

Lesson Title:	"Musher Campouts:" Math Story Problems from the Jr. Iditarod
Background Information	
Created By:	Kate Newmyer, Seabrook, TX, 2024 Teacher on the Trail™
Grade Level/ Subject:	K-6 Math
Background Information:	<p>This lesson highlights the Jr. Iditarod, which is open to students aged 14-17. The Jr. Iditarod is an approximately 150-mile race similar to the Iditarod, in which young mushers compete to win prizes and scholarship money. Mushers start from Knik Lake, race through the Eagle Quest checkpoint, take a mandatory 10-hour layover at Yentna Station Roadhouse, and then return to the start. Each musher must carry mandatory gear on their sled and take care of their own dogs. The young mushers traditionally share stories and snacks around a campfire during the 10-hour layover. Mushers are allowed to help one another.</p> <p>Part I of this lesson can serve as a review of math skills or an extension to existing lessons. It will also encourage students to develop their own story problems. Part II of this lesson enables students to plan their own musher campouts.</p>
Learning Objectives/ Essential Questions:	<p>Content Learning Objectives</p> <ul style="list-style-type: none"> <li>• I can solve one-step, two-step, or multi-step story problems.</li> <li>• I can solve story problems that ask about addition, subtraction, multiplication, and division.</li> <li>• I can solve story problems about area, volume, time, distance, and money.</li> <li>• I can create my own story problems using information about the Jr. Iditarod.</li> </ul> <p>Language Objectives</p> <ul style="list-style-type: none"> <li>• I can speak and listen about how to solve math problems in a Number Talk, with my teacher, and/or with my team.</li> <li>• I can speak, listen, and write about math strategies.</li> </ul> <p>SEL Objectives</p> <ul style="list-style-type: none"> <li>• I can work with a partner or team to reach my objective.</li> <li>• I can work through struggles. I can celebrate my success and that of others.</li> </ul>
Standards Addressed	<p>Texas Essential Knowledge and Skills (TEKS) (Note: General math TEKS for Process: Tools and Process: Ways to Know.)</p> <p>IA. I can determine what math I need to use to solve a problem. IB. I can use a problem-solving model to solve a problem. IE. I can create a representation of my math solution and explain it to another person. IF. I can describe and connect math ideas.</p> <p>Content Standards will vary.</p>

<p>Materials Needed:</p>	<ol style="list-style-type: none"> <li>1. Jr. Iditarod Mandatory Gear List, included</li> <li>2. Story Problem Cards, included (some written by my 5<sup>th</sup> grade students!)</li> <li>3. Story Problem checkpoint map, included</li> <li>3. Collaborative workspaces in your classroom</li> <li>4. Student notebooks, pencils, paper, etc.</li> <li>5. Math manipulatives such as blocks, shapes, etc., or a calculator</li> <li>6. Jr. Iditarod web site: <a href="https://www.jriditarod.org/stories">https://www.jriditarod.org/stories</a></li> <li>7. Jr. Iditarod rules: <a href="https://www.jriditarod.org/information/rules-forms">https://www.jriditarod.org/information/rules-forms</a></li> </ol> <p>Optional:</p> <p><u>Iditarod Dream: Dusty and His Sled Dogs Compete in Alaska's Jr. Iditarod</u> by Ted Wood, Bloomsbury USA Childrens; Reprint edition (September 1, 2002). 48 pp.</p> <p>“The Jr. Iditarod.” Reading A-Z. Level U/Lexile 1050L  <a href="https://www.readinga-z.com/book.php?id=1015">https://www.readinga-z.com/book.php?id=1015</a></p>
<p>Procedure</p>	
<p>Engagement:</p>	<p>Have a discussion with these questions:</p> <p>Have you ever gone on a big trip or gone camping overnight? What did you have to pack? Did you ever have to put some things back because they wouldn't fit in your suitcase, or they were too heavy? Did you ever wish you had packed something that you didn't take?</p> <p>Share information about the Jr. Iditarod, either from the background information, from the home page of the web site, or from the books listed above.</p> <p>Then have students make a list together of the items they think they would need for the Jr. Iditarod. How is this list the same or different from the items they named in their own lists?</p> <p>To connect with the stories of the Jr. Iditarod, share a few pages from <u>Iditarod Dream</u> (e.g., 24-27) or from the Jr. Iditarod web site. The following excerpt from Terrie Hanke's wrap-up of the 2023 race talks about award-winning character on the trail:</p> <p>“The Sportsmanship Award is voted upon by the mushers themselves. Who better to know the most helpful and encouraging musher on the trail? Rookie Tara Crossman from Maine was honored with this award. While on the trail, Tara was flexible and adapted to change when she parked behind a team slated to leave after her from Yentna. Within a few miles of the finish, she helped another musher get her dogs going and wouldn't leave until the second team was on their feet and following her team to the finish. Tara received a \$2,000 Scholarship.</p> <p>Race officials and veterinarians praised the youth for their mushing, camping and dog care skills. Dogs stood at the finish line clearly wondering why they had to stop – running was so much fun. There is one champion but all of the Jr. Iditarod mushers are winners. They are all responsible individuals who accept and embrace</p>

challenge. They are the future for mushing and humanity. The thrill is not in victory but in the courage to join the race. Congratulations to all.”

Tell students they will do story problems that are based on the Jr. Iditarod. Then they will get a chance to plan their own musher campout.

Prior to the lesson, intentionally plan student partners and groups.

Lesson Procedure:

Part I: Story Problems

Gather your students. Choose one or more of the story problem cards to talk through as part of a Number Talk. Have your students draw the story problem on white boards or notebooks, then talk about how they solved it.

Next, pair your students. Choose one story card to give to the class. Model for students how they can coach their partner to complete the problem with the correct answer. Praise when done! Repeat as desired for the needs of your class.

At this point, student teams can complete story problem cards to finish their Jr. Iditarod Checklist. You can run this part of the lesson like an escape room, where students are given story problems to solve as they work through the map. Students can show various strategies for solving the problems. Each page could function like a choice board, with students choosing the problems they want to solve.

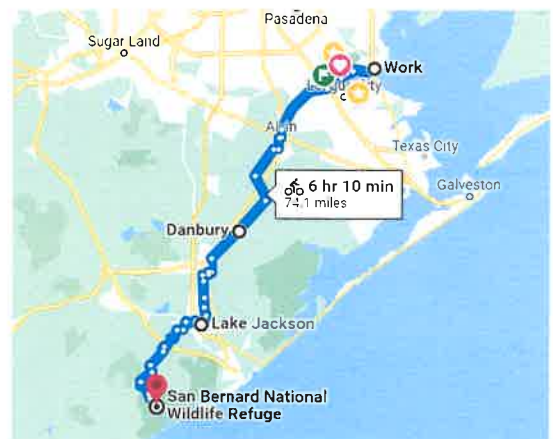
Part II: Planning Your Musher Campout

K-2: Consider presenting the musher campout as a whole class activity or in structured groups. You can have students draw pictures of the items they will bring and the food they will eat. Consider giving students a simple map of your home area to plan where to go.

3<sup>rd</sup> Grade and higher: Arrange students into teams of 3-4. They will need access to Google maps or other mapping site, a grocery store web site, and a printout of the mandatory gear list.

Step I

Plan a route from your school or home to a place on a map approximately 30-40 miles away. That’s your first checkpoint. Then find another place on your map that is about 30-40 miles farther. That’s the second checkpoint. Find one more location that is about 20-30 miles more. This will be the site of the “campout,” and then you will return home via the same route. For example, my route might look like this.



Seabrook, Danbury, Lake Jackson, and San Bernard National Wildlife Refuge are my checkpoints, and then I would return to Seabrook. The distance should be about 150 miles round trip, just like the Jr. Iditarod.

Write or record a short guide for your Jr. Iditarod teams about the kind of landscape and terrain they will go through. Will they cross any rivers? Go through any towns? What wildlife will they encounter?

#### Step 2

Pack your sled. Look at the list of mandatory gear. You must bring all of the items on this list. Decide in what order you will pack your sled. Determine if you will bring any optional items.

Optional: Create a price list of the human gear you will need by researching prices. Students in K-2 can draw pictures of the mandatory gear—sleeping bag, cooking pot, veterinarian notebooks, etc.—and then decide on one extra item.

Note: Since you are planning this musher campout with your team, consider sharing the job of carrying optional items that you want to bring.

#### Step 3

Make sure you have the necessary gear for your dogs. Choose whether you have 7, 8, 9, or 10 dogs. Each dog must have a harness, lead, four booties on their feet, a set of booties as backup, plus two pounds of food in the sled for each dog. They must also have 4 pounds of food for the overnight layover, plus snacks. Don't forget your vet books! How many pounds of food will you need, how many booties, and how many other items?

Optional Side Trail for SEL: Encourage students to create a list of dogs' names and characteristics. For example, you might have a lead dog named Sonny who is calm and dependable, and another dog named Blaze who is excitable.

#### Step 4

What food will you bring for yourself, and what will you bring to share at the campout? Visit a grocery store web site and plan your food. You have a \$25 budget, and you will need to plan for 3,000 calories of emergency food. The food should be balanced and nutritious.

#### Step 5

Using the information from Step 4 and 5, decide how you are going to arrange the food in drop bags. Refer to the Jr. Iditarod Rules, Rule 52, to determine the weight limit and number of drop bags you can use. One of the bags can be kept frozen.

#### Step 6—optional

Wild Cards! Just like every amazing adventure, some things just don't go right. How will you recalculate your needs if any of the following happen?

Wild Card I: You begin the race with 10 dogs. One develops a sore shoulder, and another loses interest in the race. You leave these dogs at designated checkpoints and continue on. Now you must recalculate your dog needs.

Wild Card II: On the way back, you get lost. There are many trails coming out of the lake, and you miss the markers. You have gone 23 miles out of your way and must backtrack. Recalculate your total miles and average speed.

	<p>Wild Card III: One of your fellow mushers needs help. You race at 14 miles per hour fifteen miles back to the last checkpoint and inform a race official. Then you continue on at a slower pace of 8 miles per hour until you have covered the 15 mile distance again. What factors will you have to recalculate?</p>
<p>Conclusion &amp; Reflection:</p>	<p>Make a list together of what students learned about the Jr. Iditarod from doing the story problems. Ask if students think they would ever want to do something like this? Why or why not? What skills would they need to learn in order to race in the Jr. Iditarod?</p> <p>Consider displaying student work in the hall, at a parent night, or on a blog or other web site for families to view.</p> <p>Ideas for a Finisher's Banquet: On the day the lesson is complete, students bring stuffed animals, slippers, and snacks. Consider reading <u>Iditarod Dream</u>. You could also put on a "crackling campfire" as a sound effect or on your classroom screen.</p>
<p>Assessment:</p>	<p>Story Problems: Teacher can be the "checkpoint checker" to make sure each of the story problems for that checkpoint are correct. Once determined to be correct, students can proceed to the next checkpoint.</p> <p>Musher Campout: Student teams can evaluate each other's work. Just like the Jr. Iditarod, students can vote for the Sportsmanship Award, representing who has done the best work, with teacher approval. Teachers, you can give a Humanitarian Award to the team that has demonstrated the best working partnership.</p>
<p>Notes</p>	
<p>Enrichment/ Reinforcement Suggestions:</p>	<ol style="list-style-type: none"> <li>1. Using the information provided below or using stories from the Jr. Iditarod web site or <u>Iditarod Dream</u>, students create their own story problems for lower grades or others to solve.</li> <li>2. Using the strategies you teach in your math lessons, ask students to represent the story problems in a variety of ways.</li> <li>3. Get together with a buddy class. Older students can help younger students solve the story problems and practice math strategies.</li> <li>4. Have a Jr. Iditarod Math Showcase. Student teams choose or can be assigned a specific story problem to explain. Then share out using Flip, Padlet, or another digital tool.</li> <li>5. Social-Emotional Learning--Students design a poster for their Jr. Iditarod musher campout that reflects the Core Values of your school or classroom and incorporates math ideas.</li> </ol>



Dusty has two red mittens and two green mittens. How many mittens does he have?



Dusty has two lead dogs. One of the dogs has two brown eyes. One of the dogs has one blue eye and one brown eye. How many eyes are brown?



Dusty's team has nine sled dogs. Five dogs are brown. The rest of the dogs are white. How many dogs are white?



In Dusty's school, there are six students. He is the only boy. How many students are girls? Draw the students.

Dusty eats one sandwich after he wins the race. After he gets home, he eats two more. How many sandwiches does he eat all together? Draw the sandwiches.

At the campfire, Dusty shares three granola bars with his friends. Another friend brings two more granola bars. How many granola bars do they share all together?



Dusty's first sled was pulled by one dog. Dusty's second sled was pulled by three dogs. How many dogs in all pulled Dusty's sleds? Draw the dogs and sleds.

There were seven trail markers. Five were orange. The rest were brown. How many trail markers were brown? Draw the trail markers.

<p>Anna packed six pairs of socks. She was only required to have three. How many more pairs of socks than required did she pack?</p>	<p>Bailey had six sponsors for her race. Then she got two more. At the last minute, three friends signed up to be sponsors. How many sponsors does she have now?</p>
<p>At the start of the race, Andrew has seven dogs. Conway has nine. How many more dogs does Conway have than Andrew?</p>	<p>Kevin used 53 dog booties during the race. Melissa used 12 more dog booties than Kevin. How many dog booties did Melissa use? How many total dog booties did Kevin and Melissa use?</p>
<p>In Dusty's second Jr. Iditarod, he had two dog tangles. It took him five minutes to untangle the dogs the first time. It took him 14 minutes to untangle and calm the dogs the second time. How long did Dusty spend untangling dogs?</p>	<p>There were ten mushers signed up for the race. Five were girls. Then, two more boys signed up for the race. How many boys were there in the race?</p>
<p>Jessica trained nine dogs for the Jr. Iditarod. Two were on loan from another kennel, and one she borrowed from her dad. How many dogs belonged to Jessica?</p>	<p>Before completing the Jr. Iditarod, Noah had raced in two other races. One was 31 miles, the other was 53 miles. How many miles of races did Noah compete in?</p>

Merissa stops to snack her dogs. (This means giving the dogs a tasty treat!) She has ten dogs. She would like to give each dog two chunks of frozen salmon. How many pieces of frozen salmon will she need?

$\frac{1}{3}$  of the dogs on Cain's team are brown. Draw a representation to show the fraction of Cain's dogs that are brown.

In 2022, Emily received a \$6,000 scholarship for first place. Hannah received \$4,000 in scholarship funds. Morgan received \$2,500 in scholarship funds and Tori won \$2,000. Ellen received a \$1,500 scholarship. Which mushers won \$2,000 or more? How much more was the winning scholarship than the fifth place scholarship?

This line represents the race map.



Mushers start at the green dot, go to the yellow dot, then turn around at the yellow dot and return to the start. How many race segments are there all together? Which dot represents one third of the race? Which dot is halfway?

Jeremiah's team has seven sled dogs. He puts yellow booties on the dogs before the race. How many dog booties all together are they wearing?

When Jeremiah finishes the race, he has six dogs (one of the dogs got a sore paw and he left it at a checkpoint to get care). How many yellow booties are on his dogs' feet now?

Ellie's nine dogs ate thirty-six pounds of food at the layover at Yentna Station. How many pounds of food did each dog get?

Ellie's dogs also ate four and a half pounds of frozen fish snacks during the race. How many pounds of fish snacks did each dog get?

The mushers start the race two minutes apart. If it takes 28 minutes for the race to start, how many mushers are competing? (Don't forget to count the last musher!)

Rohn's family is traveling to see him compete in the Jr. Iditarod. He has twenty-four family members. Each car can seat six people. How many cars will they need?



<p>In 2021, there were six rookie mushers and four veterans. In 2022, there were nine rookies and six veterans.</p> <p>Create a bar graph to represent this information.</p>	<p>In the 2020 race, Cross arrived at the finish at 15:41 followed by Anna at 16:02. Kristal arrived at 17:02 followed by Calvin at 17:08, Cassidy at 17:17 and Ida Kohnert at 17:26.</p> <p>Create a table listing the race finish times and the number of minutes between the mushers.</p>
<p>(You need Google maps for this story.) Sam is from Seward. Bjorn grew up near McCarthy and now lives in Wasilla. If Sam wanted to visit Bjorn in Wasilla, how far would he have to travel? Then they decide to visit Bjorn's hometown of McCarthy together. How many miles is the trip for each friend? How many total miles do the two friends travel there and back home?</p>	<p>Veterinarians for the Jr. Iditarod complete checks on every dog before the race. The Veterinarians will examine each dog's HEART, HYDRATION, ATTITUDE, WEIGHT, LUNGS, and LEGS. If there are nine mushers, each with ten dogs, how many dogs will they examine? How many legs?</p> <p>Extension: If each leg requires examining the toenails, paws, wrists, elbows, and shoulders/hips, how many leg parts do they examine all together? Write an equation.</p>
<p>To get ready for the Jr. Iditarod, Dusty trained three times a week for 4 weeks. Then he started training six times a week for 8 weeks. In the final three weeks before the race, he trained 5 times a week. Write an equation, then find out how many total training sessions Dusty and his dogs completed.</p>	<p>The winning musher won \$6,000 in scholarship money. The second place finisher won \$4,000. Third place won \$3,000, and fourth place won \$2,000. Fifth place won \$1,000. Every musher after 5<sup>th</sup> place won \$500 in scholarship money. If the total amount of scholarship money given out was \$21,000, how many mushers completed the race?</p>
<p>Create a graph that shows the average speeds of these mushers in order of slowest to fastest: Tori averaged 10.8 MPH. Morgan 11.2, Hannah 11.2, Emily 11.2, Kristal 11.2, Ellen 10.6, Makenna 10.2, Katie 10.1, Eva 9.5, James 9.8, Tietje 10.3, Jace 10.0, Bristol 9.4, Sawyer 8.7 and Joachim 8.3.</p> <p>What is the difference between Hannah's and Bristol's average speed? Between the fastest and slowest?</p>	<p>Five Jr. Iditarod mushers are age 15. Three are 16. Two are 17. What is the combined total of the ages of the mushers?</p>

Mike Newman finished the race in the least amount of time, which was 5h, 9m, 8s. Cali King finished in the most amount of time which was 23h, 27m, 4s. What is the difference in their race finish times?

(written by AH, VP, and KG)

Cali wanted to carry 300 pounds on her sled. Her mandatory gear weighs 239 pounds. Her optional gear weighs 98 pounds, her friends' stuff weighs 30 pounds. How many pounds of items should Cali take off from all of the weight to keep all of her mandatory gear?

(written by AH, VP, and KG)

Andrew is going to race in the Jr. Iditarod. He bought a sleeping bag that cost \$150 and booties that cost \$4.25 for one set (four booties). He has 8 dogs. What is the combined total of all of the booties and the sleeping bag?

(written by AH, VP, and KG)

5 mushers each have 9 dogs. Each dog needs 8 booties. How many booties does each dog need? Write an equation to show the calculation.

(written by AH, VP, and KG)

6 mushers each need 3 pairs of socks. They also need 3 pairs of gloves each. How many pairs of items do they need for all of the mushers? Write an equation to show your work.

(written by AH, VP, and KG)

There are 27 mushers going to a pre-race meeting and each musher is going to bring 1 family member. There are also 13 other people coming to the meeting. How many people are going to be at the meeting? Write an equation to show your work.

(written by AH, VP, and KG)

67 mushers each need a bib, and there are only 59 bibs. 17 of the bibs were misprinted. How many more bibs do they need to get?

(written by AH, VP, and KG)

Kevin Harper won the 2015 Jr. Iditarod in 11h 24m 43s. In 2016 Kevin won the Jr. Iditarod in 12h 59m 4s.

How much faster did he finish in 2015 than in 2016?

(written by AH, VP, and KG)

Tim Osmar accidentally went off track on the 150-mile race. He went 58 miles without noticing and turned back. How many miles did Tim Osmar travel in total?

(written by AH, VP, and KG)

There are 53 people at the Jr. Iditarod pre-race meeting. 36 people are family members. How many mushers are at the meeting?

Each musher needs to get 10 tags for their dogs. How many tags do they need to provide?

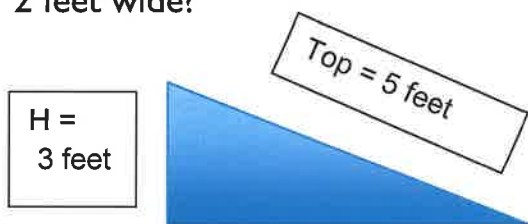
(written by AH, VP, and KG)

19 Jr. Iditarod awards broke during shipping, but 1<sup>st</sup> through 5<sup>th</sup> and 7 other people got awards. How many awards were made in total?

(written by AH, VP, and KG)

A sponsor orders 1,000 dog booties for Jr. Iditarod mushers. 11 mushers in the race have ten dogs. One musher has nine dogs, and one musher has eight. Are there enough booties for each musher to get two sets of booties for their dogs?

Nicholas's sled is 4 feet long, as stated in the Jr. Iditarod rules. The other sides are shown below. What is the area of the side of his sled bag? What is the volume of his sled bag if his sled is 2 feet wide?



Rule #1, Musher Qualifications, states that each musher must have 7 mandatory items of paperwork. If they are rookies, they must have 2 musher references in addition. If they enter after Dec. 1, they must submit proof of a registration fee. Out of ten mushers, seven are rookies, while three are veterans. Two of these ten mushers entered late and paid the fee. How many individual pieces of paperwork will the volunteers need to track?

At the Finisher's Banquet, 56 people have signed up to attend.  $\frac{1}{4}$  of the attendees are mushers who have completed this year's race. The photographer snaps 896 photos, of which half are of the mushers. How many photos did the photographer take of each musher?

Write your own story problems!

Be sure to include the solution.

Have fun!

## JR. IDITAROD TRAIL RACE SLED CHECK SHEET

BIB # \_\_\_\_\_ DRIVER'S NAME \_\_\_\_\_

TIME IN \_\_\_\_\_ DOGS IN \_\_\_\_\_ TIME OUT \_\_\_\_\_ DOGS OUT \_\_\_\_\_

**Items 1 - 18 must be on sled at each checkpoint unless otherwise stated.**

MANDATORY ITEMS CARRIED ON SLED	START	LAYOVER	FINISH
1. Cold weather sleeping bag			
2. Hand ax: head greater than 1 ¼ lb, greater than 22" long			
3. Snow shoes: 28 " long and 9" wide			
4. Promotional Material			
5. Eight (8) booties per dog			
6. Head lamp			
7. Alternate light			
8. Restraint to hold dog(s) in sled			
9. Two pounds dog food May only be used if night spent on trail other than layover area—must be on sled when musher arrives at layover and finish line			
10. One day's food for musher plus emergency ration of 3000 calories May be eaten on trail			
11. Five (5) stake out cables with snaps			
12. Proper reflective tape material			
13. Matches or lighter			
14. Dog food cooker			
15. Three (3) pair socks			
16. Rain gear			
17. Three (3) pair gloves			
18. One (1) can heat			

OPTIONAL ITEMS CARRIED ON SLED	START	LAYOVER	FINISH
1. Tent			
2. Camp stove			
3. Feed pans for dogs			
4. Cooking pans for people			
5. Stake out chain or cable			
6. Fuel for stove			
7. Ground cloth			
8.			

Driver's Signature \_\_\_\_\_ Race Marshal's Signature \_\_\_\_\_

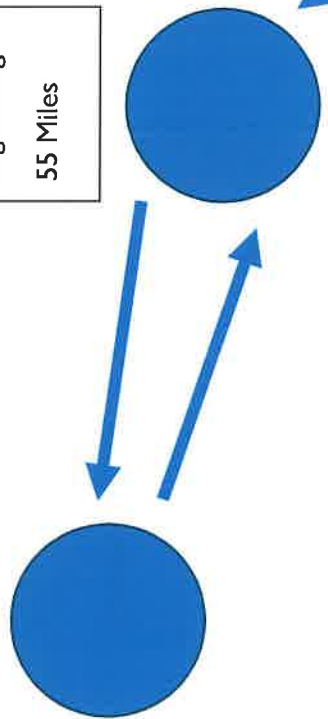
Checker's Signature \_\_\_\_\_ Checker's Signature \_\_\_\_\_

Date \_\_\_\_\_

# Jr. Iditarod Math

CKPT 3: Yentna Station  
75 miles  
10-hour layover  
Return to Knik Lake

CKPT 2: Eagle Song  
55 Miles



My team:

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\_\_\_\_\_ problems completed.

We are Jr. Iditarod Math Musers!

Signed:

Date:



CKPT 1:  
Su River Crossing  
40 miles



START: Knik Lake



FINISH: Knik Lake