Learning objectives:
- Understand that whales are mammals, and have similar anatomy to humans
- Learn different species of whales, dolphins, and porpoises and see different sizes
- Understand the difference between baleen and toothed whales

Vocabulary:
**Mammal**: Animals that are warm-blooded, have hair, give birth to live young, and breathe air. Includes whales & humans.

**Baleen**: Hard plates of keratin in a whale’s mouth that are used to filter feed.

**Porpoise**: A small cetacean with a blunt face and spade-shaped teeth. Generally smaller than dolphins.

**Blowhole(s)**: Holes on the top of a whales’ head that are used to breathe. Baleen whales have two, toothed whales have one.

**Flippers**: Two appendages on the sides of a whales’ body. Homologous with human arms, have the same bone structure.

**Fluke**: The whales’ tail. A large, powerful appendage made of cartilage that is used for propulsion/acceleration.

**Dorsal fin**: The fin on top of a whales’ body. It may be used for balance.

**Ventral pleats**: Folds of skin underneath the lower jaw that expand when feeding to hold water and fish/plankton.

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1. **Whale Puzzle (10 mins)**
   a. Start with whale outline/anatomy puzzle, ask them to tell you what they already know about whales. Can they name any species? Have they ever seen one? Are they fish or mammals? What makes a mammal a mammal? (live young, hair, breathe air, warm blooded)
   b. Puzzle will have labels. Ask them to match body part labels ONLY with yellow lines.
   c. Review each body part label. You can start anywhere on the puzzle.
      i. Blowholes- this is where the whale breathes. Whales breath air just like we do. Baleen whales have two blowholes on top of their head just like we have two nostrils. Toothed whales only have one. Whales do not breathe water out of their blowholes! A little water collects on top, and the speed of their breath turns it into mist.
      ii. Ear- small pinholes on the sides of the head. Whales have excellent hearing and rely on vocal communication for hunting and socializing. You can point out the large ear bones on the humpback skull to show that even though they have small outer ears, their ear bones make their hearing excellent.
iii. Eye-whales have so-so vision. They can’t turn their heads like we can, so
if they want to see around them they have to move their whole body.
The only exception to this is the beluga, which has a flexible neck.

iv. Baleen—hard sheets of keratin in the whales’ mouth that are used to
strain food from the water. Using a pasta strainer as an analogy helps
kids understand this. The pasta and water are put through the strainer,
only the pasta stays in. The whale takes a mouthful of water and food,
strains out the water and the food gets trapped.

v. Ventral pleats—folds of skin that expand when the whale feeds.

vi. Flippers—Appendages on the sides of the body that are homologous to
human arms. You can have the kids look up at the bones in the flipper
and talk about how all of those bones are the same as the bones in a
human arm. (phalanges, radius & ulna, humerus, and scapula)

vii. Belly button—whales have belly buttons just like us because they are
mammals and are born live. Our belly button is where we were
connected to our mother before we were born. What’s left over is a deep
scar.

viii. Fluke—the whale’s tail. Very powerful. There is only a metal outline on
our skeleton because the fluke is made of cartilage and rots away after
whale dies. Flippers have bones, flukes don’t.

ix. Dorsal fin—fin on top of the body that is also made of cartilage.

2. Harbor Porpoise Bones on Red Mat (10 mins)
   a. At the puzzle, you talked mostly about a baleen whale. These bones are from a
      harbor porpoise, which is a whale that has teeth.
   b. Explain what a porpoise is (smaller than a dolphin with spade shaped teeth
      instead of cone shaped teeth, and a blunt face instead of a beak). Feel free to
      show them the skull and feel the flat teeth (make sure you keep a hold of the
      skull during this!)
   c. Have them sort vertebrae based on where they think they go in the spine. Use
      the humpback skeleton to help with this. Look for similar shapes!
   d. Answer any questions.

3. Ropes (10 mins)
   a. Move to lengths of rope on floor by the skull. Give each child one of the ropes
      and have them unroll the rope to its full length one at a time. Each rope is
      labelled with a species.
   b. Species cards— as each child unrolls their rope, have them tell you which species
      it is. Give the adult length, species name, show them the pictures, etc.
   c. At the end—focus on the longest rope, which is the length of an adult fin whale.
      Ask how long they think a fin whale would take to swim its own body length (65
      ft). Send them in pairs to run the length of the rope, having a chaperone at the
end as a guard. Have them time themselves. A fin whale takes 2 seconds to swim 65 feet - they are the fastest baleen whale.

d. Answer any questions.