

Iditarod Vet Checks: A Multiplication Challenge (Southern Route)

Developed by: Jen Reiter, 2014 Iditarod Teacher on the Trail™, created 1/2018; revised 12/18

Discipline / Subject: Math

Topic: Multiplication by one and two digit numbers, review

Grade Level: 4-5

Resources / References / Materials Teacher Needs:

Article about Vet Checks from ADN: <https://www.adn.com/outdoors-adventure/itarod/2017/03/01/vets-check-itarod-sled-dogs-lungs-hearts-and-gums-before-clearing-them-to-race/>

Vet Check Video: <https://www.youtube.com/watch?v=R7dl4tZhmL8>

SP Kennel Vet Check Video: <https://www.youtube.com/watch?v=ApMfS5A1GLk>

Vet Center from Iditarod: <https://iditarod.com/about/veterinary-center/>

Challenge packets, included

Binder rings

Answer Sheet, included

Lesson Summary:

Students will take on the role of an Iditarod vet as they learn about the role of the vets, the anatomy of the sled dogs, solve a series of multiplication problems, and move along the trail.

Standard's Addressed: (Local, State, or National)

CCSS.MATH.CONTENT.4.NBT.B.5

Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

CCSS.MATH.CONTENT.5.NBT.B.5

Fluently multiply multi-digit whole numbers using the standard algorithm.

Learning Objectives:

TLW create multiplication algorithms in order to solve complex word problems.

Assessment:

Students can be assessed on the completion of the problems; answer sheet is included

Procedural Activities:

Prior to Lesson:

Copy the problem pages for each student. To make them resemble the Vet Book used during the Iditarod, copy onto yellow paper. Cut each sheet in half. Order the checkpoint pages in the correct order. Hole punch each packet and secure with a small binder ring.

1. Introduce the students to the role of vets and vet checks to the Iditarod Sled Dog Race with the reading or videos listed in the resources section above. Make sure the students realize the vets examine the dogs before, during, and after the race.
2. Tell the students that today they will be taking on the role of a volunteer vet and will use their knowledge of word problems and multiplication to move along the trail while examining the teams.
3. Distribute the Vet Book problem sets to the students.
4. Tell them that they are to work through the challenge problem by problem. They need to read the page and solve the problems. For each problem they must write an equation, answer, and label (I like to tell them those three things are mandatory gear and they can't arrive at the checkpoint without them!). As they bring you each page, check it. If they are correct, they may go on to the next checkpoint. If not, they must revise their work and try again.
5. As a wrap up, have the students discuss or write about why vets may choose to volunteer their time to work at the Iditarod or other sled dog race.

Materials Students Need:

Challenge problem packet, included

Technology Utilized to Enhance Learning:**Other Information:****Modifications for Special Learners/ Enrichment Opportunities:**

- Students could work in partners, or small groups.
- Students could use calculators if the math is difficult.

Additional Information

Open Source Clipart found at: <https://openclipart.org/>

Iditarod Vet Checks

A

Multiplication Challenge



Dr. _____

Anchorage:

Congratulations! You have been chosen from hundreds of applications to serve as a veterinarian for this year's Iditarod!

Your first job as an Iditarod Vet is to examine full teams of dogs prior to the race. Every team needs to undergo a complete examination before they are allowed to run. The door to the clinic is opening and your first musher is coming in! Matthew Failor is here with his team of fourteen dogs! You better get busy!

You need to start by listening to the dogs' lungs. If each dog on the team has two lungs, how many lungs will you need to listen to with your stethoscope?

Willow:

You next need to check each dog's paws to make sure they don't have any issues with their paw pads. How many feet on Matthew's team will you need to check in all?

Yentna:

You better check the claws of each dog too. Be sure there are no ingrown toenails and see if any of them need to be trimmed. Each paw has four claws. How many claws on Matthew's team will you need to check in all? (Use the data you collected from Willow to know how many feet you are examining!)

Skwentna:

As a part of the exam, each dog needs to have an ECG test. Each ECG test takes about 8 minutes. About how long will it take to get Matthew's whole team tested?

Finger Lake:

Each dog needs to have six vaccines before they are permitted to race. How many vaccines do you need to check paperwork for on Matthew's race team?

Rainy Pass:

You need to check each dog's mouth to ensure that they don't have anything wrong with their teeth that may prevent them from eating properly. Each dog has 42 teeth. How many teeth will you have to check on Matthew's team total?

Rohn:

Being Iditarod dogs, Matthew's team is used to being handled by lots of different vets. But, it wouldn't hurt to whisper some encouraging words into each dog's ear. Each dog uses 18 muscles in their ear to turn it to hear your whispers. How many muscles will be used for the whole team to hear your encouraging words?

Nikolai:

As you continue to examine each dog, run your hands down their backs to check their skeletal builds and make sure you don't sense anything out of line. Each dog has 36 vertebrae. How many vertebrae will you feel on Matthew's whole team?

McGrath:

Of course, the vertebrae aren't the only bones you need to check. Each dog has 319 bones in his or her body. If you check every single bone on every single dog in Matthew's team, how many bones will you have checked in all?

Takotna:

Great work! You are almost finished with Matthew's team! One last thing to do... weigh each dog. The best way to weigh them is to lift them up, step on the scale, find your combined weight and then subtract your personal weight.

If the dogs on Matthew's team weigh an average of 45 pounds each, what's the approximate total weight of his team?

Ophir:

Congratulations! Dr. Stu Nelson, the Iditarod Head Vet, is pleased with your work at the pre-race checks! He decides you are ready for more! He sends to you the starting line to help do one last check on the teams!

By the time the 53 mushers who are running this year's race arrive at the starting line, a vet has checked all of the dogs! Assuming all of the mushers are starting with the maximum of fourteen dogs, how many hearts have the vets listened to before the race start?

Iditarod:

Vets have also checked every one of the legs of each dog! How many Iditarod sled dog legs have been checked this year? (Use your data from Ophir to help you know how many dogs will start the race.)

Shageluk:

Your job is to walk around and observe the teams as they get ready to head to the start line. You are looking for anything that seems different or unusual in any of the dogs.

You notice that the dogs are looking around at the crowds of people who are gathered on Fourth Avenue for the start. As a vet, you know that dogs have three eyelids, not just two like humans do. How many dog eyelids are opening and closing as they watch the crowds gather? (Don't forget, you already know how many dogs are running!)

Anvik:

Some of the mushers are feeding the dogs a small snack. Not too big... they don't want any dogs getting a stomachache when they start running.

This makes you think about just how much food the teams will go through on this race! Each team has sent out approximately 2,000 pounds of food for their team! About how many pounds of food are waiting teams along the trail in all?

Grayling:

Here comes Dr. Nelson. He has a special project for you! You need to find the P-team and see if they need any help with collecting their samples. Yes – pee samples. The P-Team must collect samples from at least 12 dogs on each team. At least how many samples should the P-Team have collected on start day?

Eagle Island:

Way to go! Dr. Nelson has promoted you to Trail Vet! This means you are on the trail seeing the race first hand!

You are one of 47 vets who have traveled from all over the world to volunteer with the Iditarod on the actual trail!

If this is the 46th Iditarod and there have been about 47 vets each year, about how many vets have volunteered in all? (This is a pretty rough estimate since the first several years there probably weren't as many vets on the trail!)

Kaltag:

You and a few other vets have arrived in Kaltag! Dr. Nelson has told you that you will be here while the majority of the teams go through. When the crowd dies down a bit, some of you will move up the trail and only one or two vets will stay to take care of the last few teams!

While you are in Kaltag, you are lucky enough to see 47 teams come in. Assuming all of the teams still have fourteen dogs, how many dogs are you going to get to examine?

Unalakleet:

At each checkpoint, the vets are charged with checking each dog. You will use the acronym HAW-L to help you remember what to check for. HAW- L reminds mushers that “Haw” means to turn L (left). But, the letters also remind you and the other vets what to look for in your exam of each dog.

The H stands for heart. You’ll need to check the heart rates of each dog. Knowing that each dog has four chambers in his or her heart, how many chambers will you listen to with your stethoscope in Kaltag? (Remember to check your data from Kaltag to know how many dogs you are seeing!)

Shaktoolik:

The A in HAW-L reminds to you check the dogs' appetites. Watch them eat and check with the mushers to make sure the dogs are eating well. Remember, they need to have a lot of calories to do the hard work they are doing!

As a vet, you know that each dog has 1,700 taste buds (people have 9,000!). How many taste buds are you checking on each team?

Koyuk:

The W in HAW-L reminds you to check on the dogs' weights. Some dogs may be losing a little weight, but hopefully they are putting enough calories in to keep their weight up!

If the dogs you examine at the checkpoint have all maintained their average starting weight of 16 kilograms, what is the approximate total weight of all of the dogs you examined at the checkpoint?

Elim:

The L in HAW-L tells you to remember to check the dogs' lungs. You can use your stethoscope for this too. Listen to make sure the lungs are nice and clear and that the dogs aren't wheezing at all.

It's best if you listen to four spots on each side of the dog's body as you do this. If you do this for each dog at the checkpoint, how many times will you listen to lungs through your stethoscope?

White Mountain:

The Communications person just came by to tell you that Dr. Nelson radioed in. He needs you to get to Nome as soon as possible! It's getting close to the finish time for the top teams!

In Nome, the vets have a special job to do. The top twenty teams must be examined very carefully to determine which team should win the Humanitarian Award for best dog care!

Assuming that all of the dogs who started the race finish the race, how many dogs will have to be carefully examined in Nome?

Safety:

One part of the examination of the top twenty teams in Nome is that each dog is walked on a leash around the dog lot. This lets you look at the gait of the dog to see if he or she is sore or limping at all as you try to decide which musher should win the Humanitarian Award. How many legs will you have to watch for soreness?

Nome:

And finally, each of those legs has a paw, and each of those paws has six pads. How many footpads will you examine in Nome of the top twenty teams?

Dr. Nelson is really impressed with your work on this year's race and he hopes you decide to join his team again next year! Thanks for all of your hard work!

Thank you so
MUSH
for all you did this race!

Iditarod Vet Check Multiplication Challenge

Answer Key

Anchorage	$14 \times 2 = 28$ lungs
Willow	$14 \times 4 = 56$ feet
Yentna	$56 \times 4 = 224$ claws
Skwentna	$14 \times 8 = 112$ minutes
Finger Lake	$14 \times 6 = 84$ vaccines
Rainy Pass	$14 \times 42 = 588$ teeth
Rohn	$14 \times 18 = 288$ muscles (one ear) (504 two ears)
Nikolai	$36 \times 14 = 504$ vertebrae
McGrath	$319 \times 14 = 4,466$ bones
Takotna	$14 \times 45 = 630$ pounds
Ophir	$53 \times 14 = 742$ hearts
Iditarod	$742 \times 4 = 2,968$ legs
Shageluk	$742 \times 6 = 4,452$ eyelids
Anvik	$2000 \times 53 = 106,000$ pounds
Grayling	$53 \times 12 = 636$ samples
Eagle Island	$46 \times 47 = 2,162$ vets
Kaltag	$47 \times 14 = 658$ dogs
Unalakleet	$658 \times 4 = 2,632$ hearts
Shaktoolik	$1,700 \times 14 = 23,800$ taste buds
Koyuk	$658 \times 16 = 10,528$ kilograms
Elim	$658 \times 8 = 5,264$ times
White Mountain	$20 \times 14 = 280$ dogs
Safety	$280 \times 4 = 1,120$ legs
Nome	$1,120 \times 6 = 6,720$ pads