

# STATISTICAL OBSERVATION AND GRAPHS



GRADE **6**

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# Classroom Procedure:

1. Begin by showing students a graph and asking them to tell you everything they know about the chart. Write down all of the information they provide. Wait for a student to share the total number of observations, but if it does not happen, ask the class if they know how to find the total number of observations.
2. While reading the content pages, reinforce the concept of statistical observations and give students additional examples of practice problems. Use the Additional Resources to enhance understanding.
3. Introduce notes on probability. Have students practice problems with different types of graphs.
4. Follow the Activity page with students. Have students work individually and then share their graphs with a shoulder partner. Hang up the charts or display them in the class to see the different ways graphs can be made with the same number of observations.
5. Distribute Practice page. Check and review the students' responses as a class.
6. Distribute the Homework page. Have students share a few graphs at the beginning of the next class to reinforce their understanding.
7. In closing, have a few graphs from the internet printed or the local newspaper and have students figure out the total number of observations. Ask students to respond to why do people prefer graphs or charts to reading a text? How can graphs influence a person's decision-making? Are all graphs appropriate for the same data type (line, plot, bar, histogram)?

Lesson Title: **Statistical Observation and Graphs**

Subject: **Math**

Approximate Grade Level: **6**

**Objectives:** Students will report the number of observations in a data set or graph. Students will learn the essential elements in reading various types of charts.

**State Educational Standards\***

LB.MATH.CONTENT.6.SP.B.5,  
LB.MATH.CONTENT.6.SP.B.5.A, &  
LB.MATH.CONTENT.6.SP.B.c

**Class Sessions (45 minutes):** 1 - 3

**Teaching Materials/Worksheets:**

*Probability* Content Pages (2), Activity Page (1), Practice Pages (2), Homework Pages (2)

**Student Supplies:** Internet, printer (optional), pencils, pens, highlighters

**Prepare Ahead of Time:**

Copy Materials

**Options for Lesson:** Students can create graphs with limitations on the number of observations within the class. They will make a tally chart with at least 10 observations and a bar chart with 15 or more. Use graphical displays from the local news to help students determine the total number of observations.

\*Lessons are aligned to meet the education objectives and goals of most states. For more information on your state objectives, contact your local Board of Education or Department of Education in your state.



# Teacher Notes

In this lesson, students begin their statistics and probability journey by learning how to determine the total number of observations in a graphical display. Understanding how to read a graph and determine the total number of observations will help students better understand distributions and calculate the mean. Students learn to find the observations on various charts and draw the correct number for a unique approach to graphing.

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# Statistical Observation and Graphs

## Probability

An observation is a single unit described by the data that is collected or analyzed. Each data point represents one answer to a statistical question. If the question is how many people wore tennis shoes to school on Friday, then each person's shoes are one observation.

One of the first things we need to figure out when working with statistics or probability is how many observations do I have that answer the question?

We need to know the total number of observations to calculate specific statistics and probabilities like the mean (average) of the data.

Let's look at different graphical representations of data and learn how to determine the total number of observations.

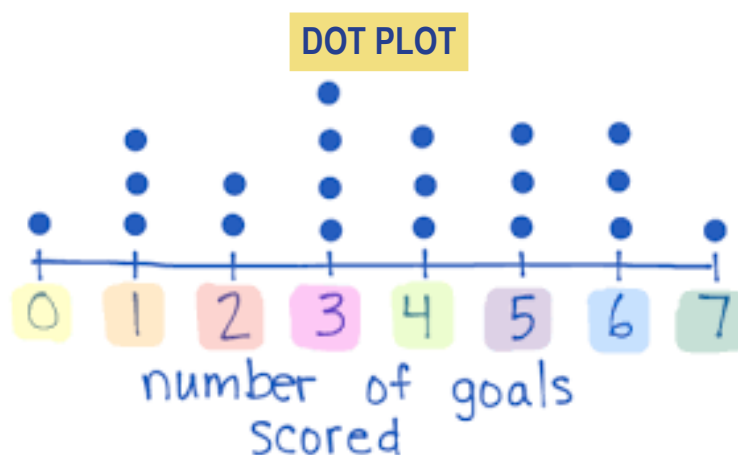
## Interpreting Graphs and Total Observations

### Grades on a Science Test in Mr. Fullerton's Class



Given this set of data, how many people took the science test?

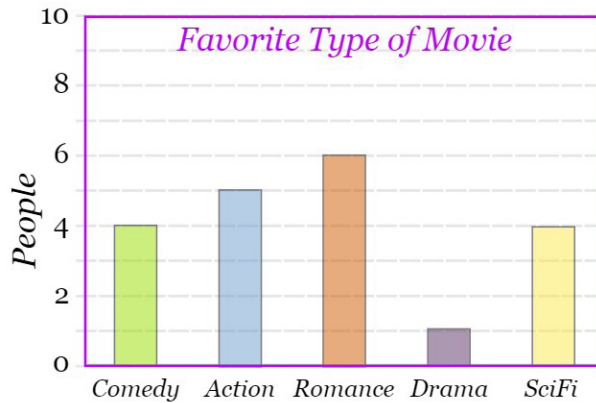
Each number represents one grade from one person, so there are 7 grades which means 7 people took the science test.



How many games did Sarah's soccer team play this year?

Each dot represents the number of goals scored in a game. Count the total number of dots to find the number of observations in a dot plot. There are 20 dots, so Sarah's soccer team played a total of 20 games.

## HISTOGRAM or BAR CHART



How do you know how many people were surveyed to make this graph?

On the bar graph, the number of people is shown on the left side. The graph tells us that 4 people like comedy, 5 people who like action, 6 who like romance, 1 who likes drama, and 4 who like sci-fi. When we add up all the people, we find the total number of observations for the data set. There are  $4+5+6+1+4 = 20$  people or 20 observations.

## TALLY



How many people answered this survey?

Each tally mark represents one observation. Count the total number of tally marks to find how many people answered this survey. There are a total of 35 observations.





Each graph contains a certain number of observations shown either by dots, bars, tallies, or numbers. When we add up the total number of observations, we know how many objects or people participated in answering the statistical question.



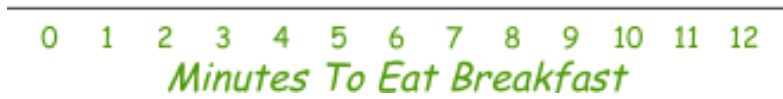
**Instructions: Complete the observations on each type of graph or chart.**

50 people answered a question. Complete the chart by filling in the number of observations on the tally chart.

### Favorite Breakfast Food

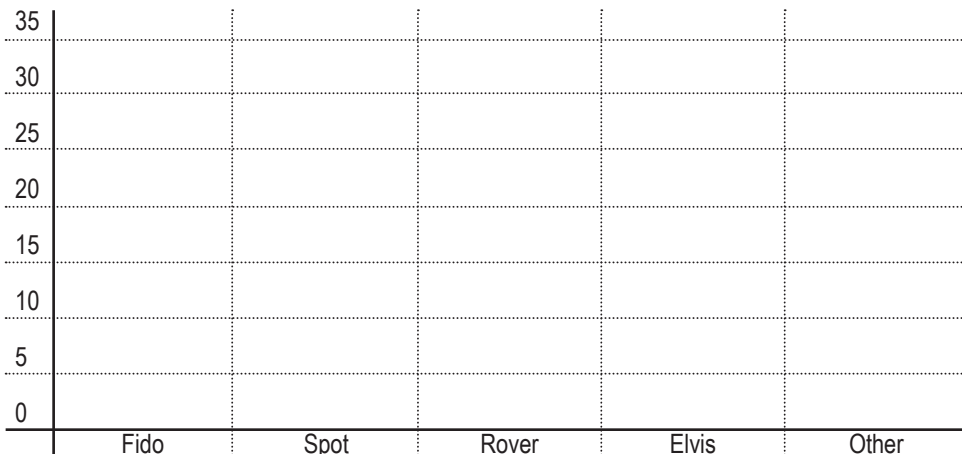
	<b>Cereal</b>	
	<b>Donuts</b>	
	<b>Yogurt</b>	
	<b>Eggs</b>	

25 people answered the survey. Create the correct number of observations on the dot plot.



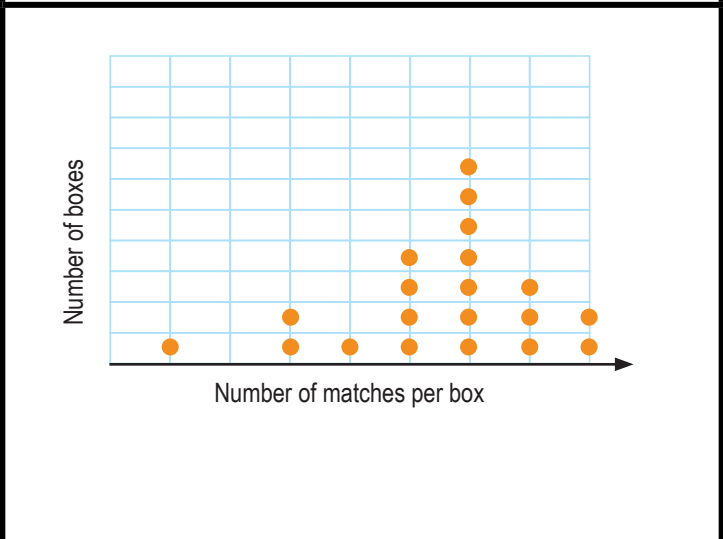
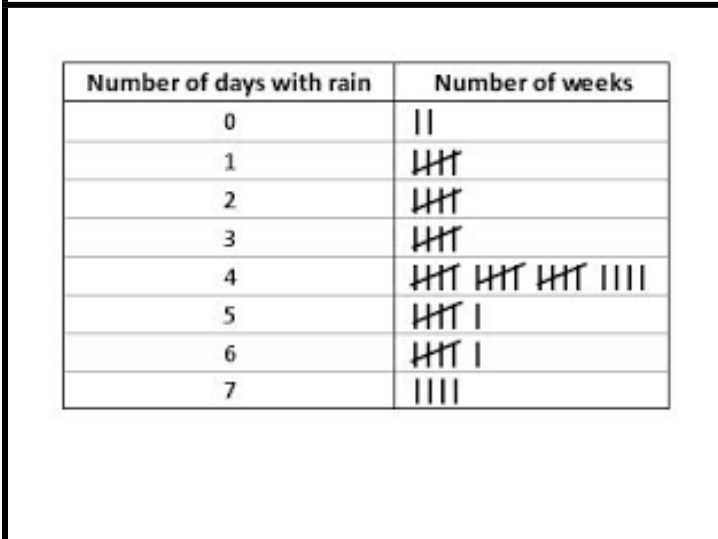
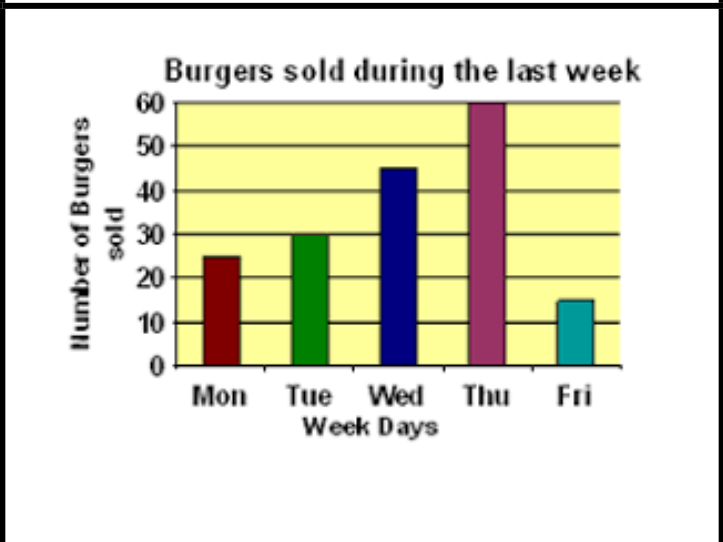
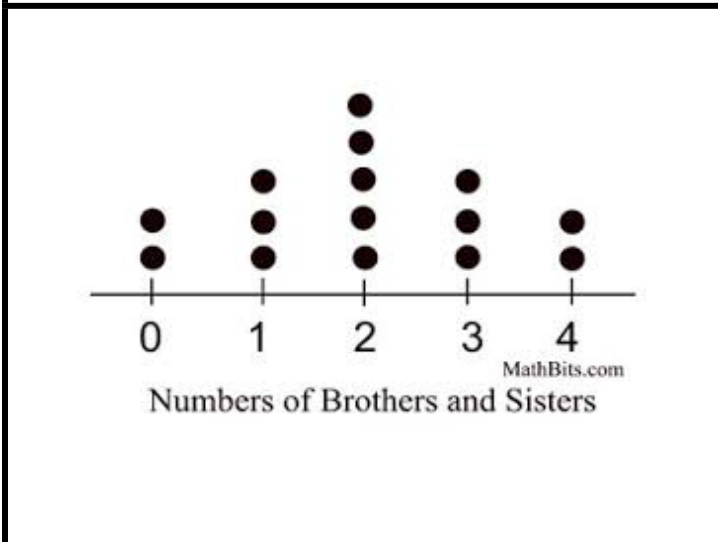
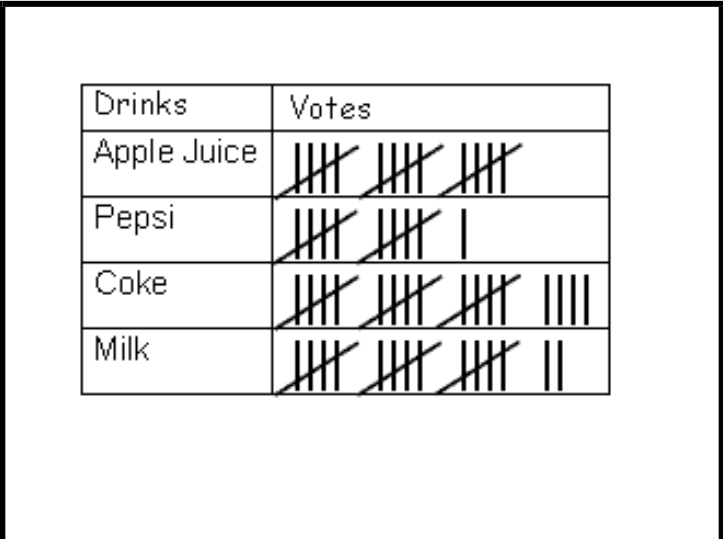
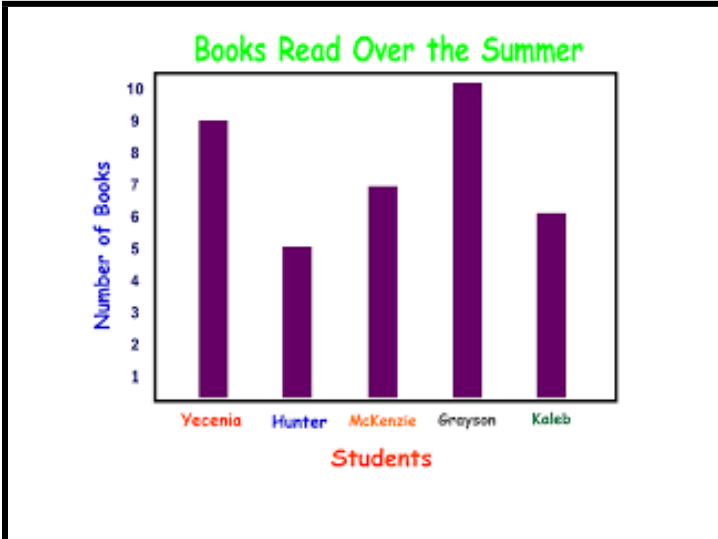
60 people answered the survey. Create the correct number of observations on the bar graph.

### Dog Name Percentages in 1960



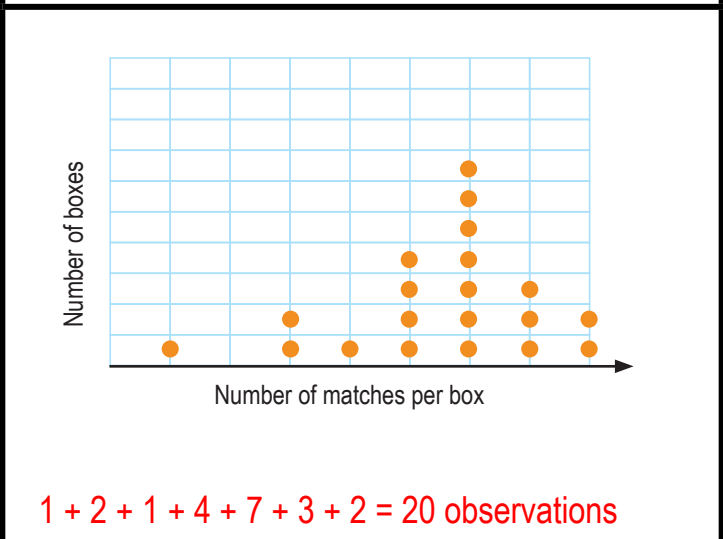
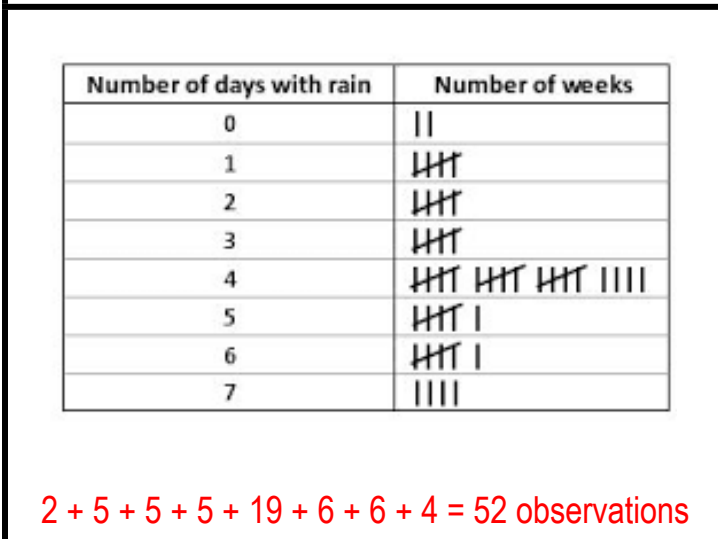
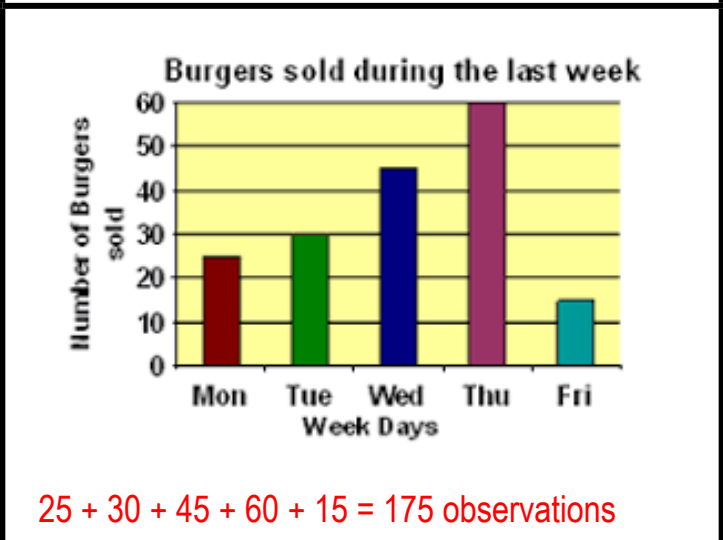
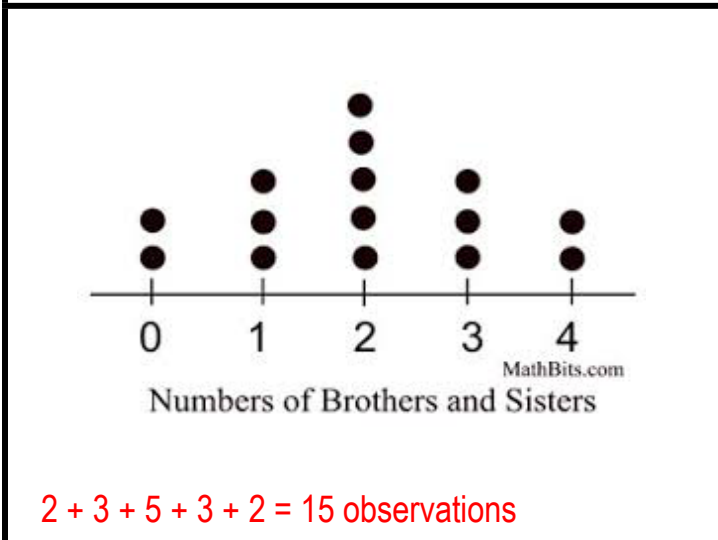
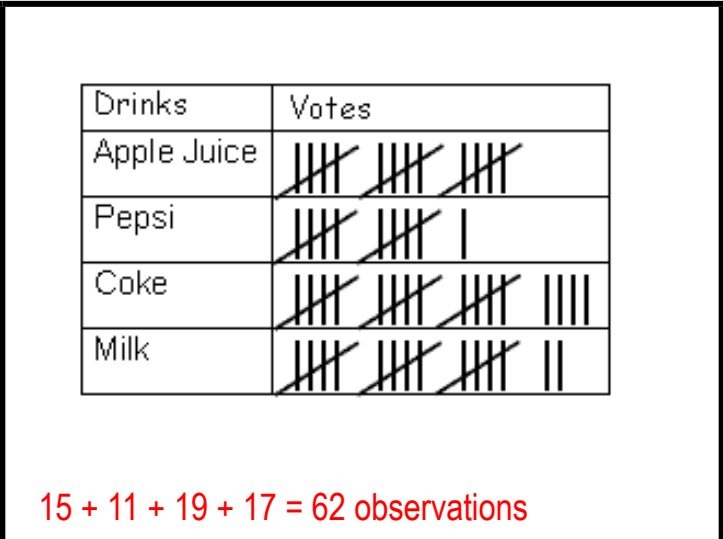
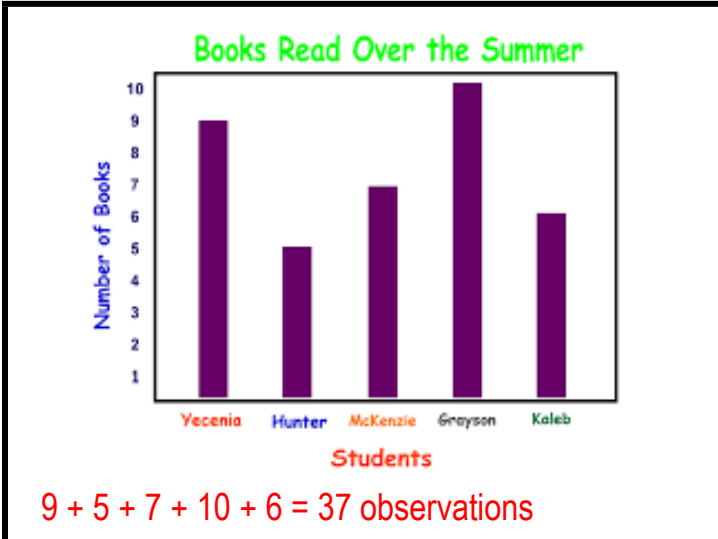


Instructions: Find the total number of observations.





Instructions: Find the total number of observations.







# Homework

Name \_\_\_\_\_ Date \_\_\_\_\_



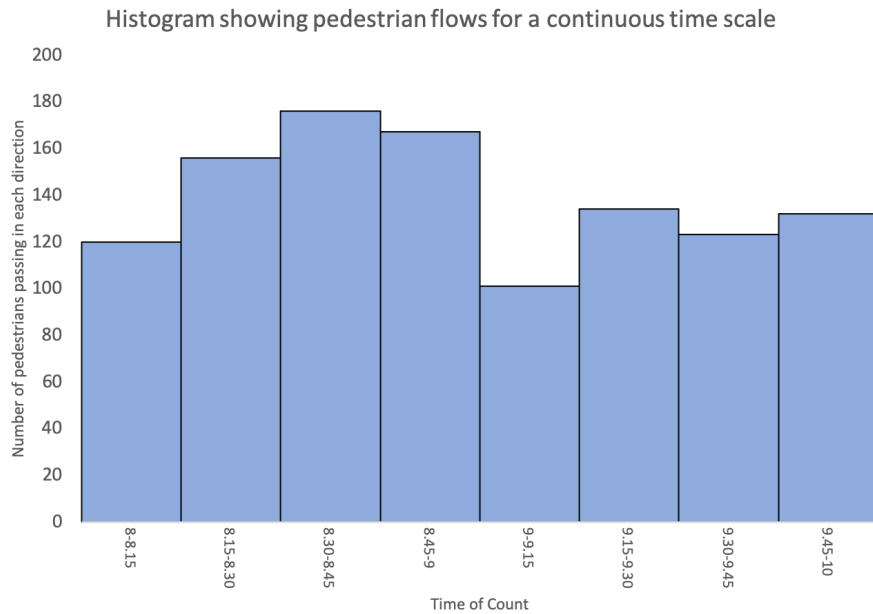
**Instructions: Find five graphs online and determine the total number of observations. Print the chart, attach it to the page, or glue it on this page with the answer circled next to it**



Instructions: Find five graphs online and determine the total number of observations. Print the chart, attach it to the page, or glue it on this page with the answer circled next to it.

Answers will vary.

### Sample answer of 1 type of Graph or Chart



$$120 + 150 + 175 + 170 + 100 + 140 + 120 + 130 = 1105 \text{ observations}$$