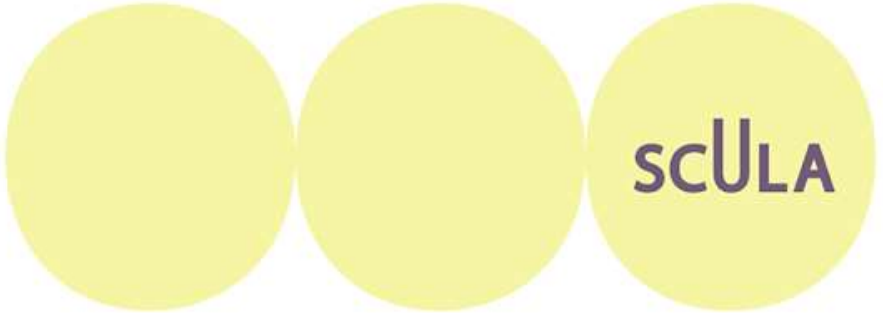
SAT MATH SECTION

Statistics I

How likely it is that...

- Mean, Mode, and Median
- Range and Standard Deviation
- Histograms and dot Plots



Mean, Mode, and Median

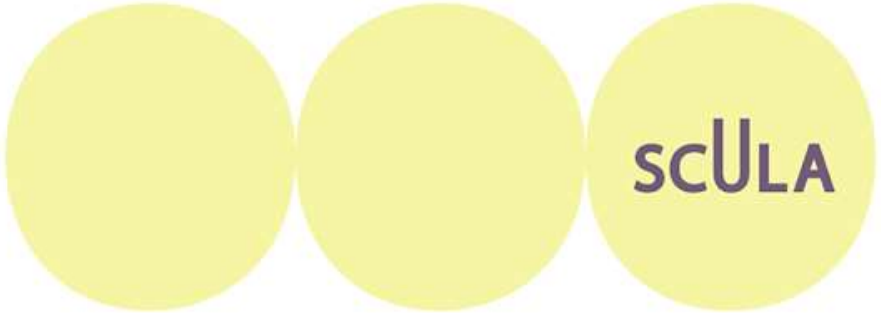
Consider this list of numbers : 5,6,2,2,2,7

The mean of this list is the average number.

The median is the number in the middle when the list is in order.

2, 2, 2, 5, 6, 7

When ordered, there is no single middle value. Thus, we take the average of the two middle values. The median is then 3.5.

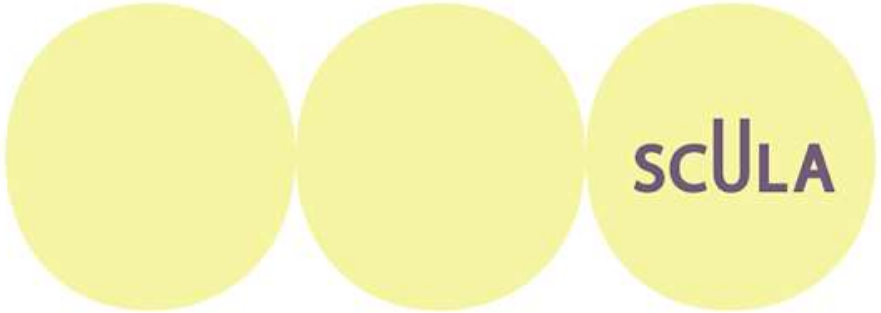


Mean, Mode, and Median

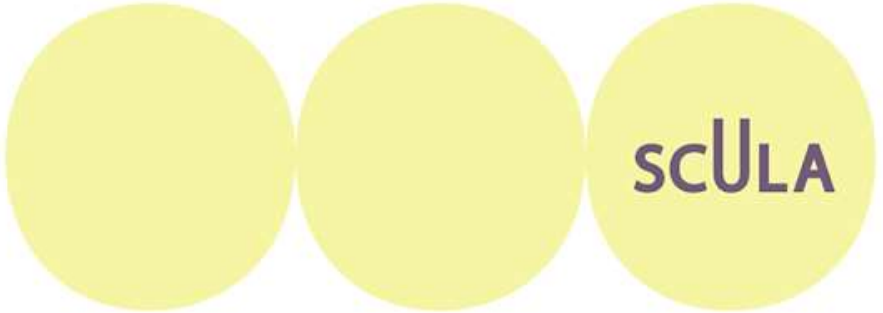
If the list of the data is long, take the two middle values if the number of the items in a list is even. If it is odd, split the list to half and take next value .

For example, if a list is 100 numbers long, take the 50th and the 1st and calculate their average. If the list is 101 numbers long, the median is then the 51th number .

The mode is the number that shows up in the list the most. We say the mode has the highest frequency .



Range and Standard Deviation



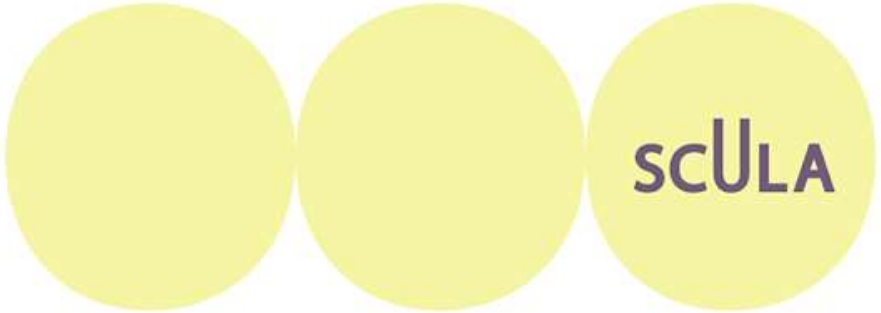
Range and Standard Deviation

The range is the difference between the biggest number in the list and the smallest number .

5 = 2-7

The standard deviation is a measure of how spread out a list of numbers is. The standard deviation is not a numerical value .

On the SAT, you will be asked to compare the standard deviation of two datasets, For that, you only compare how each data sets are spread out.



Example of Standard Deviation

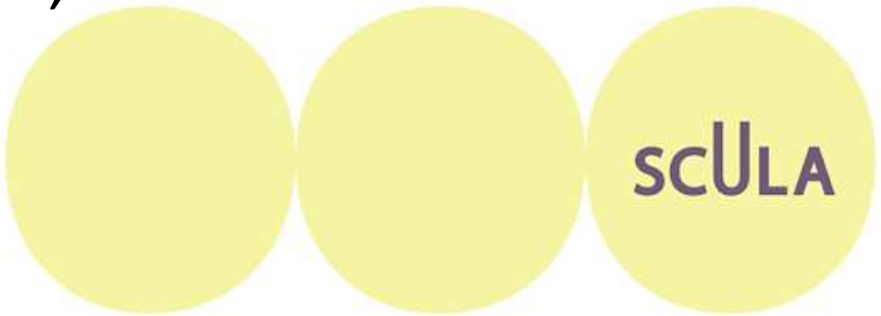
Let’s consider the first list :

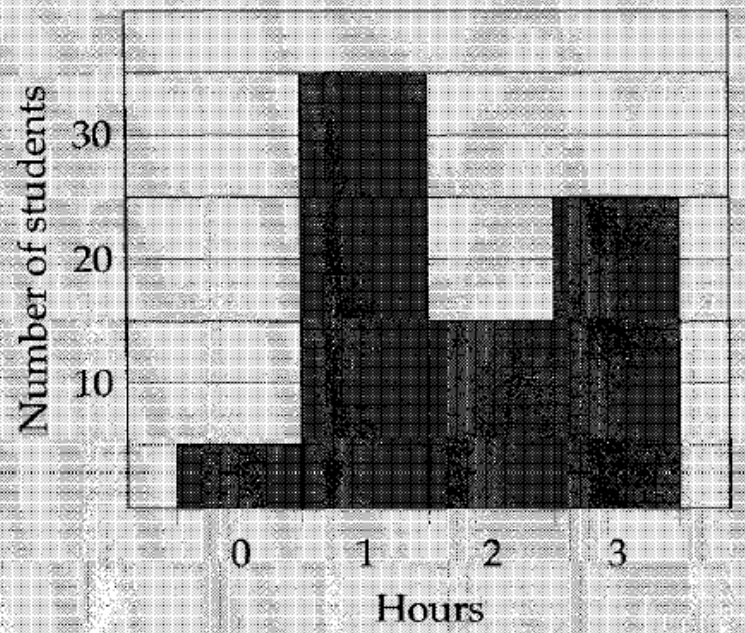
2, 2, 2, 5, 6, 7

This list will have a higher standard deviation than this list :

5, 5, 5, 5, 6, 7

Because all numbers in the second list are clustered around the mean. The closer the numbers are to the mean, the lower is the standard deviation.





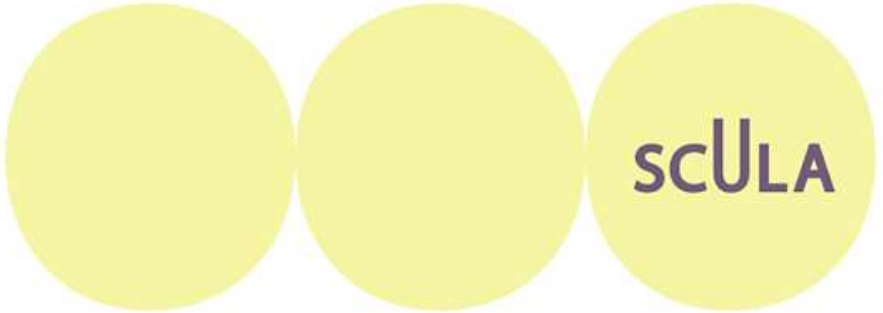
The histogram above summarizes the daily number of hours spent playing sports for 80 students at a school.

PART 1: What is the mean daily number of hours spent playing sports for the 80 students?

PART 2: What is the median daily number of hours spent playing sports for the 80 students?

SCULA

Histograms & Dots Plots



Histograms & Dots Plots

A histogram displays numerical data by grouping data into "bins" of equal width. Each bin is plotted as a bar whose height corresponds to how many data points are in that bin.

According to the figure above we can read the histogram as follows :

- 5 students spent 0 daily hours playing sports
- 15 students spent 2 daily hours playing sports

To calculate the mean, remember that the unit they are asking for is the **number of hours spent per student .**

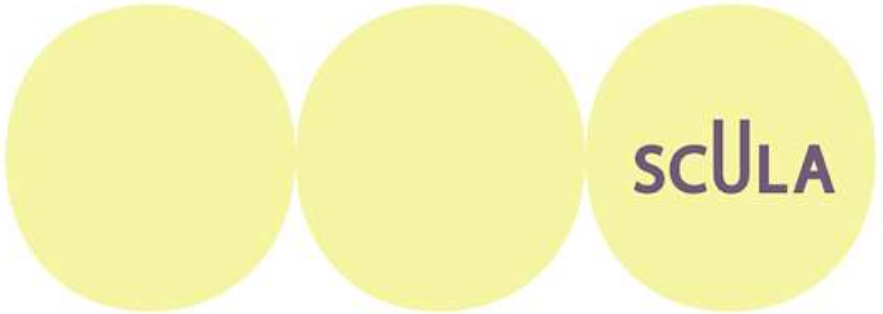
Histograms :

If 15 students spend 2 hour each playing sports, the total hours spent is 30 hours .

Accordingly, we compute the total hours spent by all students and we divide that by the number of students.

$$\frac{total\ hours}{number\ of\ students} = \frac{(0 \times 5) + (1 \times 35) + (2 \times 15) + (3 \times 25)}{80}$$

$$\frac{total\ hours}{number\ of\ students} = \frac{140}{80} = 1.75$$

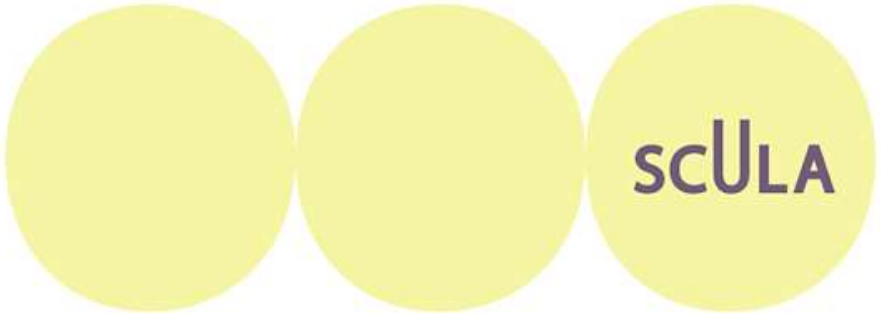


Extract the median from a histogram :

If you try to solve this by spreading all the data sets, it will include very long lists .

Thus, we consider that 80 is the number of the students .

We will then calculate the average number of the daily hours spent by the 40 th student and the 41 st student .



Median Value :

$$\frac{daily\ hours\ spent\ bu\ the\ 40th\ student + daily\ hours\ spent\ by\ the\ 41st\ student}{2} = \frac{1+2}{2} = 1.5$$

You can also eliminate the numbers from the histograms by blocks of 5 or 10

Dots Plots

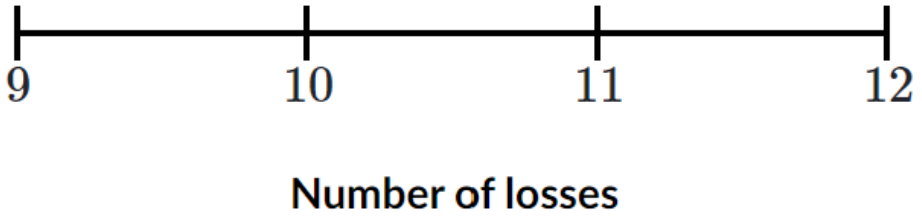
Thus, we must calculate the probability of selecting a ballerina (Event B) given condition A, that the person we select will be from among the 52 dancers. So, the answer is 1452.

You can identify conditional probability questions because they will say "given" or some other word or phrase to indicate that there is some precondition being met ("provided that," "assuming," etc.).

Make a dot plot

The following data points represent the number of losses the Minnesota Igloos have had each season.

10,9,12,10,11,12,11



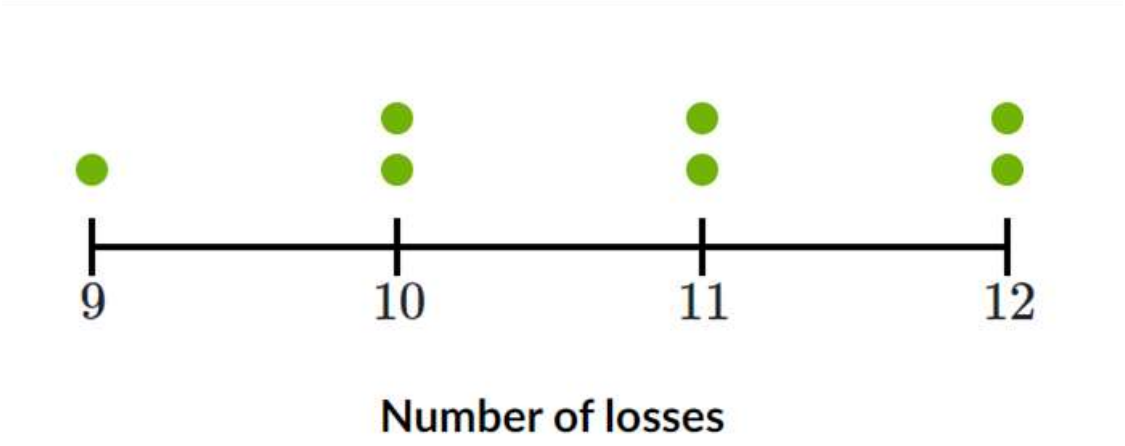
Using this data, create a dot plot where each dot represents a season.

Make a dot plot

We need to assess the frequency of each value.

10, 11, and 12 occur twice in the list .

9 only occurs once.



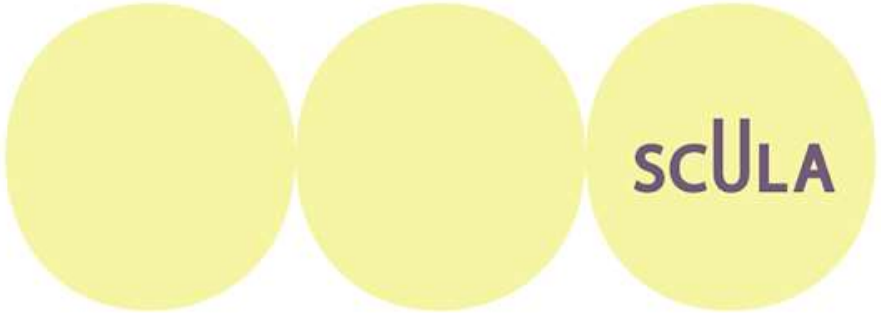
What is a dot plot?

The dot plot is a way to depict a frequency distribution. This distribution shows the frequency of an event's occurrence .

The following frequency table shows the number of Jui's pictures that have been published in each of the local magazines.

How many magazines published 2 or more of Jui's pictures?

Number of pictures	Number of magazines
0	2
1	1
2	3
3	2
4	1



PRACTICE

https://drive.google.com/file/d/1Ezv6Kwqk-kRuKRTW9zWPcEyAH25dViO-/view?usp=drive_link

THANK YOU!

DO YOU HAVE ANY QUESTIONS?