Warm Up
Two Way Frequency Table

The table below shows the ages of teachers by departments in a high school:

	21 - 30 years	31 - 40 years	41 - 50 years	51 - 60 years	Total
Science	2	3	4	1	10
Math	3	5	2	2	12
English	4	6	4	1	15
Social Studies	5	3	3	2	13
Total	14	17	13	6	50

a. Find the probability that a randomly selected teacher is 41 to 50 years old?

$\frac{13}{50} = 0.26$

b. Find the probability that a randomly selected teacher is a 51- 60 year old Social Studies teacher?

$\frac{2}{50}$

0.04

c. **Given that** a teacher is 21 – 30 years old, find the probability he/she is an English teacher?

$\frac{4}{14}$

$.29$

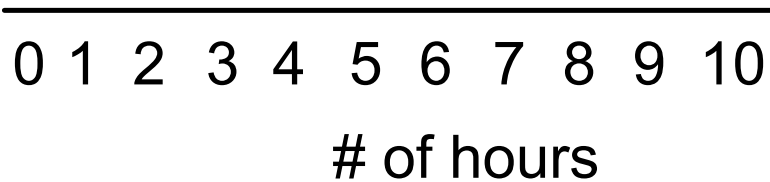d. **Given that** a teacher is 31- 40 years old, find the probability that he/she is a Science teacher?

$\frac{3}{17} = 0.18$

Graphical ways to represent data

How many hours of sleep did you get last night?

Place a dot above the number of hours of sleep you got last night.

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0 1 2 3 4 5 6 7 8 9 10

# of hours

Let's analyze our data on three key features

Center- where is the middle of the graph?

Shape - is the graph symmetrical or skewed?

Spread - are the responses close together or spread out?

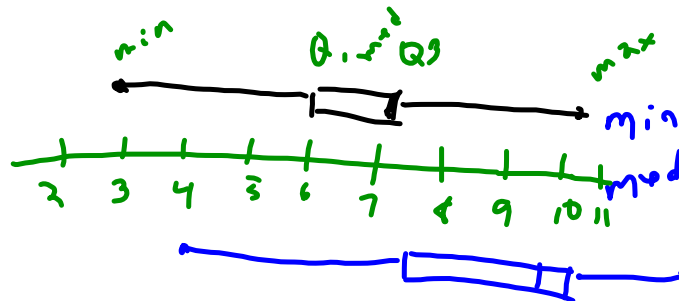We will now convert the dot plots into box and whisker plots.

In your calculator press "data" enter the number of hours of sleep for all your classmates into L1

Press 2nd data to go the "stat" menu

Hit enter for 1-var Stats for DATA: L1
    FRQ: One   Hit enter on CALC

scroll to the bottom of that list to see the

$\bar{x}$ = mean

S_x = standard deviation

σ - standard deviation

min 3

Q1 6

Med 7

Q3 7

max 10

What is a Boxplot?

A boxplot, also called a box and whisker plot, is a way to show the spread and centers of a data set. Measures of spread include the interquartile range and the mean of the data set. Measures of center include the mean or average and median (the middle of a data set).
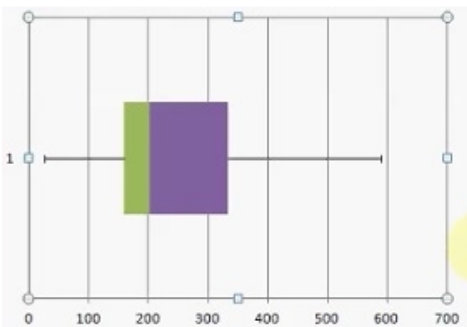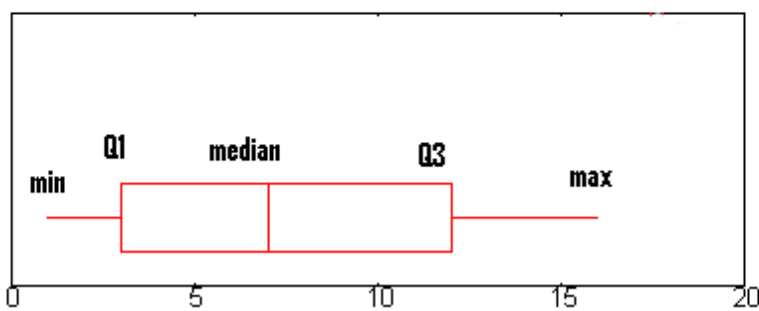
You can easily read a boxplot to find the five number summary. For example, the above image shows a box and whiskers chart with the following information:

- Minimum: 20
- Q_1: 160
- Median: 200
- Q_3: 330
- Maximum: 590

Make a box plot for the number of hours of sleep we got last night.

Each quartile contains 25% of our data. What percent of students slept more than ____ hours? What percent slept less than ____ hours? The middle 50% of students got between ____ and ____ hours of sleep.

Now think about how much sleep you typically get on a weekend. Let's make another dot plot and compare our weekend sleep to our weeknight sleep.

How do the centers of the two dot plots compare?

How do the shapes of the two dot plots compare?

How do the spreads of the two dot plots compare?

Find the mean, median and mode for the following. Use your calculator to make a box plot.

mode

$\bar{x} = 12.9$

8, 9, 12, 16, 5, 19, 18, 16, 10, 16