DOLPHIN RESEARCH CENTER
What's for Dinner?

Grade level: K-2nd

Objective: Students will apply their knowledge of fractions to real world situations.

Florida Sunshine State Standards:
Mathematics
MA.A.1.1.3 The student uses objects to represent whole numbers or commonly used fractions and relates these numbers to real-world situations.
Science
SC.G.1.1.2 The student knows that plants and animals are dependent upon each other for survival.

National Science Education Standards:
Content Standard C (K-4) – The Characteristics of Organisms: Organisms have basic needs. For example, animals need air, water, and food; plants require air, water, nutrients, and light. Organisms can survive only in environments in which their needs can be met. The world has many different environments, and distinct environments support the life of different types of organisms. Each plant or animal has different structures that serve various functions in growth, survival, and reproduction. For example, humans have distinct body structures for walking, holding, seeing, and talking**.**

Background: Students should have an understanding of basic fractions in order to complete this activity. This activity can complement one of the training lessons provided on this CD or be implemented into math curriculum when learning fractions. There are two types of whales, toothed whales, or Odontoceti, and baleen whales, or Mysticeti. Baleen whales are some of the largest whales but feed on some of the smallest animals. They include the blue whale, right whale, humpback whale, and minke whale. Baleen whales do not have teeth. Instead, they have plates of baleen that hang down from their upper jaws. Baleen whales swallow gallons and gallons of ocean water. They push the water out through the baleen plates that act as sieves to trap small ocean animals such as plankton and krill. While the water is pushed out, the tiny organisms are actually too large to be pushed through the baleen plates. The whale will use its tongue to scoop up the tiny organisms. The toothed whales are whales that actually have teeth. These include the pilot whales, sperm whales, orcas, porpoises, and dolphins. Toothed whales use their teeth to grasp their prey. They do not chew their food; they actually swallow their prey whole. Toothed whales eat a variety of fish, crustaceans, and squid, and in some cases eat other marine mammals. At Dolphin Research Center, our dolphins prefer a selection of fish such as herring, capelin, and sardines. Dolphins feed on all sorts of types of fish for the same reasons we order a salad and an entrée! Some fish, like capelin, are made up of mostly water. This is like salad to us. Dolphins are mammals like us so they need fresh water. They cannot drink their salty home, so how

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do they get their water? They digest and metabolize the fats and proteins in their fish into fresh water. The more they eat, the more hydrated they are! Herring are more of a source of fat and protein for dolphins. Then, just as we may love dessert, they will even eat what we call taste fish like sardines or marine smelt.

> ### Key Terms
>
> **Baleen:** Long plates made of protein similar to human fingernails that hang in a row from the upper jaw which form a curtain in the whale's mouth for straining food
> **Mysticete:** Scientific name for baleen whales
> **Odontocete**: Scientific name for toothed whales

Training dolphins is the career of many people's dreams! Almost everyone has either read about dolphins or seen them on television. A few people may have been fortunate enough to observe them in their wild habitat. Many people visit aquariums or marine mammal facilities to see dolphins and other marine mammals. The intelligence and creativity of dolphins makes working with them both challenging and a lot of fun. As you watch trained dolphins gracefully perform various behaviors on cue, the trainer's job may look easy. It seems as though the trainer "directs" and the dolphin "performs." What you don't see is the amount of time, planning, and expertise devoted to this unique kind of dolphin-human relationship.

In the training situation, the dolphin is an "operator," an active participant who exhibits a behavior to which the trainer then responds. The consequences that follow a behavior directly influence the frequency with which the behavior will be repeated. Training is very much a two-way communication process. The trainer's response to the dolphin will either increase or decrease the likelihood that a given behavior will reoccur. If a behavior is followed by something that the dolphin likes, the probability that the behavior will occur again is increased. If the trainer's response is not agreeable, the dolphin eventually will tend to avoid that particular behavior.

If your mother wants to "train" you to take out the trash, she may use a variety of methods. She may remove privileges or get upset if you don't take out the trash, or reward you with praise about how nice it is when you do take out the trash. Either punishment or praise may influence how often you take out the trash. However, using a method that incorporates positive reinforcement is most likely to encourage you to do this task on a regular basis. Positive reinforcement has proven to be the most effective means of influencing behavior. If, after you take out the trash, your mother rewards you with a warm smile, or a piece of cake (depending on your preferences), you will be more likely to repeat the behavior without being asked. Your behavior has been modified through operant conditioning. At DRC, primary reinforcement for our dolphins is most often FISH of course!

For more info, see *Training at DRC* and *Natural History* information files.

Materials:
- Copies of the hand out
- Pencils

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- Pictures of herring, capelin, marine smelt, shrimp, & squid (What dolphins eat!)—
  Find photos/ images online at:
  http://www.lakemichiganangler.com/tips/bait_salt.htm
  http://octopus.gma.org/fogm/Mallotus_villosus.htm
  http://fish.dnr.cornell.edu/nyfish/Osmeridae/osmeridaepic.html
  http://www.sealevelscuba.net/Trip_Reports/log_pages/albums/Bonaire2002/squid.html
  http://www.bowpanseafoods.com.au/shrimps.shtml
- Training at DRC and Natural History information files
- Candy, toys, stickers- anything to serve as a reward to the students with the most correct answers

Procedure:
1. Introduce pictures to students. What do all of these have in common?
   (They are examples of what dolphins eat!)
2. Read selections of your choice from the Background aloud to the class.
3. Ask if anyone has ever been to a marine mammal facility like Dolphin Research Center, Sea World, or any other.
4. Ask students if they have ever seen a dolphin trainer. What does a trainer do?
5. Share more Background info or read selections from the Training at DRC information file.
6. Discussion possibilities: How would you like to eat fish for dinner every night? If you were a dolphin or sea lion you would love it! The marine mammal colony at Dolphin Research Center has carefully monitored diets, which means their food is weighed and specially prepared. The amount each individual receives depends on their age, season, and, for females, if they are pregnant or nursing.

Wrap up: Go over answers and correct work. Discuss the extra credit question and answer. If you want, have students simulate a dolphin's meal bucket by making their own drawings of herring, capelin, and smelt in the correct amounts for an individual dolphin's bucket and compare the measurements! To better reinforce the concept of positive reinforcement, reward the students with the most correct answers with a lollipop or pencil or some kind of candy, sticker, etc.

Taking it Further:
- Have students research marine mammal careers.
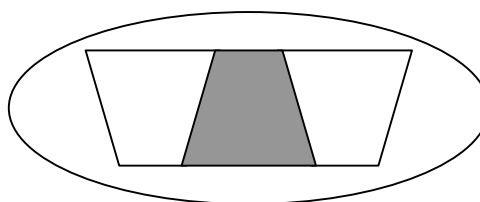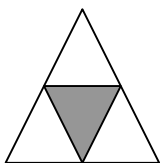
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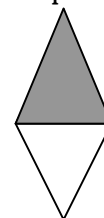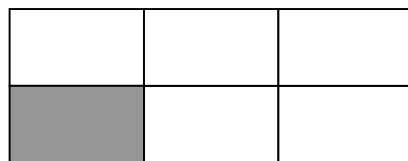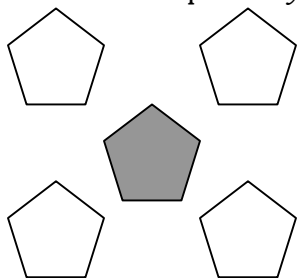
Name_____   Date_____

Imagine you are an animal trainer preparing the food for the animals. Choose the picture that represents the correct fraction of fish needed for each dolphin's meal!
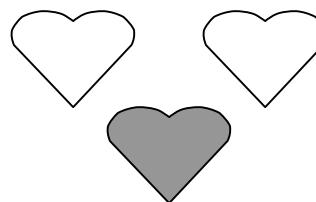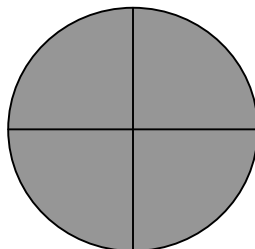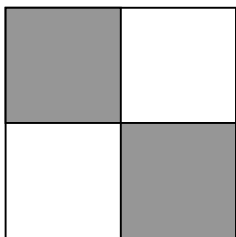
Example:
A dolphin eats an average of 15 pounds of food per day. His diet consists of 1/3 herring which picture below represents 1/3?

1. Our dolphins here at the Dolphin Research Center eat sardines. Aleta's diet consists of 16 pounds of fish per day with 1/5 of her diet made up of sardines. Which picture shows 1/5?
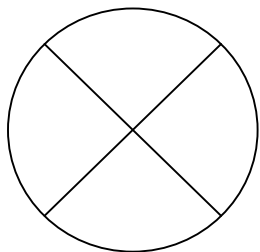
2. One of our California sea lion eats about 28 pounds of fish a day. About half of his diet consist of a fish called capelin. Which picture represents 1/2?

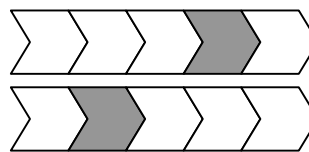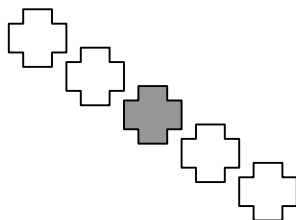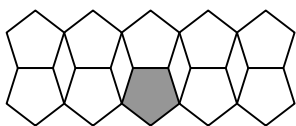# DOLPHIN RESEARCH CENTER
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3. Rainbow enjoys smelt. He would eat approximately 16 pounds of fish a day and about 1/4 of it is smelt. Which fractional model illustrates 1/4?

4. Molly consumes 20 pounds of fish per day with 1/10 of her diet consisting of sardines. Which picture shows 1/10?

EXTRA CREDIT!!
Kibby consumes 15 pounds of fish per day. 2/3 of his diet is made up of herring and capelin. Which pictures represent 2/3?