

IB Math Day 3: **How many hours a week do you work?**



How many hours a week do seniors in Oregon work during the school year? We will use this class as a sample of all students in Michigan. *[Using a sample like this to represent the entire state would not give us a reliable estimation of the true values]*

1. Record the data for the class here (or just look at the front board)
2. Go to **stapplet.com** Enter the classroom data and create a **dot plot** for our classroom data. Sketch what you see.

3. In the applet, look below the dotplot at the "Summary Statistics". Record the mean and median (med). *Include units!*

Mean = _____

Median = _____

4. Which is larger: the mean or the median? What is the **shape** of the distribution?

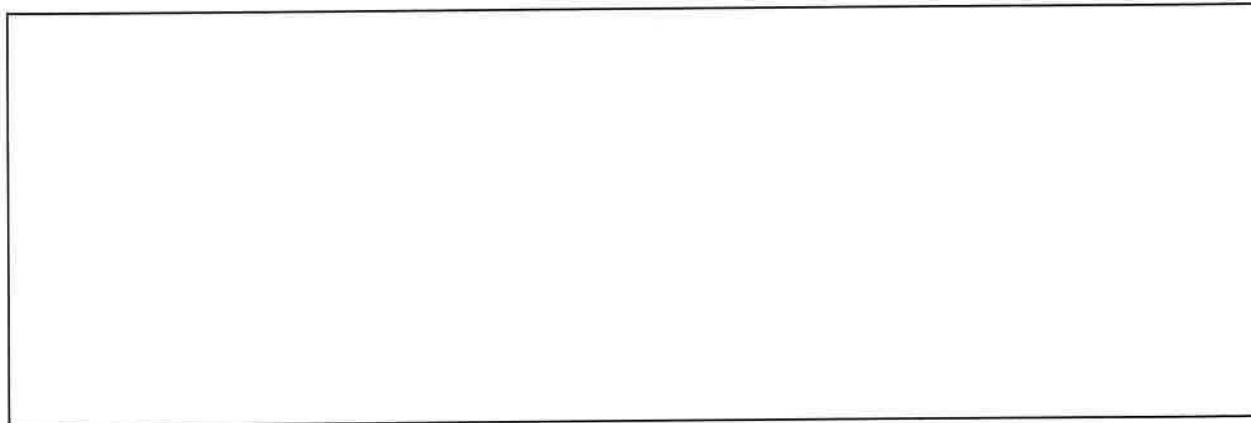
5. We forgot to add Mr. Cedarlund to the data set. He works 65 hours per week. Add his value and see how the mean and median change.

New mean: _____

New median: _____

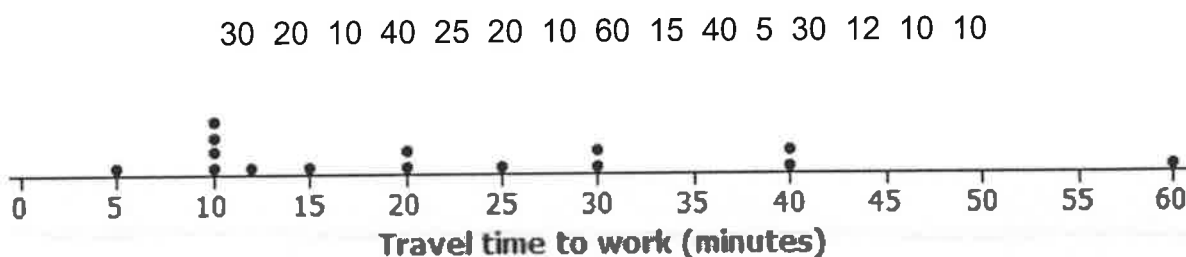
6. Which of the two statistics was more "resistant" to change when the larger data value was added to the data set?"

Lesson 1.6 – Measuring Center



Is the pace of life slower in smaller cities?

Does it take less time to get to work in smaller cities? Here are the travel times in minutes for 15 workers in North Carolina, chosen at random by the Census Bureau along with a dotplot of the data:



1. Find the median. Interpret this value in context.
2. Using your graphing calculator, quickly calculate the mean travel time. Show your work which means show your two critical values involved in the calculation.
3. Which measure of center—the median or the mean—describes a typical travel time to work for this sample of workers in North Carolina? Justify your answer.

Understanding Statistical Notation

Calculate the mean of *non-continuous data* that has been grouped

A boy rolled a die 50 times with the following results:

| Score | Frequency |
|-------|-----------|
| 1 | 9 |
| 2 | 10 |
| 3 | 5 |
| 4 | 8 |
| 5 | 7 |
| 6 | 11 |

a) An illustration of the average (mean) score:

Let x_i represents scores and f_i represents frequencies:

Multiply f_i by x_i .

| x_i | f_i | $f_i \cdot x_i$ |
|-------|-----------------|------------------------|
| 1 | 9 | 9 |
| 2 | 10 | 20 |
| 3 | 5 | 15 |
| 4 | 8 | 32 |
| 5 | 7 | 35 |
| 6 | 11 | 66 |
| | $\sum f_i = 50$ | $\sum f \cdot x = 177$ |

Find the sum of all “ $f \cdot x$ ” values which is written as $\sum f \cdot x$

$$\text{Mean score} = \frac{\sum f \cdot x}{\sum f_i} = \frac{177}{50} = 3.54 \text{ points}$$

b) Calculate using the “spreadsheet” on your GDC

c) Calculate directly, the preferred method on an IB exam, showing critical totals