Dolphin Decimals

Grade Level: Grade 4 & 5

Mathematics Skills: Relating Fractions, Decimals, and Percentages,

Adding and Subtracting Fractions and Decimals

Florida Sunshine State Standards:

Grade 4: MA.4.A.2.1, MA.4.A.2.4, MA.4.A.6.5

Grade 5: MA.5.A.2.2

Description:

Students will apply fractions, decimals, and percentages to real-world applications in an aquarium setting by learning how food is divided among animals and how time is divided during animal training sessions. This lesson may be done in conjunction with "Bringing up Baby" and "My Day as a Dolphin Trainer" activities or on its own.

Materials:

- "Why Train a Dolphin?" story
- "CMA Dolphin Presentation" video (available online)/video player
- Dolphin behavior cutouts
- Tape or magnets
- Chart paper or white board
- "Training To-Do" worksheet
- "Dolphin Decimals" worksheet

Preparations:

Print and cut out the dolphin behavior cards and attach either tape (if using chart paper) or magnets (if using the white board) on the back side. Make the appropriate number of copies of both the "Training To-Do" handout and the "Dolphin Division" handout.

Procedures:

1) Ask the class about the dolphins they have seen at zoos or aquariums. Discuss some of the different tricks or behaviors that the dolphins perform during shows and have students offer suggestions as to why these behaviors are taught to the animals.
2) Watch the "Dolphin Show" video (found online) with the class and have them write down their favorite things that the dolphins did during the presentation.
3) Read "Why Train a Dolphin?" aloud to the class. After the reading, have students raise their hands and explain why the dolphins may have done their favorite things from the video.
4) Create a chart like the one in figure 1 below.

Figure 1:

High Energy/ Exercise	Husbandry/ Medical	Cognitive/ Learning

5) Have the students classify the different behaviors (from the "Dolphin Behavior" cutouts) into the appropriate category.
6) Use common fractions to divide up the behaviors into a training session as a class. For example, if 3/5 of the behaviors are exercise, then 1/5 can be medical and 1/5 can be learning. Another example would be to divide the training session up evenly. Just remember that each training session has to have all three types of behaviors. Then, have the students translate those fractions into decimals and decimals into percentages. Have the students work through a few examples.
7) Explain to students that dolphins get fed bigger fish for harder behaviors and smaller fish for easier behaviors. Place a herring (big fish) magnet next to all the designated harder behaviors and a small fish magnet (capelin) next to all the designated easier behaviors.
8) Now, provide the students with a set number of herring and capelin (5 and 10, respectively, for example). Have the class divide up a training session using the amount of fish they use as a guide.
9) Divide the students into groups and pass out the "Training To-Do" worksheet.
10) Have each group present their dolphin presentation.

Homework: "Dolphin Decimals" worksheet
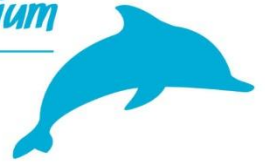
Why Train a Dolphin?
Winter

The Clearwater Marine Aquarium is not your typical aquarium. It is actually a marine animal hospital. All the animals that live at the aquarium were rescued from the wild because they were very sick or were injured in some way. The reasons they arrived at CMA are all different, but once they are there, they receive the best care.

One of the types of animals that live at the Clearwater Marine Aquarium is the Atlantic Bottlenose Dolphin. The dolphin trainers at CMA work very hard to care for our rescued dolphins. They are in charge of teaching the dolphins to perform behaviors on cue, feeding the dolphins as a reward for correct behavior, and making sure the dolphins are healthy. There is a lot of hard work that goes on behind-the-scenes, including dividing up the dolphin's daily food, cleaning and scrubbing the dolphin's tanks, and working long hours to feed the dolphins on time. The most exciting parts of the day are the training sessions that occur during the dolphin shows. Although these shows are very fun for the dolphins, their trainers, and all the guests watching, they serve a very important purpose.

Dolphins have lots of energy and need tons of exercise. In the wild, dolphins would get their exercise by hunting or avoiding predators. At the Clearwater Marine Aquarium, the dolphins perform "high energy behaviors", like jumps, flips, and tail slaps to get their exercise. All of these behaviors mimic ones that dolphins do in the wild, either to hunt or play.

Dolphins are also very intelligent. Just like we do puzzles, play games, or go to school to learn more about the world around us, the dolphins that live at the Clearwater Marine Aquarium like to do activities that require a lot of thinking. They call these "cognitive behaviors." Sometimes the trainers will have the dolphins match one toy with another based on its shape or size. Other times, they will work on training a new behavior to the dolphin, just like we might learn a new way to do a math problem or a new vocabulary word in school.

The most important reason that the dolphins at the Clearwater Marine Aquarium are trained is to help take care of them. Sometimes, going to the doctor can make people nervous, even if it's just for a check-up. Dolphins will get nervous just like we do, so the trainers at the Clearwater Marine Aquarium help to keep the dolphins calm by rehearsing the different behaviors they would do during a check-up with the veterinarian. These behaviors are called "husbandry behaviors." The dolphins practice presenting their tail flukes to the trainers, just like they would have to if they were getting a shot. They also practice holding still while the trainers look in their mouths to check their teeth, just like a dentist visit. One of the most exciting behaviors that the dolphins practice is when they beach

themselves, or come all the way out of the water onto a platform. This is a good time for the trainers or the vet to look at the dolphin's whole body and make sure they are healthy.

Winter the dolphin is a very special animal that has spent a lot of time learning behaviors that help the staff at Clearwater Marine Aquarium take care of her. When Winter was between two and three months old, she got tangled in the ropes of a crab trap line. She lost her tail and had to learn to swim a whole new way, moving side to side like a fish instead of up and down like a dolphin. The veterinarian and her trainers became worried that Winter would hurt her back by swimming so differently so they worked with Hanger Prosthetics to create an artificial tail. Winter has been trained to present her tail stub to the veterinarian for measurements, to move her artificial tail up and down, and even jump out of the water.

In order to make the most of each training session, the dolphin trainers must plan how they want to divide their time and their food with Winter and the other dolphins. They have to make sure that the dolphins have time to learn, time to play and exercise, and time to practice behaviors they would use during a check-up. They also have to divide up the dolphin's daily diet so that there is enough food for each training session. Today, we are going to learn how to plan out a dolphin training session using fractions, decimals, and percentages as a guide.
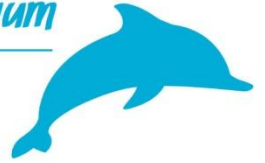
Trainer To Do

Name: _____

Directions: Congratulations! Today is your first day as a dolphin trainer at the Clearwater Marine Aquarium. This is an exciting job, but it requires a lot of hard work! Before you work with the dolphins in a training session, there are few things you have to plan out.

Dolphin Behaviors:

Many people use the term "trick" to describe the different activities that dolphins perform during a show or training session. Dolphin trainers will call those activities "behaviors" because they serve a more important purpose than just entertainment, such as exercise, learning, or medical training for the animal. Look at the chart below for an example of some of CMA's dolphins' behaviors.

	Hope		Nicholas		Panama		Winter	
	Harder	Easier	Harder	Easier	Harder	Easier	Harder	Easier
High Energy These behaviors are great exercise for our dolphins!	Somersault Forward Tail Walk	Pectoral Splash Bow	Somersault Breach	Forward Tail Walk Bow Beach	Beach Bow	Pectoral Splash Forward Tail Walk	Bow Beach	Pectoral Splash Somersault
Cognitive These behaviors make our dolphins think about problem solving or learn new things. They are fun, like doing a puzzle!	Painting Retrieval	Mimicry Hand Target	Foot Push Painting Pectoral Shake	Hand Target Hug Retrieval Mimicry	Foot Push Painting Pectoral Shake	Hand Target Hug Retrieval	Hug Painting Pectoral Shake	Hand Target Pectoral Splash Retrieval
Husbandry These behaviors are important because they help the trainers take good care of the dolphins and make sure they are healthy.	Blood Draw Stretcher Mouth Open	Pectoral Hold Dorsal Layout	Beach with Stretcher Blood Draw Stretcher	Mouth Open Dorsal Layout Pectoral Hold	Stetcher Blood Draw	Mouth Open Pectoral Hold Dorsal Layout	Stretcher Physical Therapy	Dorsal Layout Pectoral Hold Mouth Open

Part One Directions: The decimals, percentages, and fractions below represent the amount of the training session spent on each type of behavior. Use the given amounts to solve how many of each type of behavior the dolphins will do in a training session.

1) 50% High Energy, 25% Cognitive, and 25%Husbandry – 12 behaviors total

2) .75 Cognitive, 0.125 High Energy, 0.125 Husbandry – 16 behaviors total

3) 0.4 Husbandry, 0.2 Cognitive, 0.4 High Energy – 5 behaviors total

4) 1/3 High Energy, 1/6 Cognitive, 1/6 Husbandry – 18 behaviors total

Part Two Directions: Create your own presentation by following the given steps.

1) Pick your dolphin:

All dolphins learn differently, so each of our dolphins knows a different set of behaviors. Take a look at the dolphins below and circle the name of the dolphin you would like to star in your training session.

Hope	Nicholas	Panama	Winter
10 pounds of food	16 pounds of food	16 pounds of food	12 pounds of food

2) Food Prep

The amount of food that the dolphin eats determines how many fish you will have to reward them after a behavior. Every pound of food has ½ herring and 1 capelin. Dolphins eat 1 herring for every harder behavior they perform and 1 capelin for every easier behavior they perform. How many herring and capelin will you have for the training session with your chosen dolphin?

_____ Herring   _____ Capelin

3) Plan your training session

Use the chart on the first page to find the behaviors your dolphin can perform. You can repeat behaviors if you'd like, just remember to use one behavior (difficult or easy) from each category (high energy, cognitive, and husbandry) during your training session. Use the "Plan Your Training Session" chart to write in the order of your behaviors. Let the training begin!

Plan Your Training Session

Dolphin Name: _____

Herring: _____   Capelin: _____

Behavior	Category	Number of times	Herring	Capelin

Behavior (cont.)	Category (cont.)	Number of times (cont.)	Herring (cont.)	Capelin (cont.)

What was the total number of behaviors in your training session? _____

What fraction of your training session was spent on high energy behaviors? _____

In decimals? _____

In percentage? _____

What fraction of your training session was spent on cognitive behaviors? _____

In decimals? _____

In percentage? _____

What fraction of your training session was spent on husbandry behaviors? _____

In decimals? _____

In percentage? _____

Dolphin Decimals

Directions: Answer the following questions using your knowledge of fractions, decimals, and percentages

1) Winter eats 12 pounds of fish each day. If she eats 25% of her fish in each training session, how many pounds of fish does she eat in 1 training session?

2) A) How many training sessions would it take for Winter to eat 75% of her fish? B) How many pounds of fish would that be?

3) Nicholas the dolphin eats 16 pounds of fish per day. If Nicholas ate 4 pounds of fish at his first training session, what percent of his daily fish would he have left?

4) Write a fraction for the amount of fish Nicholas received in his first training session. Make sure it is the simplest fraction!

5) Hope only eats herring if they are cut in half. Write the decimal for the fraction ½.

6) Panama's trainer has 10 capelin. She feeds Panama 30% of the capelin for squirting water. How many capelin are left?

7) Winter is working with her artificial tail. The trainer wants Winter to move her tail up and down 10 times before receiving a fish. Winter has completed 60% of her trainer's request. How many more times does she have to move her tail up and down?

8) Winter and Panama are performing in a show together. If Panama performs 4/10 of the show, what percent of the show does Winter perform?

9) Hope is learning to bounce a ball back to her trainer. 70% of the time, Hope returns the ball right away. If Hope tries 10 times, how many times does she return the ball to the trainer? How many times does she miss?

10) Panama beaches on the platform for a total of 24 seconds. She takes 6 of those seconds to roll off the platform back into the water. What percent of the time was spent rolling back into the water?
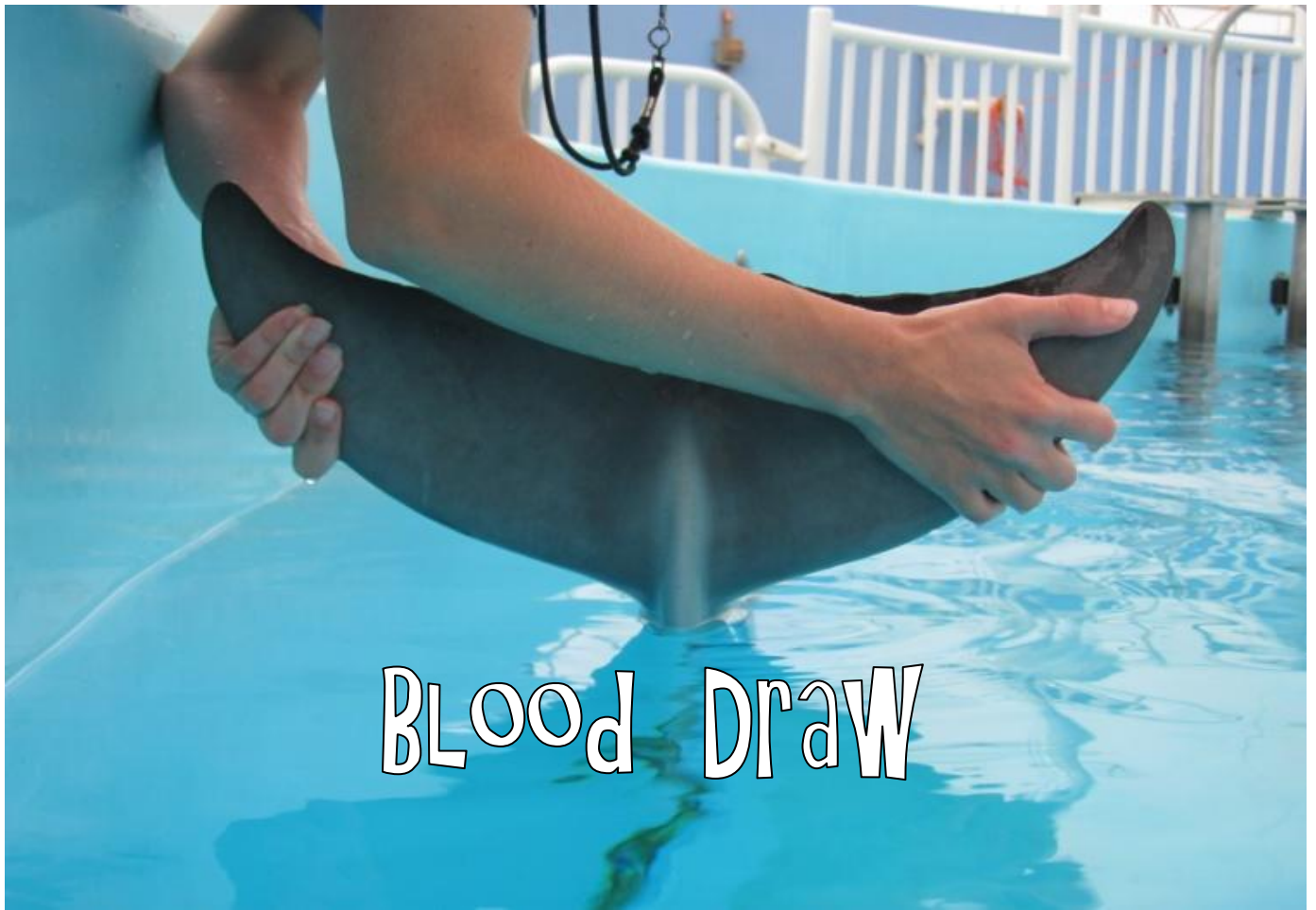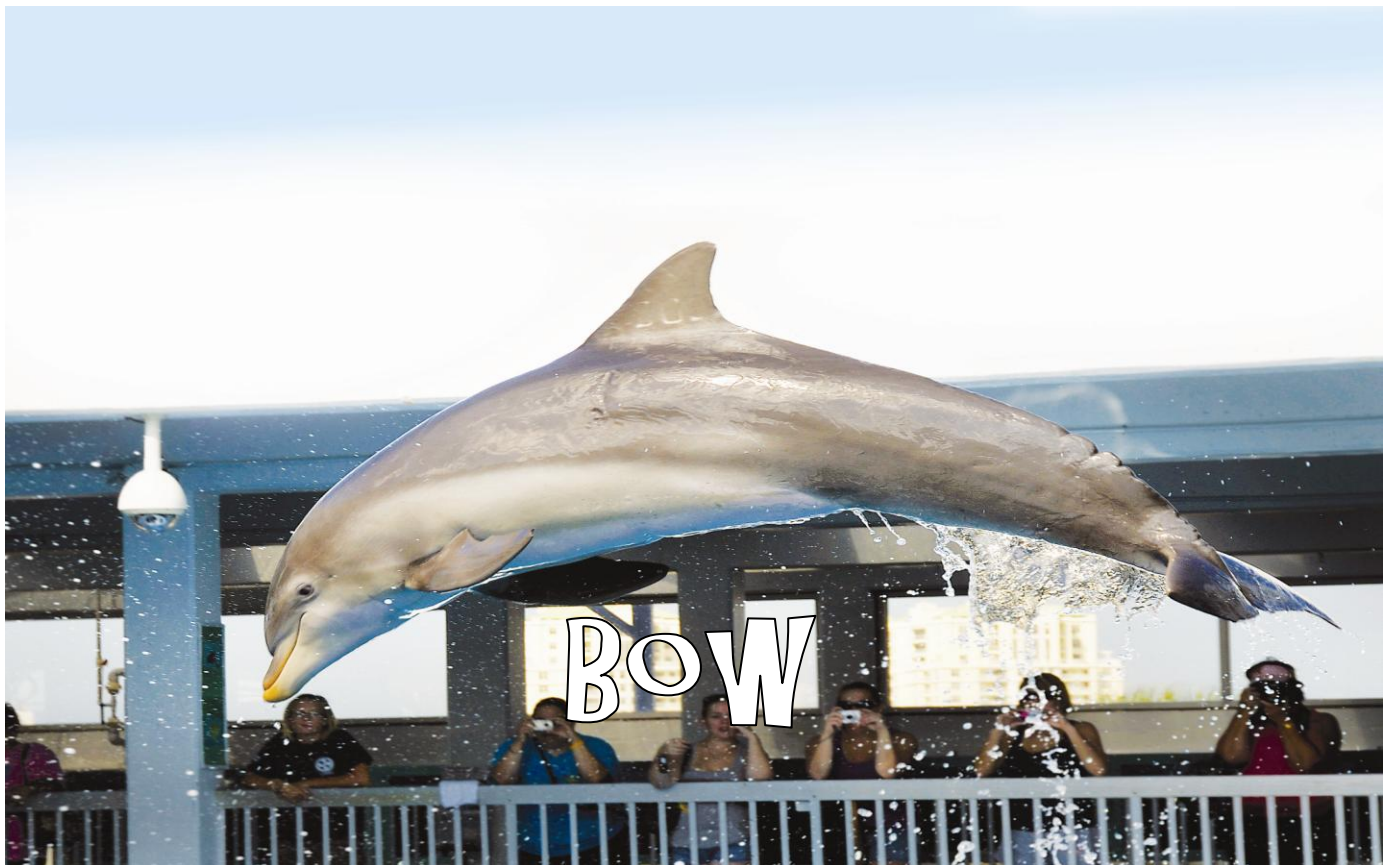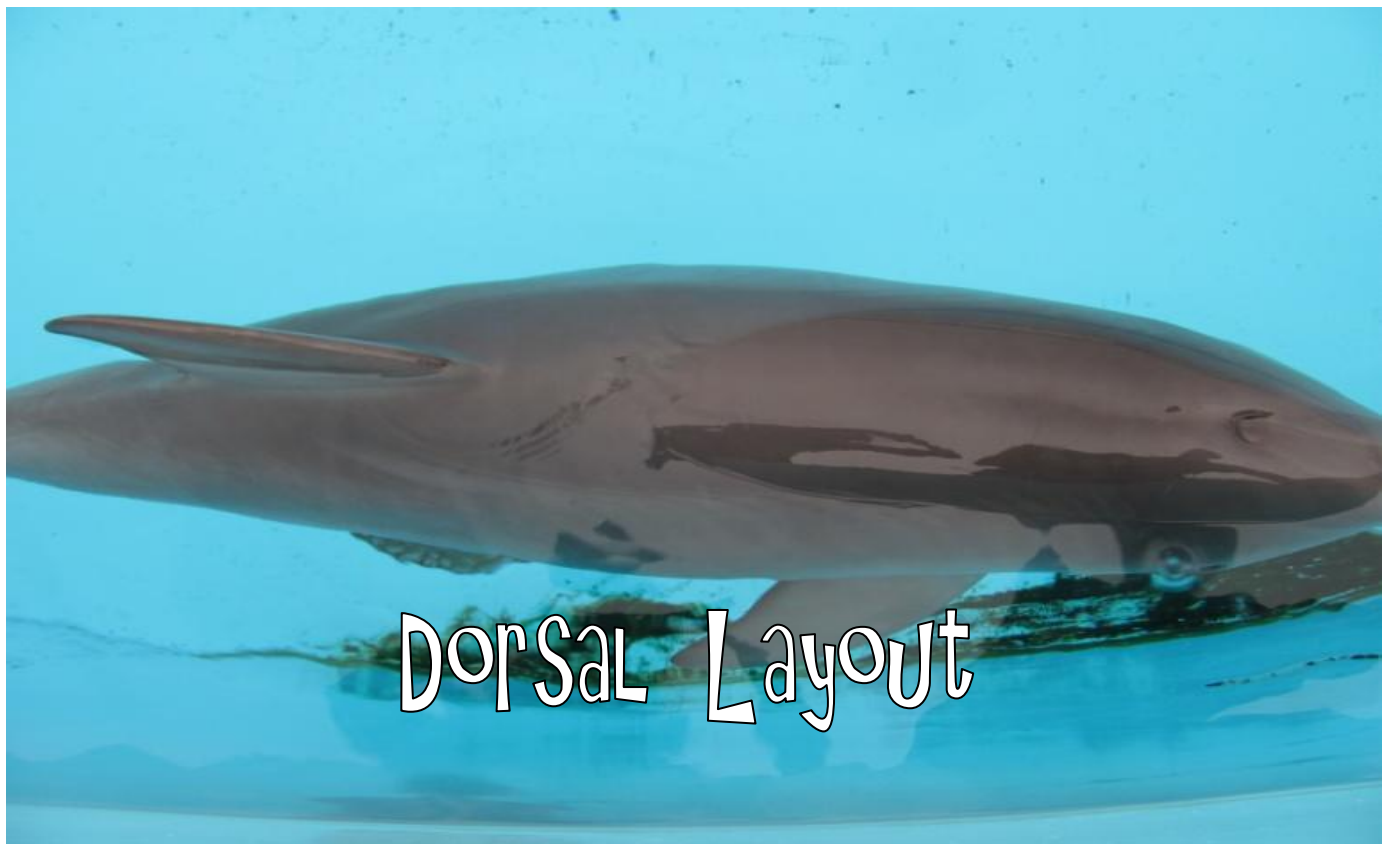
Beach

Beach With Stretcher

Blood Draw

Bow

Breach

Dorsal Layout

Foot Push

Forward Tail Walk

HaNd Target

Hug

Mimicry

Mouth Open

Painting

Pectoral Hold

Pectoral Shake

Pectoral Splash

Physical Therapy

Retrieval

SOMERSAULT

STRETCHER