

## Iditarod Math & Physics Unit Guide (Upper Grades)

### Objectives:

- Apply research skills using the Internet to gather statistical information.
- Apply mapping, graphing, probability, percentage and imaginative skills.
- Use math and statistical laws to construct a logical understanding of racing.
- Use laws of physics to analyze racing procedures and philosophies.



### Procedure:

- You are an Iditarod musher. What must you think about before running the race?
- You are a statistical researcher. You are trying to pick the next winner of the Iditarod?
- You are a journalist. Who is the most likely rookie that you should interview before the race?
- You are a veterinarian assigned to checking out the dogs prior to the race. What do you need to know?

### Use graphing & probability knowledge:

**Here are a few questions for your research. You can come up with many more.**

1. A dog exerts  $x$  amount of energy to pull how much weight for every pound the dog weighs?
2. A dog will need how much protein, fat, etc. to exert that  $x$  amount of energy?
3. Gather information on the ages of each winner of the Iditarod. What is their average age?
4. Gather information on the location where each winner lives in Alaska, or outside of Alaska.
5. What age did each winner begin racing? What is the average age?
6. Is the winner male, or female?
7. What percentage of males/females are in the top five each year compared to the total running the race?
8. What is the average temperature per year, per race?
9. What is the average snowfall per year, per race?
10. What is the percentage of Alaskans in the top five each year compared to the total in the race?
11. Gather information on different types of sleds. What type of sled does each winner use?
12. What is the average weight of the sled? If one pound is taken off how does that affect the speed?
13. Gather information on different types of sled runners. What type of runner does each winner use?
14. What is the difference in friction from plastic runners and wooden. How does that affect the speed?
15. Waxing a runner will increase speed. How much? Olympian skiers work with this issue.
16. How does altitude affect the musher's and the dog's body?
17. How much does altitude affect the speed of the dog?
18. Where do the winners of the Iditarod train, higher altitude, or lower altitude?
19. What is the average age of the winning dogs in the Iditarod?
20. What is the average weight of the winning dogs in the Iditarod?
21. Compare winning times each year to temperature, snowfall, etc.
22. Do most winning teams have male dogs, or female dogs running on their teams?
23. If a female dog has had puppies before does it affect her speed?
24. When a musher trains his dogs how many miles per day should they run prior to the race?
25. How long should a dog rest after eating, or drinking?
26. How long should a dog sleep per hour of running time?
27. Should a dog be watered first, or fed first?
28. Is it better to take long breaks in the beginning of the race, or toward the end?
29. Is it better to take a few long breaks, or many short breaks?
30. Why does a husky, genetically speaking, love to pull and run so much?

Math affects our lives in various ways. Math answers many questions. Yet, there is always the “human element” and the “dog element”, as they say; for instance, does a dog run harder for someone he/she loves? Does a musher work harder if he/she is alone on the race or racing with a partner? Does the tone of voice of a musher affect the speed of his/her dog? Who knows all the answers? Possibly you!