

11D: Visual Vocabulary Practice

For use after Lesson 11-7

Study Skill When interpreting an illustration, notice the information that is given and also notice what is not given. Do not make assumptions.

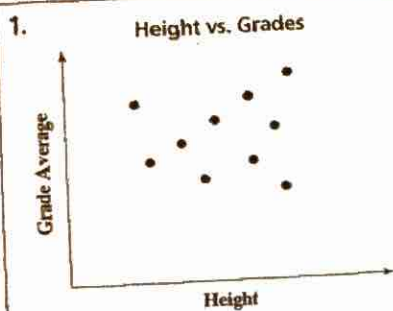
Concept List

biased question
frequency table
sample

double bar graph
line plot
no trend

histogram
population
negative trend

Write the concept that best describes each exercise. Choose from the concept list above.



No trend

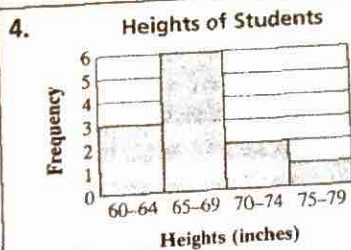
2. **Number of Sports Played by Students**

Sports	Tally	Frequency
0		5
1		2
2		3
3		7

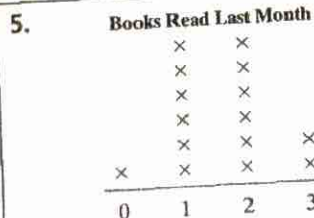
Frequency table

3. Sandy conducted a survey at her college. She chose a random sample from all freshmen and asked how much time they study each week. The freshmen class represents this for the survey.

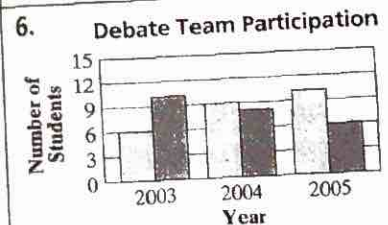
Population



Histogram



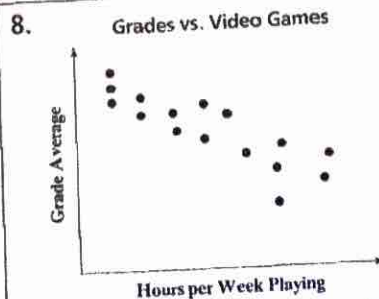
Line plot



Double bar graph

7. "Do you prefer lovable dogs or lazy cats?"

Biased Question



Negative Trend

9. Derrick conducted a survey using the customers at a local ice cream shop. Derrick chose every 5th and 8th customer entering the shop to represent this.

Sample

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11F: Vocabulary Review

For use with the Chapter Review

Study Skill Take notes while you study. Use a highlighter to emphasize important material in your notes.

Circle the term that correctly completes each sentence.

1. A flip that creates symmetry is a (~~translation~~, reflection).
2. The first number in an ordered pair is the (x, y) coordinate.
3. Lines in a coordinate plane that are parallel to the y -axis are (~~horizontal~~, vertical).
4. A (line plot, ~~frequency table~~) uses a number line with "x" marks to represent each data item.
5. You can use a (bar, ~~circle~~) graph to easily compare amounts.
6. The (~~mean~~, median) is the middle number in a data set when the values are written in order from least to greatest.
7. The (~~mode~~, range) of a data set is the difference between the greatest and least data values.
8. A (~~line graph~~, scatter plot) can be used to investigate the relationship between two sets of data.
9. A sequence is (arithmetic, ~~geometric~~) if each term is found by adding the same number to the previous term.
10. (Principal, ~~Interest~~) is the amount of money borrowed or deposited.
11. The (~~area~~, surface area) of a prism is the sum of the areas of the faces.
12. (Circumference, ~~Area~~) is the distance around a circle.
13. The opposite of squaring a number is finding its (square root, ~~perfect square~~).
14. The (~~slope~~, bisector) of a line segment is a line, segment, or ray, that goes through the midpoint of the segment.

Puzzle 1-10

Mean, Median, Mode, and Range

Choose values from the chart to create a data set that satisfies each of the clues below.

Possible Values:

5	6	4
3	5	2
1	1	3
1	1	4

Answers
may
Vary.

Clues:

- I am a set that contains three numbers. My mean is 5. 6, 4, 5
- I contain 5 numbers, my range is 5, my median is 3, and my mode is 1. ~~1, 1, 3, 5, 6~~
- I'm also a set with five numbers. My mode and my range are 5, and my mean is 4. 1, 3, 5, 5, 6
- There are only 2 numbers in my set. There is no mode, and a mean of 5. 4, 6
- I am a set that contains four numbers. My mode is 4, and my mean is 4. 4, 4, 5, 3
- I am a large set of seven numbers. My mean is 2, and my mode is 1. 1, 1, 1, 3, 2, 5
- There are four numbers in my set, my mode is 1 and my mean is 2. 1, 1, 2, 4
- I am a set that contains three numbers. My median is 3, my range is 4, and my mean is 3. 1, 3, 5

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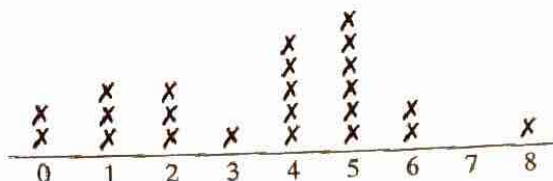
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Puzzle 11-1

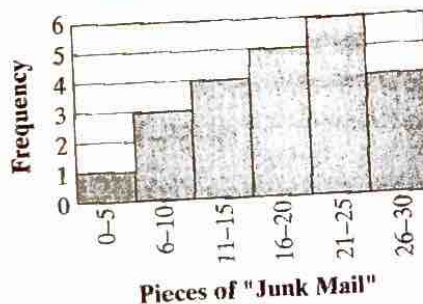
Reporting Frequency

The line plot and histogram below show the results of a survey regarding catalogs and unwanted advertisements (or "junk mail") received in the mail during the course of a month. Use the line plot to answer Exercises 1-5, and the histogram to answer Exercises 6-10. When you have completed the Exercises, use the letter code to complete the sentence.

Number of Catalogs Received By 20 People in One Month



Number of Unwanted Advertisements Received in One Month



- How many people received three catalogs in the mail? 1
- How people received at least one but fewer than four catalogs? 7
- The number of people who received more than one catalog: 18
- How many people received either two or six catalogs? 5
- The number of people who received more than six catalogs: 1
- The number of people who did *not* receive between six and ten pieces of "junk mail": 20
- How many people received more than five pieces? 22
- The number of people who received between eleven and twenty unwanted advertisements: 9
- How many people received fewer than five or more than twenty-five pieces of "junk mail"? 5
- What was the total number of people surveyed? 23

Complete by writing the letter for each answer above the exercise numbers:

Letter Code: 1 = A
2 = B
3 = C

Histograms and line plots give:

A G R E A T V I E W
1 2 3 4 5 6 7 8 9 10

26 = Z

Puzzle 11-2

Spreadsheets and Data Displays

Choose the correct tool for the job. The letter of each correct answer choice will help you answer the question at the bottom of the page.

Problem

1. Victor wants to keep track of the amount of money he spends each month for a year on CDs.
2. Victor has a paper to write for his English class and his teacher wants it typed with no spelling errors.
3. Victor wants to check his arithmetic homework for mistakes in addition and subtraction.
4. Victor has a job that pays \$7 an hour. He needs to keep track of his hours for every week he works.
5. Victor is measuring a board to cut for a step to the treehouse he is building. It needs to be 12 inches long.

Best Tool for Solving

- A. spreadsheet
 - C. word processor
 - L. calculator
-
- C. word processor
 - L. calculator
 - R. ruler
-
- S. spreadsheet
 - A. word processor
 - E. calculator
-
- T. calculator
 - H. ruler
 - L. spreadsheet
-
- S. spreadsheet
 - L. ruler
 - E. calculator

A C E L L is a box in a spreadsheet where a specific row and column meet.

Take out a piece of looseleaf paper and write 2-3 paragraphs about what displays and tools can be used to analyze data. Include examples of when each should be used. These paragraphs must be turned in before you leave.

After this, if you have time move onto the enrichment.

Enrichment 1-10

Mean, Median, Mode, and Range

Critical Thinking

Data Company's ten employees made the following salaries during the past year.

\$17,000, \$17,000, \$25,000, \$25,000, \$25,000, \$27,000, \$32,000, \$32,000, \$83,000, \$102,000

- For the salaries listed above, find each of the following.
 - mean \$38,500
 - median \$26,000
 - mode \$25,000
 - range \$85,000

- How should the company's advertisement for new employees describe salaries? Should it use the mean, median, mode, or range?

Mean because it will be more attractive to employees.

- Suppose a newspaper article states that \$38,500 is the "average" salary of Data Company's employees. Would the article be accurate? Could it be misleading? How?

It is accurate. It could be misleading because it implies that most make \$38,500

- Recently, the CompuData Corporation claimed that Data Company's employees are overpaid for the work they perform. In an article defending against such claims, which number would most likely be used? Explain.

Mode because it is the lowest salary

- If you worked for Data Company, which number would you use to describe the typical earnings of its employees? Explain.

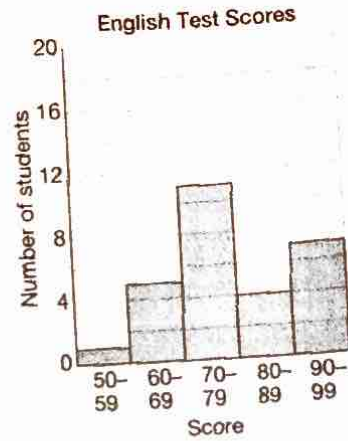
Mode because more employees earn \$25,000 than any other salary. Median because half the salaries are greater and half are lower.

Enrichment 11-1

Reporting Frequency

Recording and Organizing Data

Mr. Ishii made a histogram showing his students' performance on a recent English test.



1. What is the interval width in this histogram?

10

2. How many students scored between 80 and 89 points?

4

3. Make a frequency table for the histogram.

Score	50-59	60-69	70-79	80-89	90-99
Students	1	5	11	4	7

4. Can you tell how many students scored 73 points? Explain.

No. There could be any from 0 to 11.

5. How many students took the test?

24

6. Mr. Ishii has 32 students in his class. He gave a makeup test to the absent students one week after these test scores were plotted. The four students received the following points on the test: 58, 100, 43, 78. Describe how you would change the intervals in the frequency table to reflect these new scores.

Add new columns for the intervals
40-49 and 100-109

7. Create a new frequency table to include these new test scores.

Score	40-49	50-59	60-69	70-79	80-89	90-99	100-109
Students	1	2	5	12	4	7	1

8. How many bars will the histogram have if you plot the new data?

7

9. Create a new histogram to reflect the new test scores.

10. Mr. Ishii gave every student who scored between 70 and 79 a C on their progress report. What percent of students received a grade lower than a C? Show your work.

25%

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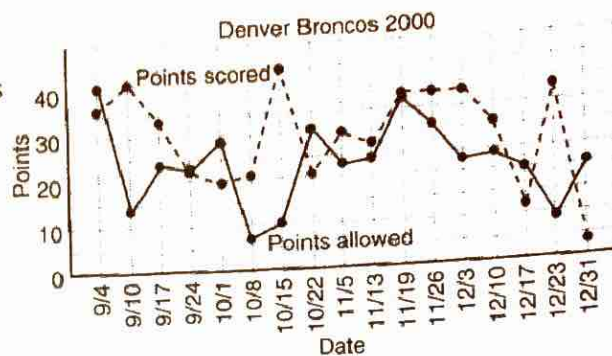
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Enrichment 11-2

Spreadsheets and Data Displays

Analyzing Data

The double-line graph shows the number of points scored and allowed by the National Football League's Denver Broncos during the 2000 football season. In how many games did the Broncos score more points than their opponents? How can you tell? How could you tell if there was a tie game?



- Look at the broken line to find how many points the Broncos scored on 9/4.
36 points
- Look at the solid line to find how many points they allowed the opposing team to score on 9/4.
41 points
- If the line for points scored is below the line for points allowed, did the Broncos win or lose?
lose
- How many times is the line for points scored above the line for points allowed?
11 times
- In how many games did the Broncos score more points than their opponents? How can you tell?
11 games because the line for points scored is above the line for points allowed for only 11 games
- Suppose both teams score 10 points. Describe what happens to the lines. Who wins the game?
Since the lines met at the same point, the game is a tie
- Write a number sentence to show that the Bronco wins and the Bronco losses equal the total games played.
11 + 6 = 17 (sample answer)
- In how many games did the Broncos score 10 or more points fewer than their opponents? Give the dates of these games.
3 games 10/22, 12/31

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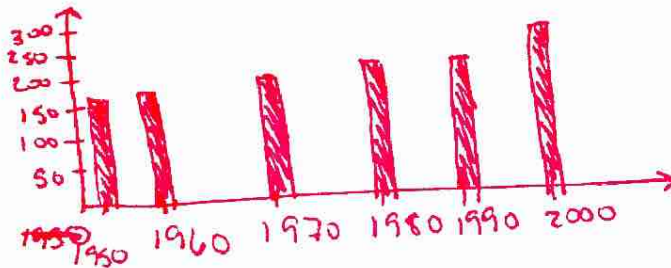
Activity Lab 11-6

Population Growth

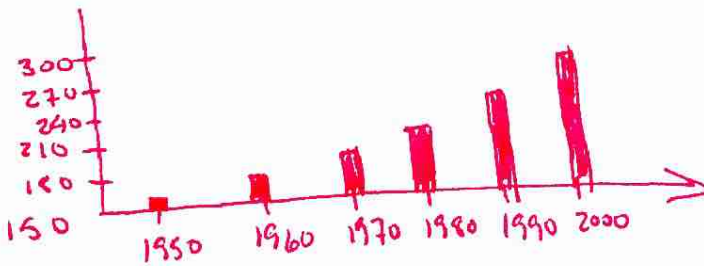
The table below shows the population of the United States that was recorded in each national census from 1950 to 2000.

Year	1950	1960	1970	1980	1990	2000
Population (millions)	151	179	203	226	248	281

- Using the data in the table, create a bar graph below. Your horizontal scale should start with 1950 and increase in increments of 10 years. Your vertical scale should start at zero and increase in increments of 50.



- Using the data in the table, construct another bar graph. This time, begin your vertical scale at 150 and increase in increments of 30.



- Which graph seems to show a more rapid increase in population between 1950 and 2000? Why is this?

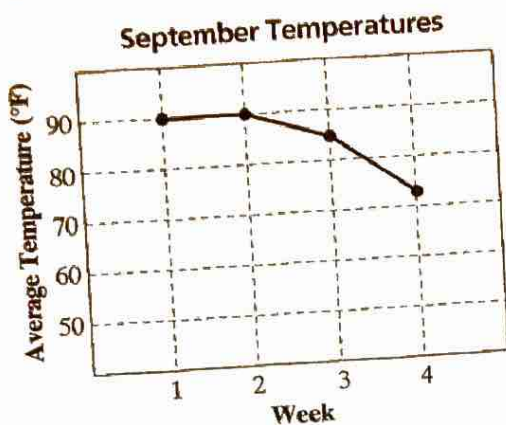
The second one because of the scale and starting point of the y-axis.

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Puzzle 11-6

The graph below shows the average high temperature for four weeks in September at a beach resort.



Read the situations shown in the first column below and match each situation to a misleading use of the information from the graph, shown in the second column.

1. A prospective client enjoys the beach when the temperature is in the nineties. **C**
2. A potential client likes the beach when the temperature is neither too hot nor too cool. **A**
3. A client is looking for a vacation where the temperature will reflect the changing season. **D**
4. A client would like a vacation where the average temperature is less than 80°F. **B**

- A. The sales agent mentions the mean temperature for all of September.
- B. The sales agent uses only the data for Week 4.
- C. The sales agent uses the mode to describe the average daily temperature.
- D. The sales agent uses the downward trend of the data on the graph to represent the approach of cooling temperatures.

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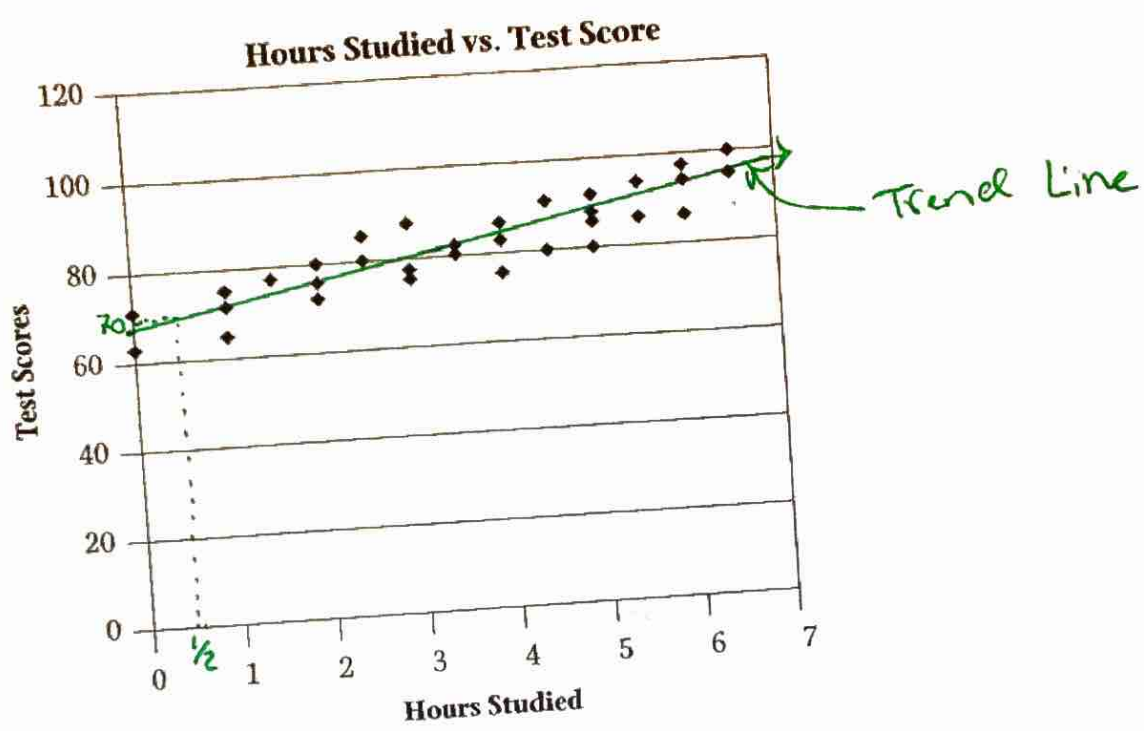
NAME:

Statistics and Probability

Unit 2: Constructing Frequency Distributions

Station 4

Discuss the following scatter plot with your group members. Then work together to answer the questions that follow.



What two pieces of data are being compared in this scatter plot? The hours studied and students test scores.

What do you notice about the general trend of the data in this scatter plot? It is positive.

If you were told that a student spent half an hour studying, approximately what grade would you expect that student to earn on the test? about 70%

What information did you use to make your last prediction? I drew a trend line and used it to approximate the score for half way between 0 and 1 hours.

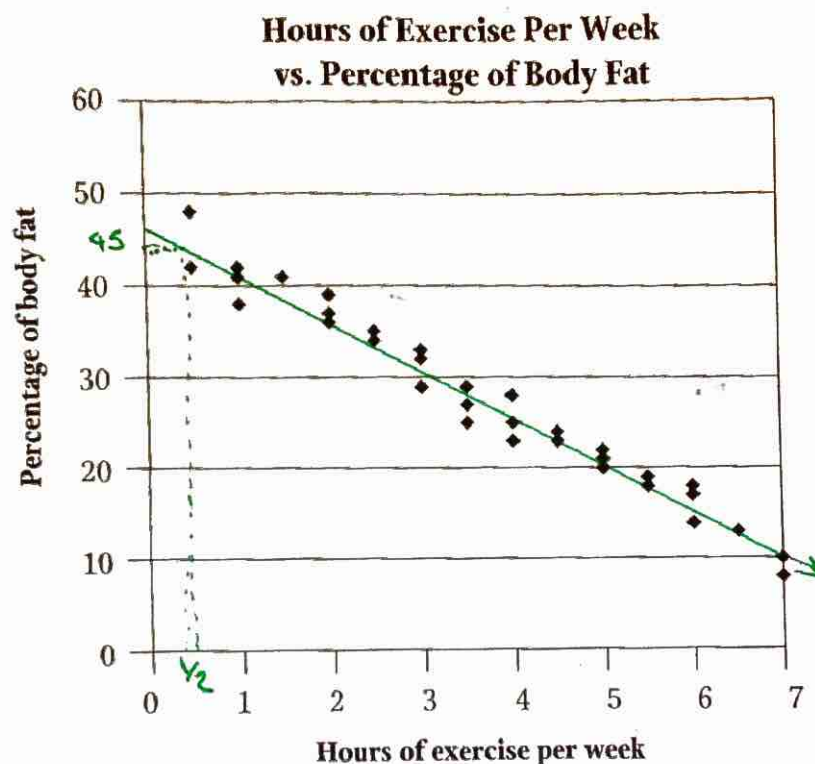
NAME: _____

Statistics and Probability

Set 6: Analyzing Data Using Graphs

Station 1

Discuss the following scatter plot with your group members, and then work together to answer the questions that follow.



What two pieces of data are being compared in this scatter plot? Hours of exercise in a week and the % of body fat.

What do you notice about the general trend of the data in this scatter plot? It is negative.

If you were told that a person spent less than half an hour exercising per week, about what percentage of body fat would you expect that person to have? between 45 and 47%

What information did you use to make that prediction? I made a trend line and I looked at the range of numbers for % body fat when the hours are between 0 and 1/2.

NAME: _____

Statistics and Probability

Set 1: Collecting, Organizing, and Analyzing Data

Station 2

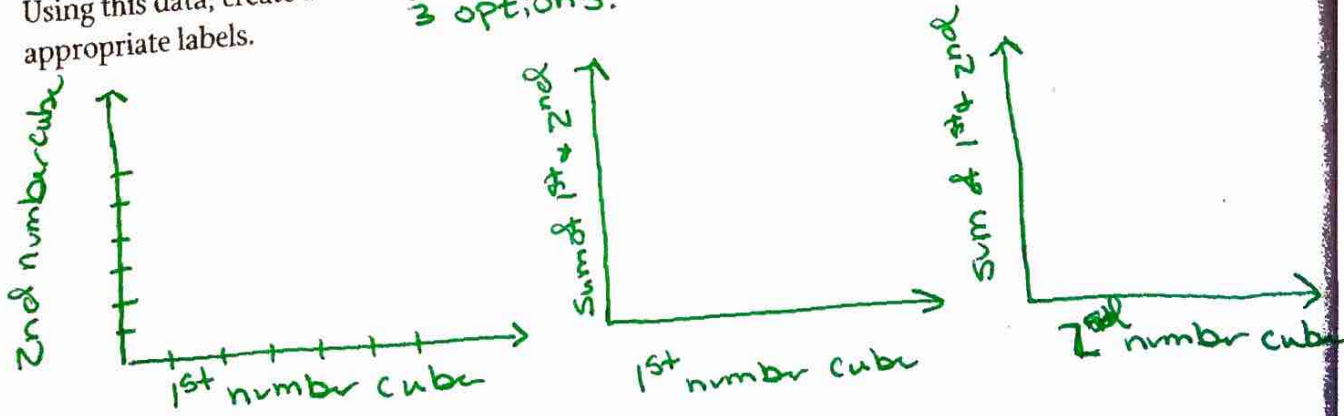
At this station, you will find two number cubes. You will be using these number cubes to generate data which you will then graph.

Roll the number cubes one at a time. Record the number that comes up on the first number cube. Roll the second number cube and record the number. Then record the sum of the two number cubes. Do this 10 times and record the data in the table below.

First number cube	Second number cube	Sum of number cubes

Answers will vary.

Using this data, create a scatter plot in the space provided. Be sure to title the scatter plot and use appropriate labels. *3 options.*



What is the range of the sums? 2 to 12

What do you notice about your scatter plot? Is there a general trend? _____

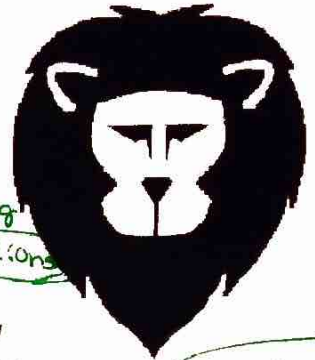
Answers will vary.

Name _____

Date _____

Making Inferences From Random Data - Independent Practice Worksheet

Solve all the problems.



1. Scientists in the jungle want to find the best estimate for the lion population. They tagged and released 20 lions as part of a research project. Later, they found 160 lions, 8 of which were tagged? Find the best estimate of population?

$\frac{8}{160} = \frac{20}{\text{est. pop.}}$ $8x = 160 \cdot 20$ $8x = 3200$ $x = 3200 \div 8$

2. Ronald works in an Ornithology department. Students asked him to find out the best estimate of the local bird population. So he tied a belt around the legs of 40 birds. A few days later, he observed 520 birds, 34 of which had belts. To the nearest whole number, what is the best estimate for the bird population?

$\frac{34}{520} = \frac{40}{x}$ $34x = 520 \cdot 40$ $34x = 20800$ $x = 20800 \div 34$ $x = 611.76$

about 612 birds

3. Henry has a stationery shop in school. He surveyed and collected random samples of 100 students regarding student's pen preference? Make at least two inferences based on the results.

Overall students like metal pens best and the next preferred is crystal

Student Sample	Crystal Pens	Metal Pens	Plastic Pens	Total
#1	32	48	20	100
#2	18	67	15	100

4. Sam is a school leader. She wants to decide whether makeup should be allowed in school or not? She collected random samples of 100 females regarding make up preference. Make at least two inferences based on the results.

Between both samples most want to wear mascara & the least want to wear lipstick.

Student Sample	Mascara	Lipstick	Eye liner	Total
#1	46	26	28	100
#2	60	17	23	100

5. Farmers marked 45 cows and released them. The next day they counted 150 cows, 15 of which had marks. Find the best estimate for the cow population in village?

$\frac{15}{150} = \frac{45}{x}$ $15x = 45 \cdot 150$
 $15x = 6750$
 $x = 6750 \div 15$
 $x = 450$

about 450 cows



Name _____

Date _____

6. The animal department wants to estimate baboon population. So they paint 50 baboons with a mark. These baboons were then released into the jungle. After two months, 300 baboons were caught. Among these baboons, 25 were marked. To the nearest whole number, what is the best estimate for the baboon population?

$$\frac{25}{300} = \frac{50}{x} \quad 25x = 300 \cdot 50$$

$$25x = 15000$$

$$x = 600 \text{ baboons}$$

7. The government of Mexico declared blue sharks an endangered species. They put tags on 36 blue sharks and released them. Later, they corral 130 blue sharks; among those blue sharks, 20 were tagged. Find the best estimate for the blue shark population?

$$\frac{20}{130} = \frac{36}{x} \quad 20x = 36 \cdot 130 \quad 20x = 4680$$

$$x = 234 \text{ sharks}$$

8. The local food surveyors collected data of two random samples of 100 children regarding their food preference? Make at least two inferences based on the results.

Apples are liked the most & Grapes are liked the least

Student Sample	Apples	Banana	Grapes	Total
#1	62	20	18	100
#2	68	18	14	100

9. Snake charmers want to estimate the population of a particular species of cape cobra. They mark 20 cape cobras with a radioactive tag. After few months they catch 190 cape cobras, 17 of which had marks. What is the best estimate for the cape cobra population?

$$\frac{17}{190} = \frac{20}{x}$$

$$17x = 20 \cdot 190 \quad 17x = 3800$$

$$x = \frac{3800}{17}$$

About
229
Cape
cobras

10. Andrew is planning what to buy for a garments store in the downtown area. He collected two random samples of 100 men regarding their men's wear preference? Make at least two inferences based on the results.

Student Sample	Jeans	Pants	Shorts	Total
#1	78	10	12	100
#2	64	22	14	100

Jeans are by far the most popular with pants slightly more popular than shorts.



Name _____

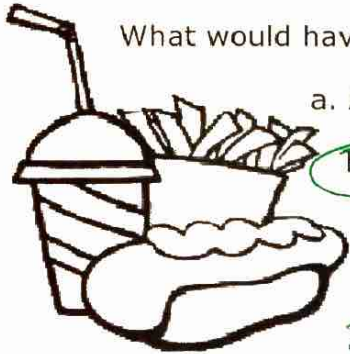
Date _____

Understanding Random Sampling - Independent Practice Worksheet

1. Harry collected green balls in a bag. He drew two balls, of the five balls, out of the bag. Is this a random sample of the green balls in the bag?

Yes. Each item in the bag has the same chance of being selected.

2. Daisy wants to find out where the greatest number of people buy fast food for lunch. He surveys every fourth person on a random street and asks them where they get food for lunch regularly?



What would have been an improvement in Daisy's experiment?

a. Ask people their favorite lunch food.

b. Survey all people in the area.

c. Ask people where they get breakfast.

Alternately she could survey every 3 or 4th household in the area.

3. Jack is trying to determine the best location to sell hot dogs. There are 4 different licensed locations in the city (on the street, downtown, near the garden, and in the school canteen). Jack observed that many people tend to visit downtown and the garden. Jack decided to sell hot dogs in the downtown area where he saw that the most people gather.

What changes to Jack technique would have giving him a better understanding of where he would be the most successful selling hot dogs?

Survey all 4 areas & Ask the people if they eat hotdogs to determine which area likes hotdogs the most

4. Kerry collected shells from a sea shore in a box. He takes out a handful of shells from the box. Is this a random sample of shells in the box?

Yes.



Name _____

Date _____

5. There are four doctors in the city. Their offices are located in four different parts of the city (South Street, Downtown, Outskirts Alley, and West Street). Kevin is trying to figure out which doctor has the most patients. He observed that the Downtown and West Street areas have larger populations. He concurred that the doctors in those areas have more patients. After comparing those two areas, he decided that the West Street doctor had the most patients because the area had the most traffic.



What changes to Kevin technique would have giving him a better understanding of which doctor has most patients?

Survey all 4 areas. Survey the number of people visiting the doctors office + Look at the parking lots (if they have any)

6. Drew tries to predict which restaurant will have the least amount of business during Christmas season. There are three restaurants in city. Two are on the outskirts of the city and one is in the city. He learned that two hotels situated on the outskirts are fully booked because one has a Christmas show and the other restaurant has a huge indoor pool. From this information he inferred that the restaurant in the city will have the least amount of business during the Christmas season.

What would have been an improvement in Drew's experiment?

- a. Ask people at the restaurants if they like fast food.
- b. Survey all people to see which December holiday they celebrate.
- c. Look at the past Holiday performance of the restaurants.

7. Terry had white and red marbles in a container. He takes out 4 marbles, without looking in the container. Is this a random sample of marbles in a container?

yes



Name _____

Date _____

8. Fred is releasing his new album of jazz music. He can only release the album in one store. He wants to know where his release would be the most successful in the city. He observed that the downtown area people and college students love jazz music the most.

He then decided to release the album in downtown store because he felt college students might not be able to afford the album.

What changes to Fred technique would have giving him a better understanding of where his release would be the most successful?

Survey people from both areas to see if they buy albums regularly.

9. Jeffery is comic writer. He wants to write new comics for children. He wants to write comics that are specific for his readers. He decides to write the comic specifically for one local elementary school. There are five local elementary schools he is considering. Jeffery wants to write the comic for the most people possible. Which is the **best question** to ask schools to determine which elementary school has the most students?

- a. How many school buses drop off students every morning at your school?
- b. How many photo copiers does your school have?
- c. How many student chairs are in your school?
- d. How much milk is consumed at your school every year?

10. George put some assorted color shirts into a bag. He looks in the bag and removes the blue shirts from the bag. Is this a random sample of the shirts in the bag?

NO



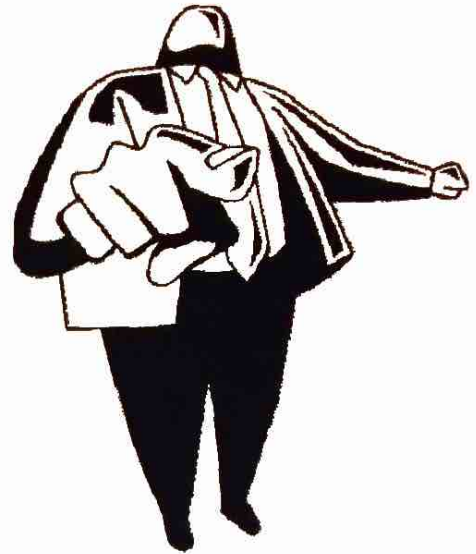
Name _____

Date _____

Is it Biased? Worksheet

Label each statement as biased or unbiased.

Unbiased 1. A Gallup Poll interviews a random sample of 2,500 Adult Americans to predict the opinions of all adults living in United States on color discrimination.



Unbiased 2. Do you prefer sleeping in the daytime or night time?

Biased 3. Should the dress code for Pizza Hut employees be enforced?

Either. 4. Do you prefer Parliamentary democracy or Presidential democracy? *It can be either since there are other forms of government.*

Biased 5. Do you think a flyover should be built on cross roads?

Unbiased 6. Does the College Board have a right to enforce a dress code?

Biased 7. Do you think the police and Homeland security are doing a good job to fight terrorism?

Biased 8. Do you think the government is providing good medical facilities for children?

Unbiased 9. How many women out of every 1000 women hold a Masters Degree?

