

Exploration 15

Iditarod

Statistics and Rates

Goal:

Students analyze statistical data and work with rates.

Time:

4 to 6 class sessions

Activities

Math Topics	1	2	3	4
Statistics	X	X	X	X
Rates		X	X	
Number	X	X	X	X
Computation	X	X	X	X
Estimation		X	X	X
Measurement		X	X	X
Algebra			X	
Probability				X

Introduce the Exploration:

Ask the students if they have ever heard of the Iditarod. Let them talk about it or tell them yourself that the Iditarod is a race of over 1,000 miles that mushers and their dogs run in Alaska. Tell them that they will learn about this race in this exploration, and they will have an opportunity to work with data from the race.

This exploration's Web sites are available online only.

Explore the Iditarod Web site:

<http://www.iditarod.com/>

Note: You can access this site through your CD-ROM by clicking on Exploration 15.

Assessment: All of the problems in this section involve student choice. Refer to the *Suggestions for Assessment* on page 5 for more information.

Iditarod

Exploration 15 (cont.)

Activity 1

Prize Money

How much more does the first place winner make than the last place winner?

Express your answer in dollars, and then show the increase as a percentage.

You may need to review with your students how to calculate the percentage increase.

This activity's Web site is available online only.

Access the site for this activity through your CD-ROM:

Click on Exploration 15, Activity 1

For the one-computer classroom: Collect the data on the purse together.

Activity 2

The Red Lantern Musher

Find the most recent race that has data on the finishing time of the winner and the finishing time of the last place finisher, also known as the Red Lantern Musher. Calculate their rates of travel in miles per day to the nearest hundredth. What is the difference in their rate of travel?

You may need to review with students how to calculate a rate (see *How Fast? How Far?*, pages 70-71, for practice).

This activity's Web sites are available online only.

Access the sites for this activity through your CD-ROM:

Click on Exploration 15, Activity 2

For the one-computer classroom: Collect the data on finishing times together and read the section in *History* about the *Red Lantern Musher*.

Activity 3

Winning Rates

- Find the times of the winner in 1973 and the most recent winner. Calculate their rates of travel in miles per day to the nearest hundredth. What is the difference in their rate of travel?
- Imagine that the most recent winner can always run his or her dogs at the same rates no matter what the distance. Write an equation that shows how to calculate the time to run a given distance.
- Imagine that the most recent winner ran his or her dogs for a distance of 1,300 miles at the rate you calculated in Part A. Use the equation you wrote in Part B to calculate how much time it would take to go 1,300 miles.

You may need to review with your students how to calculate a rate (see *How Fast? How Far?*, pages 70–71, for practice). The equation should be in the form $t = d / r$ (where t = time, d = distance, and r = rate)

This activity's Web site is available online only.

Access the site for this activity through your CD-ROM:

Click on Exploration 15, Activity 3

For the one-computer classroom: Collect the data on times together.

Activity 4

A Sample of Mushers

- Look at the page that names the mushers. You are going to try to predict the age of a musher. First, you will look at the ages of many mushers. How many mushers and their ages do you think you should look at in order to make an accurate prediction? Once you decide how many mushers you need age information on (sample size), click on that number of mushers to collect the age data. Based on your selections, assign probabilities to the following categories:
 - a musher will be 29 or younger in age
 - a musher will be 30 to 39 in age
 - a musher will be 40 to 49 in age
 - a musher will be 50 to 59 in age
 - a musher will be 60 or older
- Make a prediction on the ages of a randomly selected group of 10 mushers. Use the probabilities you created in Part A.
- Select 10 mushers that you did not select in Part A. Collect the data on their ages. How accurate was the prediction you made in Part B?

You may need to review the topic of probability with your students (see *Chances Are*, pages 67–69, for practice). Help them understand that if their sample size was 10 and five out of the 10 mushers were between the ages of 40 and 49, then the probability of a musher being 40 to 49 in age is $\frac{5}{10}$ or $\frac{1}{2}$.

Discuss the results with your students. If they came fairly close in the predictions they should feel successful in their ability to predict based on looking at a sample.

Duplicate the activity page, *Estimate the Age of a Musher* (page 62), for the students.

This activity's Web site is available online only.

Access the site for this activity through your CD-ROM:

Click on Exploration 15, Activity 4