Circus Animal Cookies:
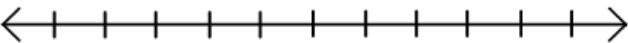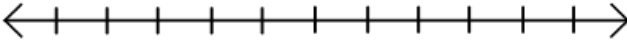## Predictions, Association, and Line of Best Fit

Who doesn't love Circus Animal Cookies? Patricia, Jen, and Adam each had a bag of Circus Animal Cookies and they knew each bag contained some pink and some white cookies. Adam asked, "I wonder how many cookies I have in my bag?" Jen wondered, "do you think we all have the exact same number of cookies?" As they started to make predictions, Patricia asked, "I wonder how many pink cookies versus white cookies each of us have?"

#1 Examine a snack size bag of Circus Animal Cookies.
  a.   How many total cookies do you expect in a small, snack size bag of Circus Animal Cookies? How many pink and white cookies do you think will be in your bag?

  b. Open your bag of cookies! Is your prediction correct?

  c. Write down the data collected from your team. How many pink cookies and white cookies did each of your teammates get?

#2 A *dot plot* is one way to represent our data. Using the data from your team create two dot plots, one for the number of pink cookies and one for the number of white cookies. Be sure to label the number line.

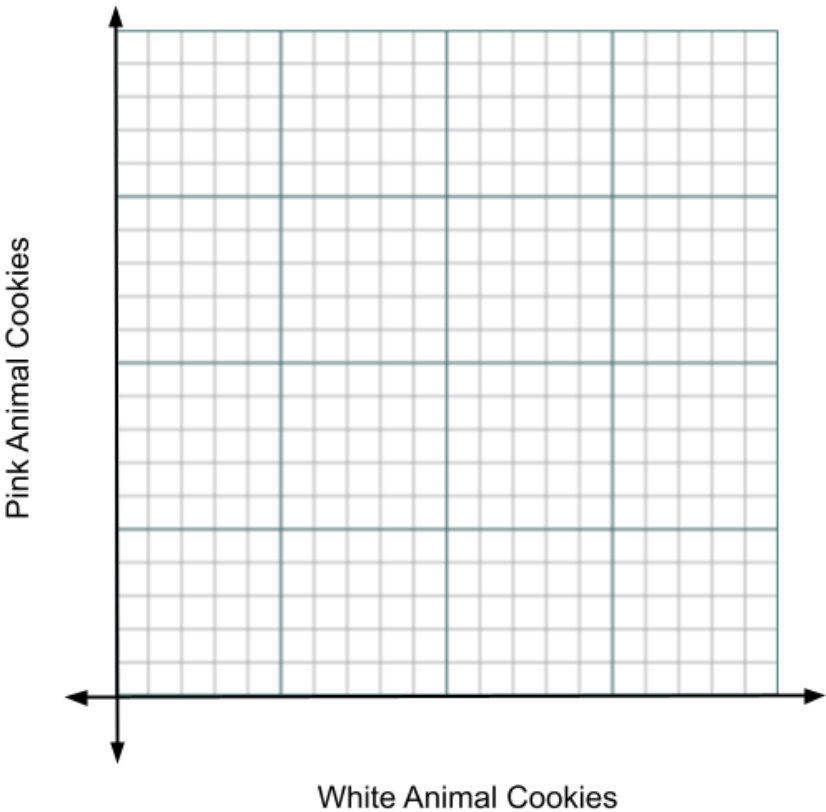| Pink Cookies:	White Cookies:
←++++++++++++++→	←++++++++++++++→

#3 Now we are going to compare the number of pink and white animal cookies in your bag with the rest of the class.

    a. Collect data from each Team and organize the data in tables.

	Team 1				Team 2				Team 3				Team 4		
W															
P															

	Team 5				Team 6				Team 7				Team 8				Team 9	

b. Another way to represent our data is in a *scatter plot.* Graph your data in a coordinate plane like shown below. The *x-axis* represents the # of white animal cookies and the *y-axis* represents the # of pink animal cookies.

Pink Animal Cookies

White Animal Cookies

#4 An *association* (relationship) between two numerical values can be described by its form, direction, strength, and outliers. Read the Math Notes box that you glued into your notebook to familiarize yourself with how best to describe scatter plots.

a. Describe the class scatterplot you made with our Circus Animal Cookie data. Describe the form, direction, strength, and if there are any outliers.

b. After analyzing the graph, Adam says, "I think we can model this data with a line! It won't connect every single point, but it'll do a good job of showing generally the trend of the points." Patricia agrees, "Yes, that would be the *best fit line*!" What line are they talking about? Draw the line on your graph. Be prepared to share with the class your strategies for drawing this line.

c. What does the slope of this line represent? What does the y-intercept represent?

d. Recall that linear equations are written in the form *y=mx+b*. What is the equation of your best fit line?

e. Does it make sense for the best fit line to go into the negative regions of the graph? Can *x* or *y* be negative?