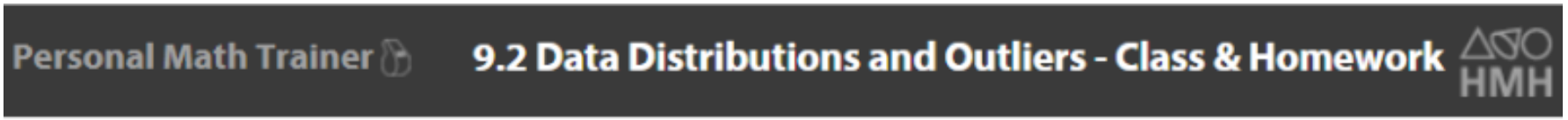

Personal Math Trainer
9.2 Data Distributions and Outliers - Class & Homework
HMH

1

Enter an equation in slope-intercept form to represent a line that includes the points (3, −4) and (5, 2). Complete the explanation on how to find the equation.

First, find the slope ▾ of the line by using the formula, $m = \frac{y_2 - y_1}{x_2 - x_1}$. Then, find the y-intercept by substituting one point and the slope into the general form of the ~~slope-intercept~~ Point-slope equation and solving for b ▾. The equation is $y =$ 3x − 13

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad (3, -4) \text{ and } (5, 2)$$

x_1 y_1 x_2 y_2

Point-Slope Form

$$y - y_1 = m(x - x_1)$$

Slope

Ordered pair

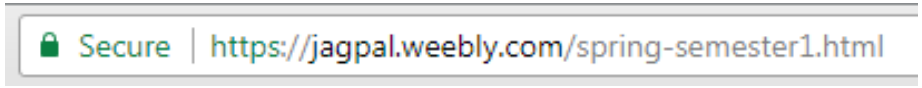
$$m = \frac{2+4}{5-3} = \frac{6}{2} = 3$$

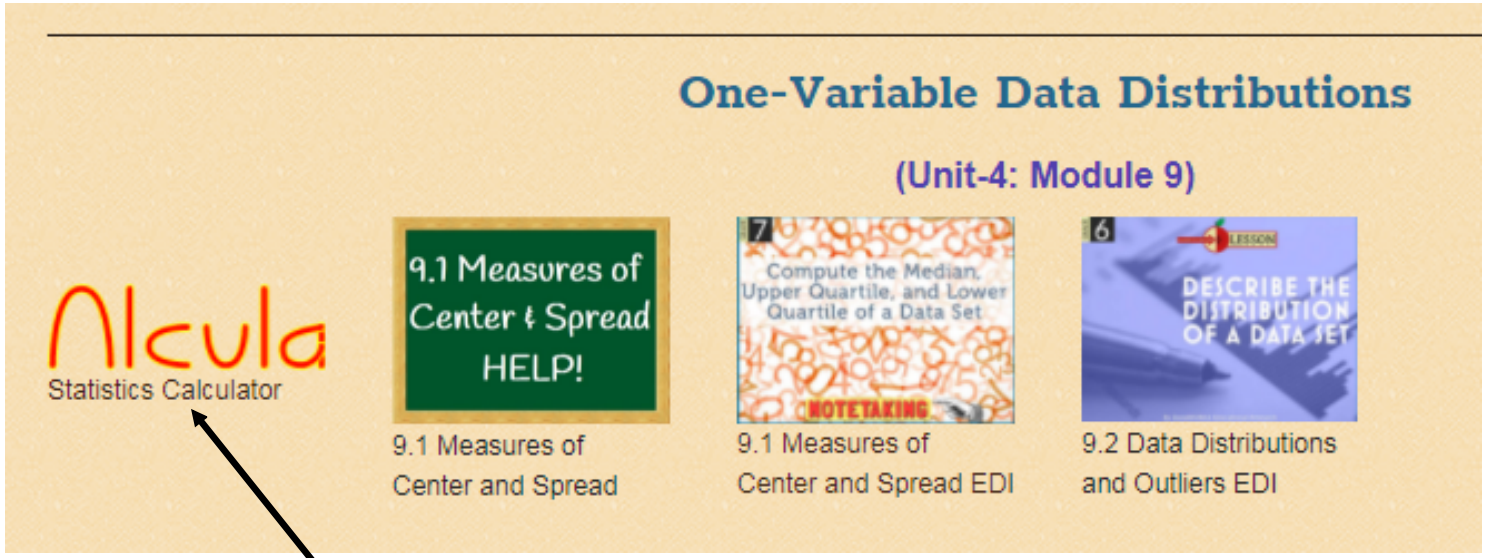
$$y + 4 = 3(x - 3)$$

$$y + 4 = 3x - 9$$

$$-4 \qquad -4$$

$$y = 3x - 13$$





Use the Online Calculator

The mean is the total of all the values, divided by the number of values.

Mean

Median

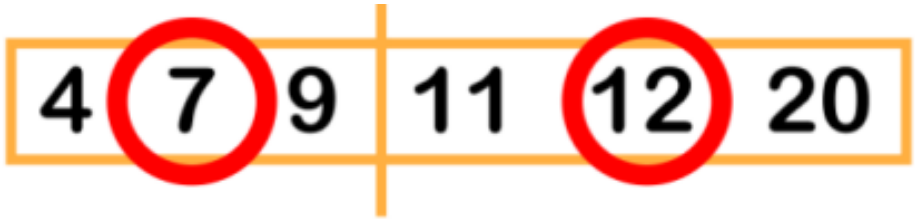
The median is the middle number in a list of numbers ordered from lowest to highest.

The range is the difference between the lowest value and the highest value.

Range

$$S = \sqrt{\frac{\Sigma(X - \overline{X})^2}{N}}$$

where S = the standard deviation of a sample,
Σ means "sum of,"
X = each value in the data set,
$\overline{X}$ = mean of all values in the data set,
N = number of values in the data set.



IQR = 12 - 7 = 5

The tables list the age of each member of Congress in two randomly selected states. Complete the table and complete the explanation to compare the data. Round the mean and the standard deviation to the nearest hundredth.

2

State 1
29, 27, 31, 49, 42, 62, 34, 29, 67, 43, 72, 65, 34, 31, 29, 79, 60, 74, 61, 38, 35, 52, 54, 25, 36, 59

State 2
45, 40, 61, 35, 49, 45, 29, 59, 30

	Mean	Median	IQR ($Q_3 - Q_1$)	Standard deviation
State 1	46.81	42.5	30	16.42
State 2	43.67	45	21.5	10.84

The mean is lower for State 2 ▼, which means that, on average, members of Congress tend to be younger in State 2 ▼ than in State 1 ▼. However, the median is lower in State 1 ▼, which means that there are more young members of Congress in State 1 ▼ despite the differences in average age. Finally, the IQR and standard deviation are lower for State 2 ▼, which means that the ages of members of Congress are closer together than they are in State 2 ▼.

3 and 4

The tables describe the average ages of employees from two randomly chosen companies.

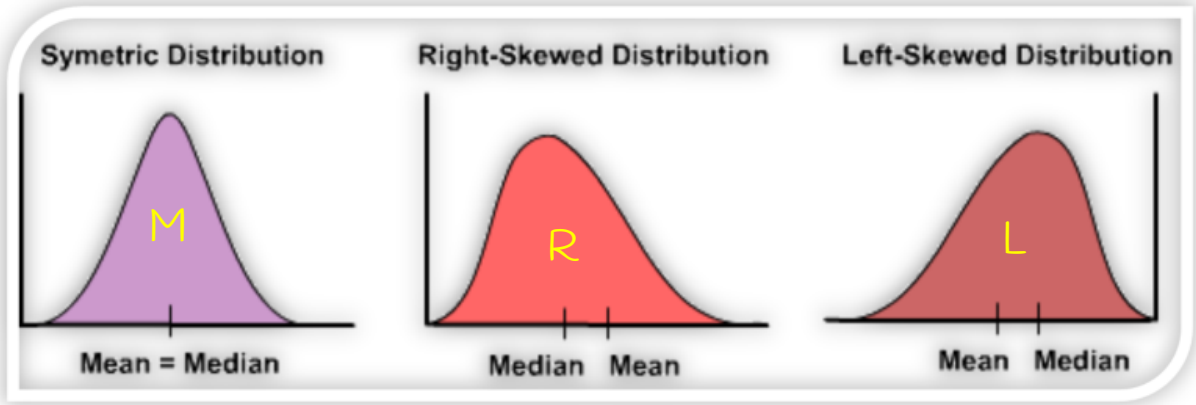
Company A
31, 37, 43, 54, 59, 58, 50, 45, 38

Company B
32, 31, 53, 53, 50, 60, 63, 55, 63

Calculate the mean, median, interquartile range (IQR), and standard deviation for each data set. Round to the nearest hundredths if necessary.

	Mean	Median	IQR($Q_3 - Q_1$)	Standard deviation
Company A	46.11	45	18.5	9.27
Company B	51.11	53	20.5	11.33

5 Drag and drop each data set into the correct category to show whether each set of data is left-skewed, right-skewed, or symmetrically distributed.

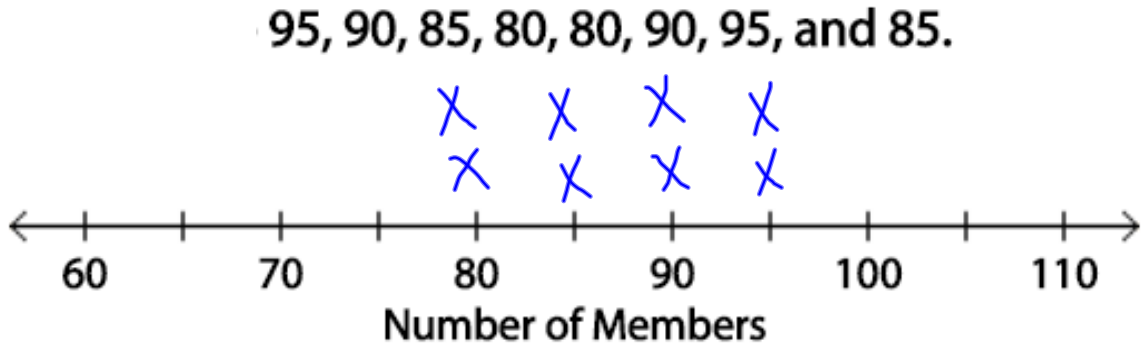


Left-Skewed Distribution	Right-Skewed Distribution	Symmetric Distribution
	2, 2, 4, 2	8, 8, 6, 6 1, 3, 3, 1 6, 8, 8, 10 20, 22, 22, 20

6

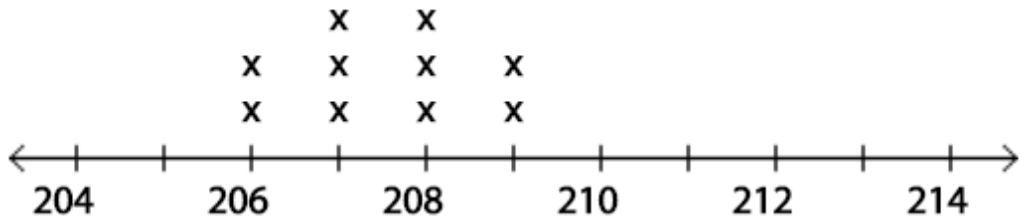
The numbers of members in 8 workout clubs are 95, 90, 85, 80, 80, 90, 95, and 85.

Select the appropriate dot plot for the data set using an appropriate scale for the number line.



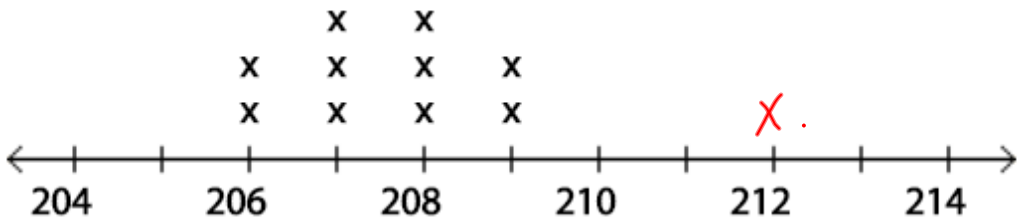
Symmetric
Distribution

7 The dot plot given represents the scores of 10 students on a standardized test. An eleventh student was sick on the test date, took a make-up test, and made a score of 212. Complete the table. If necessary, round to the nearest tenth.



206, 206, 207, 207, 207, 208, 208, 208, 209, 209

	Mean	Median	Range	IQR	Standard Deviation
Without Make-up Test	207.5	207.5	3	1.5	1.0



206, 206, 207, 207, 207, 208, 208, 208, 209, 209, 212

With Make-up Test	207.9	208	6	2	1.6

8

The high temperature, in °F, for the past 4 days was 45, 38, 46, and 35. Carlos knows that the mean high temperature for the past 5 days was 42°F. Enter and solve an equation to find the high temperature on the first day. Use x to represent the high temperature for the first day.

The equation: $\frac{x + 45 + 38 + 46 + 35}{5} = 42$

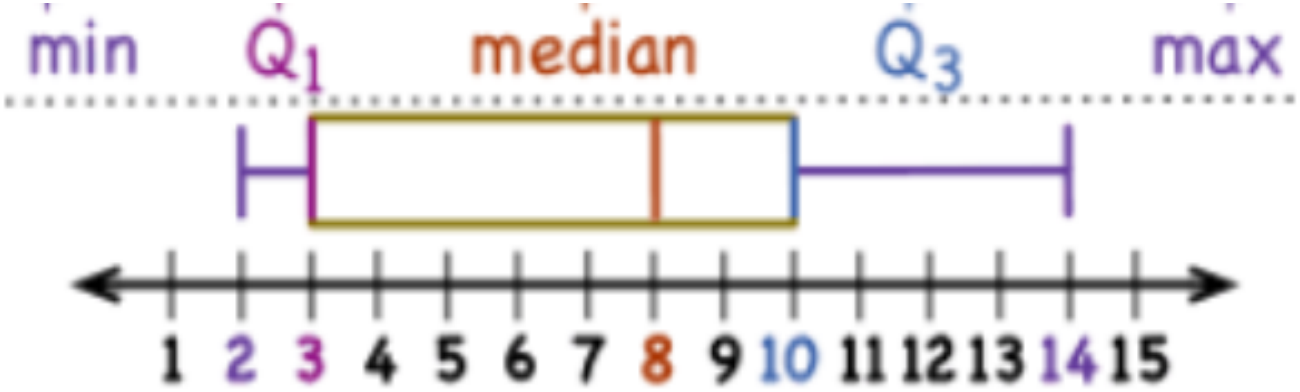
$5 \cdot \frac{(x+164)}{5} = 42 \cdot 5$

$x + 164 = 210$

$-164 \quad -164$

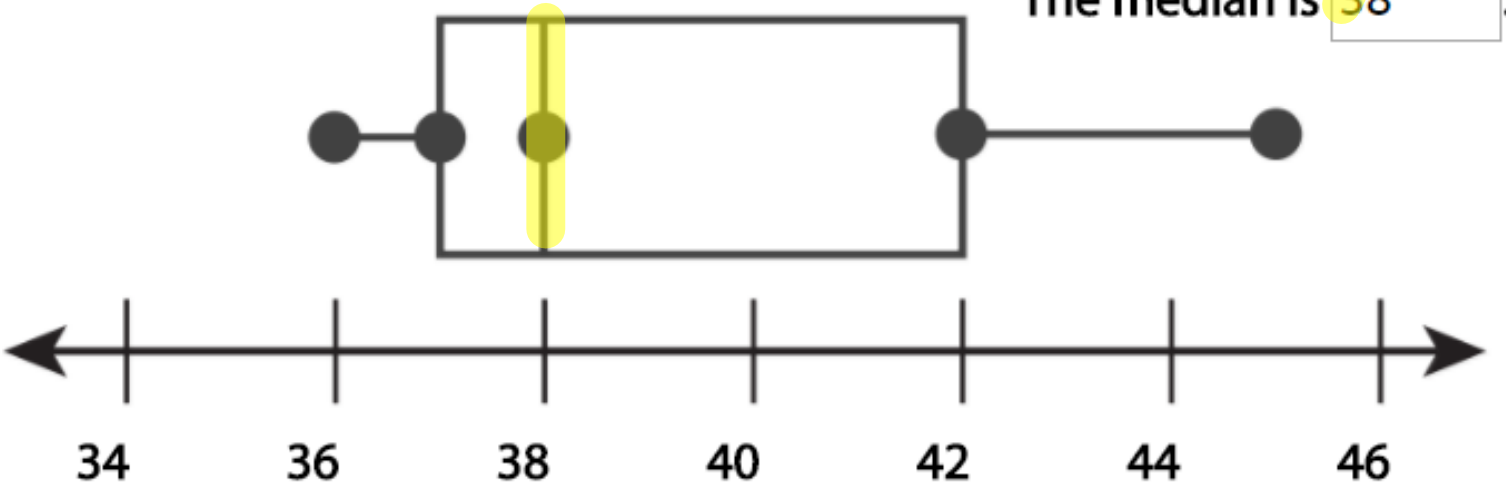
$x = 46$

9



Use the box plot shown to answer the question. What is the median?

The median is 38 .

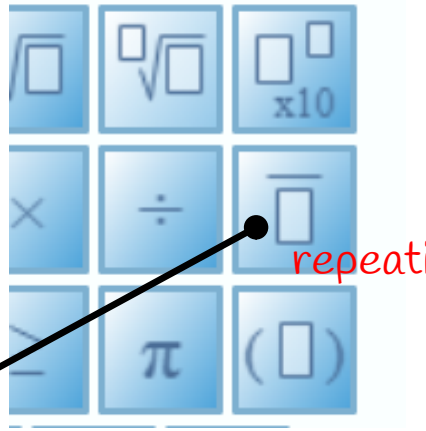


10 Vivian surveyed 10th and 11th graders about whether they like reading comics. Some of the results are shown in the frequency table shown. Complete the table.

	Enjoy Reading Comics		
Grade	Yes	No	Total
10^{th}	45	53	98
11^{th}	72	38	110
Total	117	91	208

208 − 110 = 98

91 − 53 = 38



repeating decimal

Find the conditional relative frequency that a student enjoys reading comics given that the student is an 11^{th} grader. Complete the explanation on how to solve the problem.

Find the conditional relative frequency by dividing the number of eleventh graders who like reading comics by the total number of eleventh graders. The conditional relative frequency is

$65.\overline{45}$ %.

$\frac{72}{110} \cdot 100 = 64.454545$