Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_

Week of Tuesday, February 5th -Thursday February 7th Guided Notes: **Misrepresentation of Graphs**

**Tuesday/Wednesday** Do Now:

1. Ms. Misconish wants to drive from Gatlinburg to Nashville, a distance of about 222 miles. Her car gets its best gas mileage when she drives at 55 mph. At that rate, how long will it take her to get form Gatlinburg to Nashville?
2. If f(x) = and g(x) =, what is the value of x when f(x) = g(x)?

**> Misleading Data**

* Statistics are often used to mislead people by presenting the information with the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** used to represent the results on the graph.
  + The wrong display can **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** to make you think something untrue.
  + Scales can be manipulated to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in the data displayed on the graph.
  + A graph may be misleading because it’s **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the scale.
  + A graph may be misleading if the graph’s **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
  + Using samples that are **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of a population.
* A graph is misleading if it is set up to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* Depending on the data, a specific type of display is necessary. Below is a table of appropriate data displays:

|  |  |
| --- | --- |
| **Type of Display** | **Best used to…** |
| Bar Graph | Show the number of items in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Box and Whisker Plot | Show measures of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for a set of data |
| Circle Graph | Compare \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the data \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Double Bar Graph | Compare \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of categorical data |
| Double Line Graph | Compare \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of data |
| Histogram | Show \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of data divided into equal intervals |
| Line Graph | Show \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Line Plot | Show \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Scatter Plot | Show \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between a data set with two variables |
| Stem and Leaf Plot | List all \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in condensed form |

**> How to Determine if a Graph is Misleading**

1. Read and annotate the graph for the following features:

* Title (underline)
* Labels on the X and Y axes (circle)
* Use the scale/key to label each individual data point on the graph

1. Closely examine the scale – check that it:

* Begins at zero
* Increases at a steady rate
* Has intervals that are equally spaced

1. Read the question carefully and answer it

**> Misleading Data Examples**

|  |
| --- |
| **Example 1:** Do these graphs show the same data? If so, how do they differ?    Which graph would you use to convince your parent you needed to go to summer basketball camp to work on your shot? Why? |
| **Example 2:** Do these graphs show the same data? If so, how do they differ?  graph one  Which graph would you use to convince someone that the price has increased dramatically over the years of 2005 - 2009? Why? |
| **Example 3:** Do these graphs show the same data? If so, how do they differ?  graph2.tiff  Which graph would be used to best convince someone that Jules is the obvious winner of the class election? Why? |
| **graph3.tiffExample 4:** Do these graphs show the same data? If so, how do they differ?  Which graph would you use to convince someone that the unemployment rate has changed greatly from year to year? Why? |
| **Example 5:** Do these graphs show the same data? If so, how do they differ?    Which graph would you use to convince someone that the nonfarm income has minimally changed from 1960 - 2000? Why? |
| **Example 6:** Do these graphs show the same data? If so, how do they differ?  ex7.tiff  Which graph would you use to convince someone that 3 times as much pizza is sold as tacos? Why? |
| **Example 7:** Do these graphs show the same data? If so, how do they differga.tiffgb.tiff  Which graph would you use to convince someone that the amount of visitors hasn’t really changed over time? Why? |
| **Example 8:** Do these graphs show the same data? If so, how do they differ?    Which graph would you use to convince someone that the favorite pet is obviously a dog? Why? |
| **Example 9:** Which of the following statements could be true about the graph below?   1. The sales trend increased significantly from 1995-2002. 2. The graph is misleading because the scale begins at 5. 3. The graph is misleading because the intervals increase  by two hundredths, exaggerating the differences in the data points. 4. Both B and C. |
| **Example 10:** How could the graph be redrawn to better represent the data?     1. The scale should be redrawn to have intervals of 10. 2. The bars should touch. 3. The scale should be redrawn to have intervals of 2. 4. This data should be represented in a circle graph. |

**dn.tiffThursday, February 7th** Do Now:

1. Solve.
2. Explain the location of the numbers -1.8 and -1.88 relative to each other and other whole numbers on the number line.

ex1.tif

**> Misleading Data Examples**

|  |
| --- |
| **Example 1:** The bar graph shows the heights of the tallest buildings in Nashville.  Kay said that the BellSouth Tower is at least 10 times as tall as City Center.  Is she incorrect? |
| **Example 2:** The tables below show the prices of 6 homes in January and November. A newspaper reported $160,000 is the average price of homes and has remained that amount from January through November. How is the report misleading?  ex2.tif |
| **Example 3:** A number of polls were taken after a debate between Obama and Romney. One poll showed that Obama was declared the winner 75% to 25%. A second poll showed that Romney was declared the winner 85% to 15%. Four other polls showed that Obama was declared the winner 60% to 40%. Which poll or polls are most likely accurate? Who won the debate? |
| **Example 4:** The circle graph shows how people in a town feel about their mayor. A radio station that supports the mayor said that the mayor has an approval rating of about 60%. Why is this misleading?  ex4.tif |
| **Example 5:** A doctor’s office put an ad in the newspaper for a receptionist. Including the doctor, the office has 5 employees. The salaries of the employees, including the doctor, are $25,000; $20,000; $400,000; $35,000; and $20,000. The ad said that the average salary was $100,000. Is this ad misleading? Why or why not? |
| **Example 6:** A radio station’s poll showed that 85% of its listeners would like fewer commercials during rush hour. Three other polls not conducted by the radio station showed that only 45% of the people would like fewer commercials during rush hour. What is most likely the cause of the discrepancy between the radio station’s poll and the other polls? |
| **Example 7:** ATT wants to know which cell phone company most people in Memphis prefer. ATT calls 100 Memphis residents who have ATT and learn that 80% of customers prefer ATT. Then ATT calls 100 people at random from the phone book and learns that 40% of the people prefer ATT. Which sample is more accurate? |
| **Example 8:** A politician wants to know what voters think about pay raises. She asks every person at her fundraiser. She finds that 98 out of 100 people at the fundraiser approve of pay raises. Which of these statements is true about the sample?   * 1. The sample is biased because it includes only people who tend to agree with her views.   2. The sample is biased because it includes only people who want a free lunch.   3. The sample is random and shows that she truly represents what the voters think about the pay raises.   4. The sample is random because 100 people were chosen at the same time. |
| **Example 9:** A magazine has published a table with 2008-2009 financial aid profiles for the University of Tennessee. Which of the following conclusions shows how the information in this table may be misleading?  ex2.tiff   * 1. The table does not show the number of students who did not apply for financial aid.   2. The table does not show how many applicants were found to have financial need.   3. The table does not show whether students are freshman or not.   4. The table does not compare its statistics to other years. |
| **ex3.tiffExample 10:** In a survey, students were asked if they would like to have longer school  days if they could have a longer summer vacation. 85% of the students surveyed said ‘yes’  while 15% surveyed said ‘no’. The question and circle graph are the results of the survey.  What is misleading about these results?   * 1. The graph does not show who is being surveyed.   2. The segments of the graph aren't drawn to scale.   3. The question only addresses part of the topic.   4. The question is not objective |
| **ex4.tiffex4a.tiffExample 11:** The table shows the lunch choices of students for one day. The data was then represented in a circle graph. What is misleading about the graph?   * 1. The title is confusing.   2. The scale is wrong.   3. The section labels are wrong.   4. The sections are the wrong sizes. |
| **Example 12:** The bar graph shows the results of a survey on the favorite type of pet among eighth graders. Which of the following best explains why the graph might be considered misleading?     1. The title is misleading. 2. The vertical axis doesn’t begin at 0. 3. The horizontal axis should include more types of pets. 4. The scale on the vertical axis is too large.   ex5.tiff |
| **Example 13:** Patti took a poll of all the students in the cafeteria and created the following circle graph from the data. Patti said that about 60% of students do not like pizza. Why is Patti incorrect?  ex7.tif   1. The graph says that about 40% of students do not like pizza. 2. Since most students who like pizza also like fried chicken and hotdogs, Patti should have said that about 25% of students do not like pizza. 3. Since the cafeteria serves pizza only 20% of the time, Patti should have said that only 20% of students like pizza. 4. The graph shows only students’ favorite lunches, not whether they do not like a particular food. |
| **Example 14:** |