

Who Runs the Iditarod?

Developed by: Jen Reiter, 2014 Iditarod Teacher on the Trail TM **Revised 09/01/23**

Discipline / Subject: Math

Topic: Data Collection, Graphing, Probability

Grade Level: 3-8; others with modification

Resources / References / Materials Teacher Needs:

***Parts of this lesson are based on a lesson originally found on the Cabela's Iditarod Education Expedition site.

Lesson Summary:

The students will use probability to predict the characteristics of the winner of this year's Iditarod. They will then choose a musher to track during the race.

Standards Addressed: (Local, State, or National)

Common Core Math Standards (Grade 6)

CCSS.Math.Content.6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*

CCSS.Math.Content.6.SP.A.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

Learning Objectives:

- TLW identify and classify this year's Iditarod mushers based on their gender, experience, and residency
- TLW create a circle graph to display data
- TLW identify the probability of the various musher characteristics winning the race
- TLW identify a musher to track during the race

Assessment:

Students can be assessed on the worksheets completed during the lesson.

Procedural Activities: Day One:

1. Warm-Up: (Note – If you have been discussing the Iditarod all year long, the results of this warm-up may be skewed. I have resorted to doing this on the first or second day of school and then revisiting it to remind them of their first impressions for this warm-up.)
 - Have the students describe what characteristics they feel a “typical” Iditarod musher has. Are they male or female? How much experience do they have? Where do they come from?
 - Have students share their thoughts. Explain that for the next few days, they are going to be discovering “Who Runs the Iditarod”, make some predictions about the winner, and ultimately choose a musher to track during the race.

The teacher can collect the entries and enter them to create a [word cloud](#) (Use [Wordart.com](#), [WordClouds.com](#), or [WordItOut](#)) that describes what the students think about Iditarod mushers.(I have repeated this activity at the end of the race and compared the two word clouds –the students’ opinions can really change!)

2. Divide class into 2 groups.

experience: rookie vs. veteran

gender: male vs. female

residency: Alaska vs. all other states

- Have each group sort through the current musher data to find the number of mushers who meet each of their characteristics. They should record their data in a t-chart on their worksheets. One way that works well is for one partner to read the characteristic (male, male, male, female, etc.) as the other partner records the tallies.
3. Create Circle Graph:
Have each group create a circle for their own criteria using this site:
<http://nces.ed.gov/nceskids/createagraph/>

Note: students can save, email, or print from this site: a teacher will need to demonstrate program prior to students working independently

4. Share Data:

- a. Have each group present their findings to the whole class
- b. Keep graphs for tomorrow’s lesson
- c. Graphs can then be displayed with the Musher Tracking Map

Day Two:

1. Brainstorm as a class: Using pie graphs from yesterday, determine the possible characteristics combinations for mushers. As you work, have the students record the possible combinations on their worksheets (do not complete the ranking column yet).

male –veteran – Alaska
male – rookie – Alaska
male – veteran – other state
male – rookie – other state
male – veteran – foreign
male - rookie – foreign

female – veteran - Alaska
female – rookie - Alaska
female – veteran – other state
female – rookie – other state
female – veteran - foreign
female – rookie – foreign

2. Make models to represent actual mushers racing this year:
 - a. Use unifix cube stacks to represent the mushers. There should be one stack per musher. Divide the mushers between student partners.
 - b. Stack- gender on top, experience center, residency on bottom
 - rookie = white
 - veteran = black
 - male = blue
 - female = pink
 - Alaska = yellow
 - other state = red
 - foreign = green
3. As a whole class, sort all of the stacks into like groups. For example all the male veterans from Alaska should be in one group.
4. Chart: Have the students return to their original charts and complete the ranking column. They should rank the characteristic combinations from the most likely to win to the least likely.
5. Have students complete the evaluation questions either independently or as a group.
6. Wrap – Up: Run a quick probability experiment. Put all the stacks in a bag and have each student choose one. Did the results of the experiment match what was expected?

Day Three (Extension):

Notes:

- *You may or may not want to teach this lesson immediately after the first two. I usually wait to teach it until the day of the pre-race musher banquet when the mushers draw for starting order.*
- *You may want to have the students read the musher biographies for homework the night before this lesson.*
- *I like to do this lesson as a “mock” banquet to simulate the actual draw/banquet.*
 - *As the students enter the classroom in the morning, their morning assignment has them sign their names on the board in the order they arrive in the morning. This gives us an order to do the “draw” during math class.*
 - *As each student is called, they come to the front and draw a stack from the mukluk. The mushers draw a round chip from a mukluk with their starting number.*
 - *The students then announce to the class the characteristics shown on their stack and choose a matching musher. The mushers must announce their starting number and then usually make a few comments.*
 - *The mushers then exit the stage and go through the “autograph” chute. I like to have the students autograph around the edges of the map we will be using to track our mushers.*
 - *Members of the press then interview them. I have parents come in and “represent” the Alaskan Dispatch News and the Nome Nugget. When it is a Fairbanks start, I also have the Fairbanks Daily News Miner represented. You could even have the Iditarod Insider present.*

1. Review with the students what has been discovered about the characteristics of the mushers running the race and the probability behind predicting the winners. Put unifix stacks in the bag (or mukluk).
2. One at a time, each student draws a stack.
3. They must choose a musher that matches the characteristics on the stack to follow on the trail during the race. You can do this in a couple of different ways. They can choose based on just the characteristics from a chart, or if they have read the musher biographies ahead of time to have some other basis for their choices.
4. Have students use musher biographies to write the rough draft of their musher biography card on their worksheets.
5. Have students write the good copy of their card and post them with the Trail Map.

Note: The pin number on the biography card matches musher's bib number. I have tried it several different ways, but trust me – this is the easiest!

6. Wrap-Up: Discuss the mushers that the students pulled as a probability experiment. Did the most students pull the most common stacks? Did the least students pull the most unique stacks?

Materials Students Need:

- Current musher data sheet *** delete the summary from the bottom (available from the official Iditarod site)
- One laptop per group
- Student worksheets (included at the end of the document)
- Unifix cubes
- Bag
- Mukluk or boot to draw from
- Musher biographies from Iditarod site

Technology Utilized to Enhance Learning:

Online Graphing - <http://nces.ed.gov/nceskids/createagraph/>

Iditarod.com for research - <http://iditarod.com/>

Other Information:

The students could also complete the Race Application as if they were their musher to get an idea of what information the mushers need to have to sign up for the race. The form can be found on the Iditarod website.

Modifications for Special Learners/ Enrichment Opportunities

- You can change the difficulty of the lesson by increasing the difficulty of the probability sections.
- Younger children could look at it terms of least likely, likely, most likely. More advanced students could look are the probability in terms of fractional chances.
- Add an additional color Unifix cube for any past champions, creating an additional identity combination.

Part Three:

There are many different identities a musher can fall into; veteran, rookie, man, woman, from Alaska, from another state, or from a foreign country. Each musher uses three of these different identities to describe him or herself. There are twelve different identity categories for a musher to fall into.

1. First see if you can list all twelve identities.
2. Next, rank in order from the most likely identity to the least likely identity of the musher who will win.

Gender	Experience	Residency	Rank

Part Four:

1. What is the most likely identity of the musher who will win the Iditarod this year? Explain why you think this is true.

2. Which set of identities is least likely to be found at the race? Why do you think not many mushers with these identities enter the race? What might keep them from participating?

3. Are there any other identities that we could have measured as well?

4. Write four other observations you can make about the data.

Part Five:

Complete the rough draft for the musher you have chosen to follow.

Musher Biography Card



Musher's Name: _____

Veteran or Rookie? _____ Male or Female? _____

Hometown: _____

Other Interesting Facts:

Tracker's Name: _____

Pin Number: _____