December 14, 2017

Objective(s): You will learn to create & interpret graphs.

Agenda:

- Lab Review
- Dimensional Analysis / Sig Figs Review
- Graph Notes
- Work Time
- HW: Finish *Interpreting Graphs* WS

5 Thinking about the game

a. The conversion chains you create for this game could be quite long, and the actual conversions could be solved with fewer conversion factors. What is the least number of conversion factors you would need to make these conversions, given the cards you have in the deck?

- converting ft to cm

- converting mi to m

b. Because of the limitations of the cards in the deck, to convert km to cm, you would have to go through English units. What is a much easier way to convert km to cm?Explain.

c. Explain the math reasoning for being able to "cancel" like units that appear in the numerator and denominator of conversion factors in a conversion chain.

Show work & answers in INB. Collaborate with partners.

Section 1.3 Review *(p23)*

1. What does it mean to "convert" from one unit to another? Give an example.
2. How many meters do you cover in a 10-kilometer (10-K) race?
3. An Olympic swimming pool is 50 meters long. You swam from one end to the other four times.
   a. How many meters did you swim?
   b. How many kilometers did you swim?
   c. How many centimeters did you swim?
4. In the United States, a standard letter-sized piece of paper is 8.5 inches wide by 11.0 inches long. The international standard for a letter-sized piece of paper is different. The international standard is based on SI units: 21.0 cm wide by 29.7 cm long.
   a. Convert 21.0 cm to inches. Show your dimensional analysis setup.
   b. Convert 29.7 cm to inches. Show your dimensional analysis setup.
   c. State the dimensions, in inches, of the international standard for a letter-sized piece of paper.
   d. Which piece of paper is longer: a U.S. letter-sized piece of paper, or an international letter-sized piece of paper?
   e. Suppose the United States adopted the international standard for letter-sized paper. Explain at least two things that might result from this change.
5. Which of these measurements has three significant digits? (There might be more than one correct answer choice.)
   a. 29.3 cm
   b. 290 cm
   c. 0.029 cm
   d. 290. cm
6. Convert 345 cm to inches. Show your dimensional analysis setup and report your answer with the correct number of significant digits. (1 in = 2.54 cm).

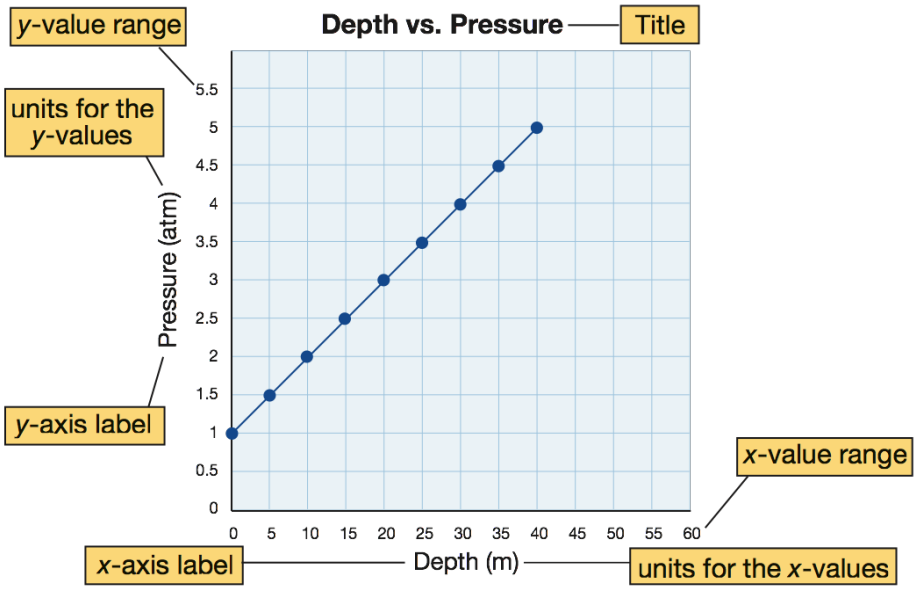
Scatterplots & Interpreting Graphs:

Take notes from final slide in INB

PESChp1Measurement4.ppt

view slides 6-14, notes from slide 15

Making a Scatterplot or XY Graph



Name: _____ Date: _____

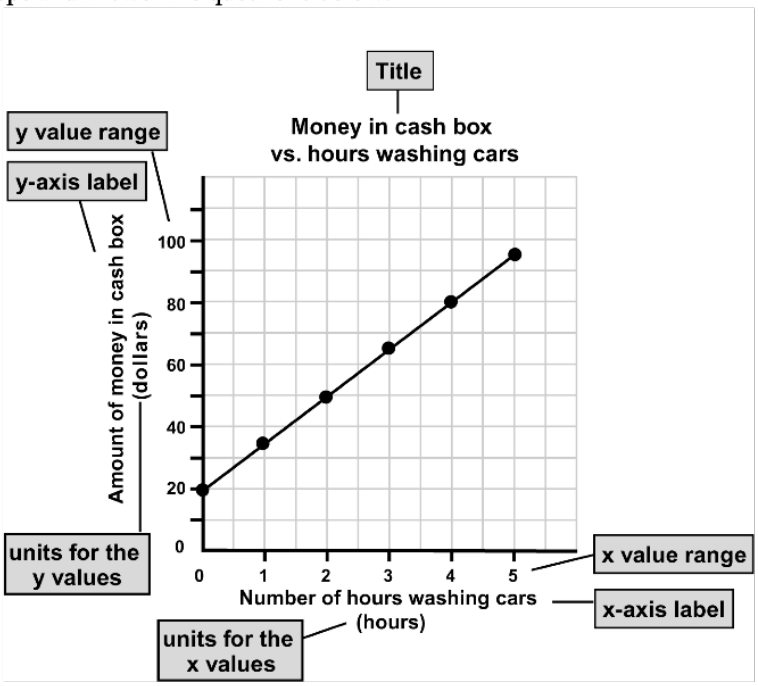
CONTENT 1.4

1.4 Interpreting Graphs

READ

The four main kinds of graphs are scatterplots, bar graphs, pie graphs, and line graphs.

To learn how to interpret graphs, we will start with an example of a scatterplot. The data presented on the scatterplot below is the amount of money in a cash box during a car wash that lasted for five hours. Use this graph to follow the steps and answer the questions below.



PRACTICE

Step 1: Read the labels on the graph.

1. What is the title of the graph?
2. Read the labels for the *x*-axis and the y-axis. What two variables are represented on the graph?

Step 2: Read the units used for the variable on the *x*-axis and the variable on the *y*-axis.

3. What unit is used for the variable on the *x*-axis?
4. What unit is used for the variable on the *y*-axis?

Step 3: Look at the range of values on the *x*- and *y*-axes. Do the range of values make sense? What would the data look like if the range of values on the axes was spread out more or less?

5. What is the range of values for the x-axis?

6. The range of values for the *y*-axis is 0 to $120. What would the graph look like if the range of values was 0 to $500? Where would the data appear on the graph if this were the case?

Step 4: After looking at the parts of the graph, pay attention to the data that is plotted. Is there a relationship between the two variables?

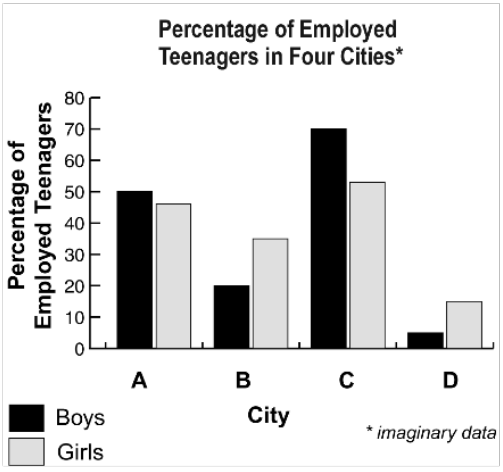
7. Is there a relationship between the variables that are represented on the graph?

Step 5: Write a sentence that describes the information presented on the graph. For example, you may say, "As the values for the variable on the *x*-axis increase, the values for the variable on the *y*-axis decrease."

8. Write your own description of the graph.

9. The theater club at your school needs to raise $1000 for a trip that they want to take. They will be taking the trip next fall. It is now April. Based on the graph, would you recommend that the group wash cars to raise money? Write out a detailed response to this question. Be sure to provide evidence to support your reasons for your recommendation.

Now, apply what you know about interpreting graphs to a bar graph. Use the steps from part one to help you answer the questions.



1. What is the title of this graph?

2. What variables are represented on the graph? (Hint: there are three variables.) Describe each variable in terms of the categories or the range of values used.

3. Write a sentence that describes how the percentage of teenagers employed compares from city to city. Do not state any conclusions about the data in your sentence.

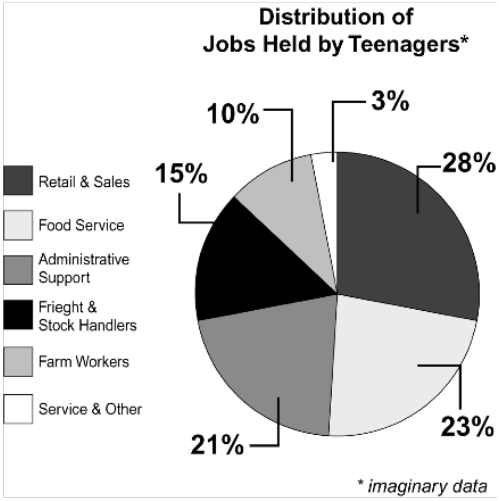
4. Write a sentence that describes how the percentage of boys employed compares to the percentage of girls employed. Do not state any conclusions about the data in your sentence.

5. Based on the data represented in the graph, come up with a hypothesis for why the percentage of teenagers employed differs from city to city.

6. Based on the data represented in the graph, come up with a hypothesis to explain the employment differences between boys and girls in these cities.

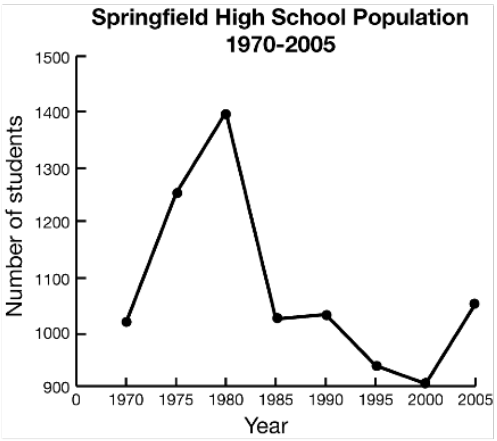
CONTENT 1.4

Now, apply what you know about interpreting graphs to a pie graph. Use the steps from part one to help you answer the questions.



1. What is the title of this graph?
2. What variables are represented on the graph? (Hint: there are two variables.)
3. Are any units used in this graph? Explain your answer.
4. If you were going to report on this data, what would you say? Write two to three sentences that describe this graph. Do not state any conclusions about the data in your sentence.
5. Come up with a hypothesis based on the data in this graph. Briefly describe how you would test your hypothesis.
6. Do you have a job? If so, in which category does your job fit? Do you think this pie graph accurately represents the working teenager population in your area? Explain your response.

Finally, apply what you know about interpreting graphs to a line graph. Use the steps from part one to help you answer the questions.



1. What is the title of this graph?
2. What variables are represented on the graph? (Hint: there are two variables.)
3. What is the range of values for each variable?
4. Write a sentence that describes the change in student population at Springfield High School from 1970 to 1985. Do not state any conclusions about the data in your sentence.
5. a. Come up with a possible reason for the sudden drop in population between 1980 and 1985.
   b. If this were your high school, how could you find out if your explanation is correct?
6. Explain why this graph is a line graph, not a scatterplot.