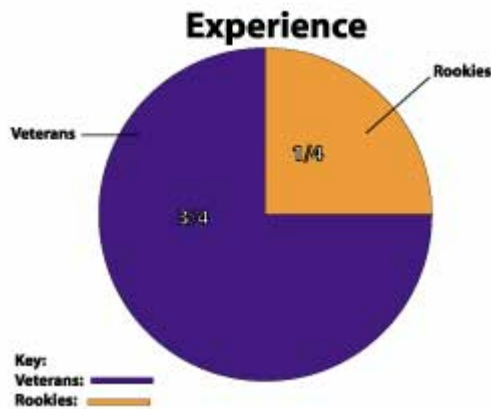
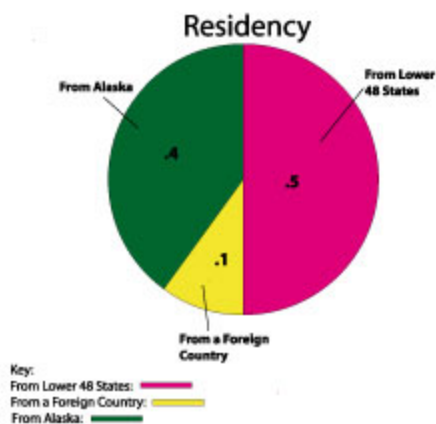


These graphs are examples that don't reflect current data. All graph examples are based on 100 mushers.

Objective(s): Students will first apply research skills using the Internet to gather statistical information on mushers of the Iditarod Dog Sled Race. Students will then apply the data they have collected in the form of three different pie charts. Students will utilize the pie charts that they have created to enable them to interpret the data to create models that identify all of the possible types of mushers entered in the race. Students will again utilize their pie charts to help them rank the likelihood of meeting a randomly selected musher.



Click here for [current musher data](#).



Time: Two, 60-minute class periods.

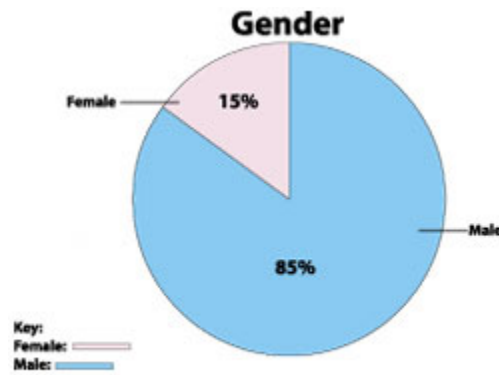
Materials: Musher Data Sheet, Musher Probability Sheet, 12 x 18 construction paper, colored pencils, a percent circle, Unifix Cubes (or any type of device that can be connected) or 1" x 1" paper squares.

Prior Knowledge: Students should have a good understanding of how to create a pie chart.

Students should also have an understanding of the difference between probability terminologies such as "chance," "likelihood," and "probability."

Procedure: Using the Musher Data Sheet, have students gather identification data on all of the participating mushers for the Iditarod Race.

After discussing how to create circle graphs, students will use their data sheets to create three circle graphs displaying the areas of identification (gender, experience, and residency).



Using Unifix Cubes or another manipulative, color-coordinate an identity trait with different colors. For example:

- Male = blue
- Rookie = white
- Veteran = black
- Female = pink
- Alaska Resident = yellow
- Lower 48 Resident = red
- Foreign Resident = green



Based upon the data that has been collected, make piles of cubes with similar colors for the assembly of "mushers." For example, if there are 50 men and 32 women you'd have a pile of 50 blue cubes and 32 pink cubes.

Share the Musher Probability Sheet with the students. Students should already have a basic understanding of probability and chance. After reading the directions, use the example to share one possible identity of a musher. A man that is a rookie from a foreign country would be a blue cube attached to a white cube attached to a green cube. (See example) Groups of students should then use the three graphs they created to help them determine all of the possible combinations of identities.

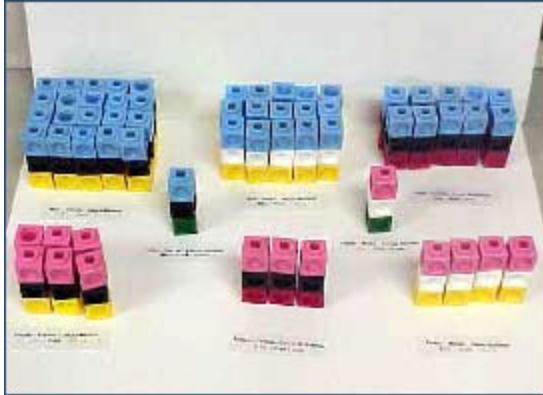
Once all possible identities have been recorded, ask students to rank the identity of the musher that one would most likely select if they randomly chose from the entire group. Keep ranking the groups of mushers from greatest to least until you reach the musher one would be least likely to find.

As soon as students have finished the entire Musher Probability Sheet, they can begin working with others to create the different musher identities based upon the different data. It is best if you have the musher models arranged in similar ways. For example, all gender cubes go on top, all experience cubes are in the middle, and all of the residency cubes are on the bottom.

Once a model has been created, have it placed together with others of the same type in like groups somewhere in your room where they are visible to all.

Students can check their rankings as a whole group once all of the possible identities have been accounted for. Using the previous example, you would list the various identities from greatest to least in the following way:

- Male - Veteran - Alaska (Blue - Black - Yellow)= 20 models
- Male - Rookie - Alaska (Blue - White - Yellow)= 15 models
- Male - Veteran - Alaska (Blue - Black - Red) = 10 models
- Female - Veteran - Alaska (Pink - Black - Yellow)= 6 models
- Female - Rookie - Alaska (Pink - White - Yellow)= 4 models
- Female - Veteran - Lower 48 (Pink - Black - Red)= 3 models
- Male - Veteran - Foreign (Blue - Black - Green)= 1 model
- Female - Rookie - Foreign (Pink - White - Green)= 1 model



Place all of the models into a bag. Each student will eventually, without looking, choose one model from the bag, but before they do, ask the class which model they believe they have the best chance of choosing. Allow them to explain their reasoning.

Allow each student to choose a model. When you have made one trip to each student, record the results on the board.

Discuss the results. Was the original prediction as to which model they would most likely choose correct? If not, what happened?

Based upon the results, what would be the outcome if each student were allowed to choose one more model? At this time, allow each student to choose yet another musher. Again, when you have gone through the entire class, record the results.

Were predictions more accurate? What factors determined the probability of choosing a particular model?

The Assignment

Evaluation: Ask students to write responses to the following questions:

- What is the most likely identity of the musher that will win the Iditarod Dog Sled Race for this year? Explain why you believe this is true.
- Which set of identities is the least likely to be found at the race?
- What factors might limit these mushers from competing in the race?
- Are there any individual identities that haven't been discovered?
- If so, what would the individual identities be?

Write your own question or observation about the musher

- identities.

This lesson plan was prepared by Paul Miller who teaches 5th grade at Waunakee Intermediate School in Waunakee, Wisc.