

**Note to Students: STOP!!! If you have access to technology, THIS IS THE WRONG ASSIGNMENT!**

Go back and find the online assignment instructions for this week.

## Algebra 2: Week 7 (Offline) Assignments

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*5/18 - 5/25*

**Directions:** Complete all the items below and turn in the completed work to the office on Monday from 12 -3 pm or take a picture of the work and email it to your Algebra 2 teacher. BE SURE ASSIGNMENTS ARE CLEARLY LABELED AND YOUR NAME IS ON THEM!

### Part 1: Guided Notes on Section 11.3

- Read Section 11.3 of the textbook and **fill in the attached guided notes**.

### Part 2: Textbook Problems

- On a separate piece of paper, **complete the following problems from the textbook:**
  - **Section 11.3 on page 614-615: #5-27 odds**

### Part 3: Quizizz Assignment

- **Complete the multiple choice Quizizz worksheet** (attached). You may write on the page or show your work on a separate piece of paper.

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### Additional Resources:

The last pages of this packet may be helpful for completing this week's assignments.

- Answer Key to the Section 11.3 Guided Notes

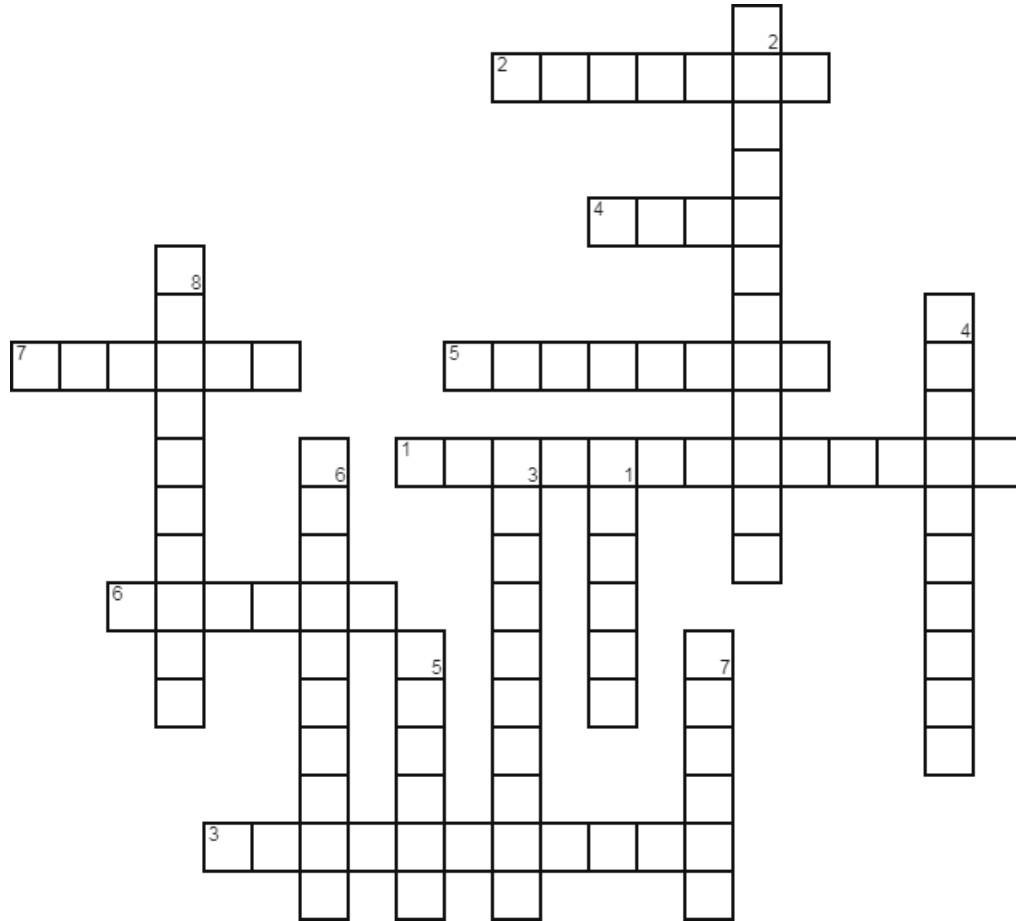
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Have questions about the assignment? Contact your Algebra 2 teacher for help.

Name:

Date:

## 11.3 Vocabulary



### Across

1. An \_\_\_\_\_ study observes individuals and measures variables without controlling the individuals or their environment.
2. For a \_\_\_\_\_ sample, a population is divided into groups; all members in one or more groups are selected.
3. For a \_\_\_\_\_ sample, only members of a population who are easy to reach are selected.
4. A \_\_\_\_\_ is an error that results in a misrepresentation of a population.
5. An \_\_\_\_\_ sample is representative of the population that you want information about.
6. Questions that are flawed in a way that leads to inaccurate results are called \_\_\_\_\_ questions.
7. A \_\_\_\_\_ is a subset of a population.

### Down

1. In a \_\_\_\_\_ sample, each member of a population has an equal chance of being selected.
2. For a \_\_\_\_\_ sample, members of a population can volunteer to be in a sample.
3. For a \_\_\_\_\_ sample, a rule is used to select members of a population (for instance, selecting every other person).
4. For a \_\_\_\_\_ sample, a population is divided into smaller groups that share a similar characteristic; a sample is then randomly selected from each group.
5. Questions that are flawed in a way that leads to inaccurate results are called \_\_\_\_\_ questions.
6. An \_\_\_\_\_ imposes a treatment on individuals in order to collect data on their response to treatment (may or may not be medical).
7. A \_\_\_\_\_ is an investigation of one or more characteristics of a population (every member of a sample is asked one or more questions).
8. A \_\_\_\_\_ is the collection of all data (such as responses, measurements, or counts) that you want information about.

## **11.3 Collecting Data:**

**In Exercises 1 and 2, identify the type of sample described.**

1. A bank wants to know whether its drive-thru customers are satisfied with the service. Customers receive a code on their receipt that allows them to go online and fill out a survey.
2. A school wants to know whether high school teachers prefer before-school or after-school faculty meetings. Ten teachers with classrooms near the front office are surveyed.

**In Exercises 3 and 4, identify the type of sample and explain why the sample is biased.**

3. Every fifth customer who walks into a locally owned hardware store answers a survey that asks for opinions about lowering taxes for locally owned businesses to increase the likelihood that they can stay open for business.
4. A fitness center wants to find out whether its members would sign up for an afternoon yoga class. It surveys the first twenty members on the alphabetized membership list.

**In Exercises 5 and 6, explain why the survey question may be biased or otherwise introduce bias into the survey. Then describe a way to correct the flaw.**

5. A guidance counselor asks high school students, "Do you miss school often?"
6. "The fish being caught in our lake are found to have lesions, which could be toxic when eaten. Do you think the city should address this health problem?"



9. What is a survey?

- a) process of collecting statistical data from a small group of a population
- b) Statistics collected from an entire population
- c) An element or feature that can vary
- d) A person chosen from a population

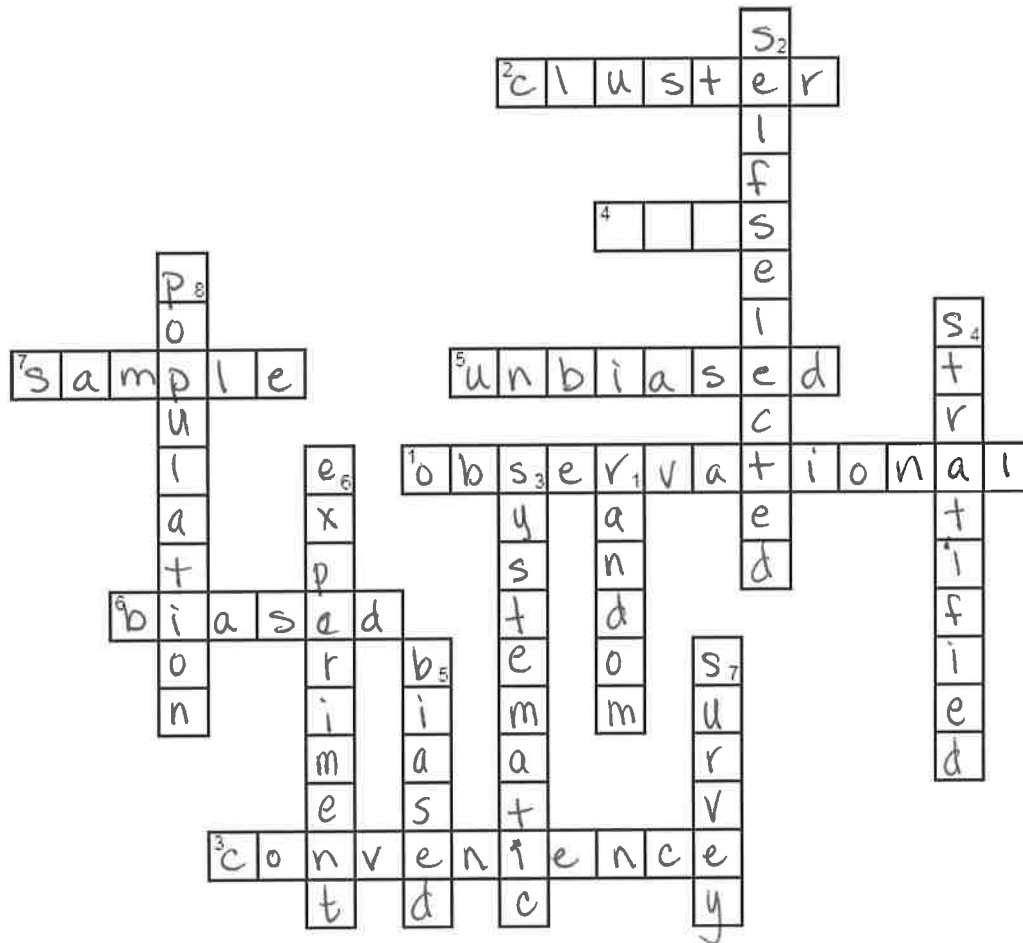
10. Which of the following is an example of a sampling method that is randomized?

- a) Simple Random Sampling
- b) Stratified Sampling
- c) Cluster Sampling
- d) All of these

Name:

Date:

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## 11.3 Collecting Data:

### **In Exercises 1 and 2, identify the type of sample described.**

1. A bank wants to know whether its drive-thru customers are satisfied with the service. Customers receive a code on their receipt that allows them to go online and fill out a survey.

This is a self-selected sample or voluntary response sample. Voluntary response samples are problematic since only those who feel strongly about their experience are likely to respond. These types of sampling are best avoided.

2. A school wants to know whether high school teachers prefer before-school or after-school faculty meetings. Ten teachers with classrooms near the front office are surveyed.

With only the information given, this appears to be a convenience sample. Assuming the office staff is in charge of surveying teachers, they might find it easiest to simply walk over and talk to some nearby teachers. Since convenience samples lack randomization, the results drawn from these samples are often not valid for the population of interest. What about the teachers who are further away from the office? Would they more likely favor after-school meetings since morning meetings often give teachers little time to set up their classrooms for the day? Unfortunately, all we can infer from this survey is the preferences of teachers near the front office.

### **In Exercises 3 and 4, identify the type of sample and explain why the sample is biased.**

3. Every fifth customer who walks into a locally owned hardware store answers a survey that asks for opinions about lowering taxes for locally owned businesses to increase the likelihood that they can stay open for business.

This is a systematic sample. Systematic samples are an excellent alternative to achieving a random sample when a simple random sample is difficult to conduct. So if the problem isn't the fact that they used a systematic sample, then why is it biased? There are two problems with this sample...

1. The main problem is that this survey design has response bias. Any design that influences the responses is referred to as response bias. Because the local business is conducting the survey, customers will more likely agree to lower taxes in an effort to please the store (and not appear to be rude).
2. To a lesser extent, the sample doesn't represent the population of interest. Since initiatives to raise/lower taxes are presented to all voters, the population of interest should probably have been all registered voters. By only surveying at the locally owned hardware store customers, we are likely to find a greater proportion of people who approve supporting local businesses. Note that this is not a problem if you truly were interested in only people who shop at this store.

4. A fitness center wants to find out whether its members would sign up for an afternoon yoga class. It surveys the first twenty members on the alphabetized membership list.

This is a convenience sample. Convenience samples often do not represent the population of interest and can give us misleading results. In this case, families who are members of the gym would all share a last name and would all be selected in this sample. Couples and families with children would be overrepresented in this sample. We should have used a simple random sample instead by assigning each member a number and then generating 20 random numbers.

### **In Exercises 5 and 6, explain why the survey question may be biased or otherwise introduce bias into the survey. Then describe a way to correct the flaw.**

5. A guidance counselor asks high school students, "Do you miss school often?"

Students may be more likely to lie about their true feelings since they know the guidance counselor is asking them. By making this an anonymous question, students will more likely report the truth.

6. "The fish being caught in our lake are found to have lesions, which could be toxic when eaten. Do you think the city should address this health problem?"

The additional information in the first sentence of the question contains language that influences the responders' choice. Words such as "lesions" and the phrase "which could be toxic when eaten" strongly persuades people to side with fixing this health problem. A quick fix would be to remove the additional information from the question.