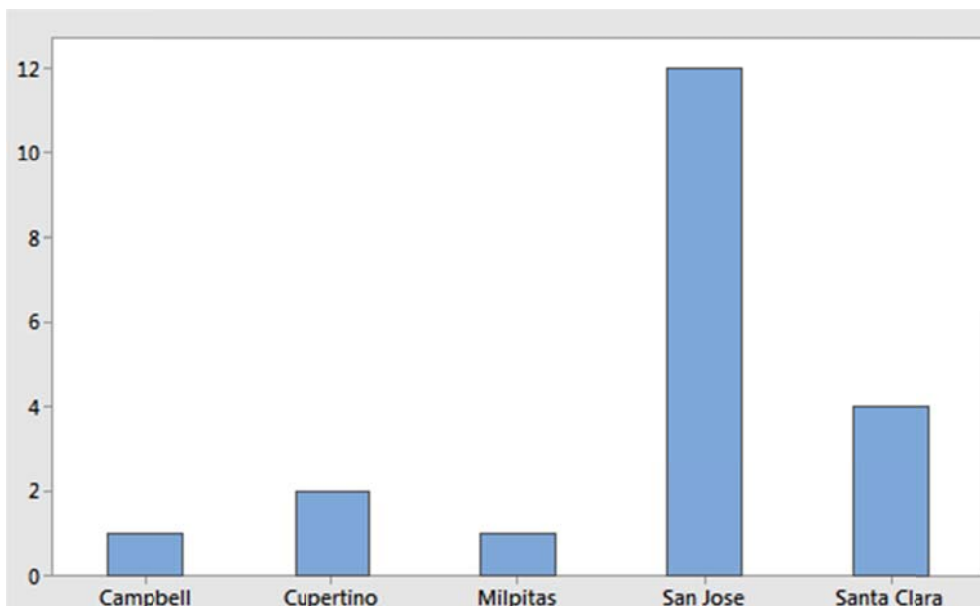
4. For the **time** data, calculate the **range** of the data (high minus low)

   Range = 80 - 10 = 70 minutes

5. Determine the needed interval width for 5 class intervals (range +1)/5 **rounded up** to an integer.

   (70+1)/5 = 15 (rounded up)

6. Group the **time** data into 5 intervals of equal width starting with the lowest number. Calculate the frequency, relative frequency and cumulative relative frequency.

| Interval | Frequency | Relative Frequency | Cumulative Rel. Freq. |
|---|---|---|---|
| ( 10 , 30 ) | 6 | 0.30 | 0.30 |
| ( 25 , 40 ) | 10 | 0.50 | 0.80 |
| ( 40 , 55 ) | 3 | 0.15 | 0.95 |
| ( 55 , 70 ) | 0 | 0.00 | 0.95 |
| ( 70 , 85 ) | 1 | 0.05 | 1.00 |
| Total | 20 | 1.00 | |

7. Create a histogram of the **time** data and describe the shape of the data.
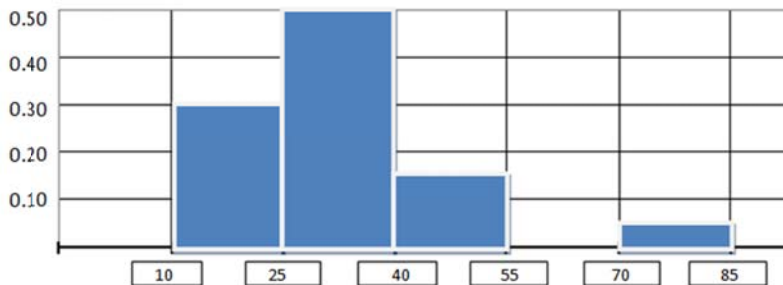


   Center around 35, Spread is 75 minutes range
   Shape is skewed positive. There appears to be one outlier.

8. Create an ogive **and** estimate the median and quartiles.



Q1     med   Q3
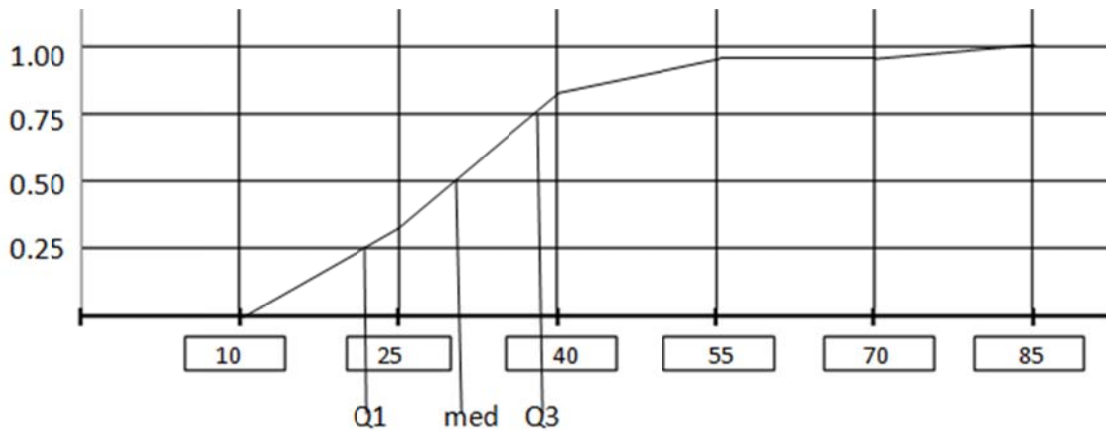
Estimates from ogive: Q1=22,    median=30    Q3=38