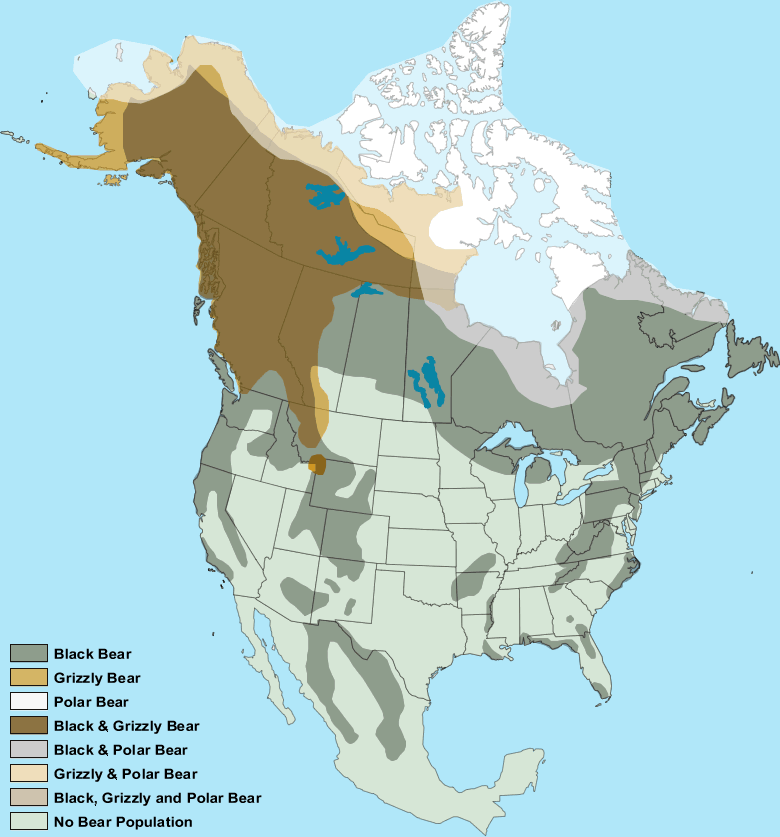
Vocab:

* Population –
* Population Dynamics –
* Sampling –
* Population Density –
* Dispersion –
* Uniform Dispersion –
* Clumped Dispersion –
* Random Dispersion –

**Introduction To Populations**

1. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a group of the same species that live in a specific area.

Use the map the United States to circle and define a population.



1. Use the space below to discuss with group members to come up with two ways that populations can grow over time.

Use the space below to discuss with group member to come up with two ways that populations can decrease over time.

The study of how populations change is called **population dynamics**. To truly understand population dynamics, come up with a mathematical equation that represents how populations can change over time.

1. Populations can be spread out over an area in diverse ways. There are three major ways that populations can be spread out over an area.

|  |  |  |
| --- | --- | --- |
| Random | Uniform | Clumped |
| http://www.uwyo.edu/dbmcd/popecol/Fig6.3Dispersion.jpg | http://www.uwyo.edu/dbmcd/popecol/Fig6.3Dispersion.jpg | http://www.uwyo.edu/dbmcd/popecol/Fig6.3Dispersion.jpg |
| Random dispersion means that there is no pattern to how organisms are spread over the area | Uniform dispersion means that there is an even spacing over the area that the animal is spread | Clumped dispersion means that there are areas of tightly packed animals around resources |

Now we are going to utilize the classroom around us to see how the types of dispersion are used in your classroom. Use the space below to draw a basic map of your classroom.

Length of Classroom: \_\_\_\_\_\_\_\_\_\_\_\_\_\_meters Width of Classroom: \_\_\_\_\_\_\_\_\_\_\_\_\_\_meters

Total Square Meters: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. How many people are in the classroom?
2. The best way to understand dispersion is to understand the **population density**. The population density is the number of organisms in an specific area. What is the overall population density of the classroom?
3. What type of dispersion do students commonly display in this classroom?
4. What type of dispersion do students display during lab periods?
5. **Sampling** is the practice of counting a smaller section of the population and applying it to the larger population. It is a useful way to understand a changing and dynamic population. While it may not the perfect way to understand a population, it is the only way to understand how to understand a dynamic population.

Work with your group members to come up with a method of sampling that would be appropriate for sampling the number of people in your school that have access to a pool. Use your method of sampling on the class to estimate the number of people in your school that have access to a pool.

Total number of students in the school: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Estimated number of students with access to a pool: \_\_\_\_\_\_\_\_\_\_\_\_\_

1. There are multiple different methods of sampling. Each can be used based on the population that is going to be studied.

**Random sampling** is the process of taking samples from a population at random. This is often used when a population that is too large to accurately study the population. This method of sampling will be used in the activity below.

Take one of the bags in front of the class and follow the steps below to use random sampling to understand the sentence in the bag

1. Find a bag with a sample set of information in the population.
2. Record a guess as to what sentence is on the series of cards.
3. Select one index card with a sentence that will have a bit of information. Record that information on the data table below.

|  |  |
| --- | --- |
| **Sample Number** | **Information on the Card** |
| Sample #1 |  |

1. Place to the sample to the side and repeat step 3 three more times. Each time record the information on the data table below.

|  |  |
| --- | --- |
| **Sample Number** | **Information on the Card** |
| Sample #2 |  |
| Sample #3 |  |
| Sample #4 |  |

1. Now try to estimate the entire sentence that is written on your cards. Record your estimation below
2. You may now check your sample and find out what information is being represented by your population. Record the correct sentence below.

**Tag and release sampling** is the process of taking samples from a population randomly and measuring the sample. However, once you are done with that sample you release the sample back into the population. This is often a good method when you are working with living members of a population. Based on the method of sampling, an organism can be caught and recorded again later in the study.

1. Find a new bag with a sample set of information in the population.
2. Record a guess as to what sentence is on the series of cards.
3. Select one index card with a sentence that will have a bit of information. Record that information on the data table below.

|  |  |
| --- | --- |
| **Sample Number** | **Information on the Card** |
| Sample #1 |  |

1. Place to the sample to the side and repeat step 3 three more times. Each time record the information on the data table below.

|  |  |
| --- | --- |
| **Sample Number** | **Information on the Card** |
| Sample #2 |  |
| Sample #3 |  |
| Sample #4 |  |

1. Now try to estimate the entire sentence that is written on your cards. Record your estimation below
2. You may now check your sample and find out what information is being represented by your population. Record the correct sentence below.

**Systemic sampling** is the process of identifying samples from a population systematically and measuring the sample. A good example of this would be to sample every twenth tree in a forest.

1. Find a new bag with a sample set of information in the population.
2. Record a guess as to what sentence is on the series of cards.
3. Take out all the index cards and place them so the words are face down. **Do not** look at the information on the cards! Arrange the cards by their sequence number.
4. Take every **even** card and turn it over. Record each card’s information in the data table below.

|  |  |
| --- | --- |
| **Sample Number** | **Information of the Card** |
| Sample #1 |  |
| Sample #2 |  |
| Sample #3 |  |
| Sample #4 (if needed) |  |
| Sample #5 (if needed) |  |
| Sample #6 (if needed) |  |
| Sample #7 (if needed) |  |
| Sample #8 (if needed) |  |

1. Now try to estimate the entire sentence that is written on your cards. Record your estimation below
2. You may now check your sample and find out what information is being represented by your population. Record the correct sentence below.

Let’s take a moment to understand the lab that we just did. With your group, record the answers to the questions below.

1. Each type of sampling asked you to assess the information from your sample before actually providing it (step 2). Each type of sampling also asked you to assess the information from your sample after acquiring information (step 5). After reflecting back on these steps, were your assessments more accurate after sampling? Why or why not?
2. Were your assessments after the samples correct? Why were they not perfectly correct in each case?
3. Which method of sampling seemed to work best for this activity? Why might it have worked for this activity?
4. Give an example for each type of sampling in the real world. Why might your hypothetical situation be good for that type of sampling?