



# Ice Age Engineering

## 1st Grade

### Duration

Museum Visit

30-45 minutes

Classroom

1 hour

### Location

La Brea Tar Pits Museum

### Supplies

- Worksheet
- Pencil
- Clipboard (optional)

### Standards

NGSS

1-LS1-1.A, 1-LS1-1.D

S+E Practices

1,2,3,4,6

CCSS ELA

RI.1.1, RI.1.10, W.1.8

CA State

Science Grade 1

Life Sciences 2.c

### Vocabulary

Trait • Adaptation •  
Morphology • Function

## Concepts

- An animal's physical form helps it survive in its environment.
- Fossils help us understand how extinct animals survived.
- We can solve human problems using ideas from animal adaptations.

## Objectives

- Students will examine three case studies of fossils inside the Museum and learn how different Ice Age animals survived.
- Students will make connections between an animal's physical characteristics and its behaviors.
- Students will use one physical trait from one of the case studies to design a solution to a human problem.

## Outline

1. Students will use their worksheet to learn about how three different Ice Age animals survived.
2. Students will use their observations of each case study as evidence to make conclusions about how an animal's physical characteristics aided in its survival.
3. In the classroom, students will draw on their research from the Museum to design a solution to a human problem using one of the Ice Age adaptations they noticed.

## Pre-Visit

Review the idea that all animals have physical traits that allow them to survive. For example, a cheetah has long, flexible limbs and a long tail that allow it to sprint after its prey. If a cheetah did not have these physical characteristics, it would be unable to catch its food and could not survive.

Have students practice naming various animals and pointing out the features on each animal's body that are most important for its survival.

## Museum Visit

During their visit to the Museum, students will use their worksheet and examine three case studies of Ice Age animal behaviors.

1. The saber-toothed cat
2. The Harlan's ground sloth
3. The dire wolf

Once they have an idea of how each kind of animal survived, they will locate each skeleton inside the Museum.

At the skeletons, students will use close observation and sketching to determine the physical characteristics that fit with the behaviors described on the first page of their worksheet.

## Post-Visit

Back in the classroom, have students review their research from the Museum. Working alone or in groups, students should pick one physical characteristic from one of the three animals they observed at the Museum. They will use this trait to design a solution to a human problem. Encourage them to be creative! Students should include a detailed drawing of their idea, as well as a statement about how it would work and what problem it would solve. Once students have designed their Ice Age-inspired idea, they can share their work with the rest of the class.

Examples:

Designing a pair of scissors based on the shearing surfaces of a saber-toothed cat's teeth.

A suit of armor based on a ground sloth's skeleton.

## La Brea Tar Pits Case Studies

Review the information below before finding these specimens inside the Museum! Circle the words that tell you the most about how these Ice Age animals behaved and survived, like in the examples below.

1. The *saber-toothed cat* is one of the most notorious carnivores of the Ice Age. Paleontologists believe that this cat was an **ambush predator** that would carefully stalk its prey before pouncing and attacking. It was most likely a powerful jumper with a strong upper body. It could grasp onto its prey and hold on after pouncing. The saber-toothed cat most likely did not have a strong, crushing bite, but could stab and slash soft parts of its prey.
2. The *Harlan's ground sloth* is an **herbivore** from Pleistocene Rancho La Brea. It was most likely a slow-moving animal that could not run away from its predators. Although it couldn't run, the ground sloth's body was an important tool for protection. The ground sloth was a very strong animal with robust musculature. Certain parts of its body can be used for protection as well as to help it find food.
3. The *dire wolf* is the most commonly found large animal at Rancho La Brea. Like the saber-toothed cat, it is a carnivore and a predator. This animal traveled in packs and most likely had a very **good sense of smell**. It was a fast runner that could chase its prey over long distances. Unlike the saber-toothed cat, it most likely had a crushing bite and could eat both meat and bone.



## Find the Evidence!

Now that you have an idea of how these animals might have behaved and survived, it's time to find the evidence on the skeletons! Find each animal in the Museum and take some time to draw the parts of its body that you think would help it survive in Ice Age Los Angeles.

For example, we wrote “good sense of smell” as something that would help the dire wolf survive. What would you find on the skeleton that tells you that a dire wolf had a good sense of smell? What might you find on the Harlan's ground sloth skeleton that tells you it's an herbivore? Do you see anything on the saber-toothed cat's skeleton that would help it ambush its prey?

Use the next pages of this worksheet to record your observations about each animal.

## My Observations: Saber-Toothed Cat

## My Observations: Harlan's Ground Sloth

## My Observations: Dire Wolves

## My Ice Age Invention

Apply your research and observations from the Museum to design a solution to a human problem!

Think about the kinds of challenges animals might have experienced during the Ice Age-- finding food, protecting themselves, and hunting their prey. How did their bodies help them solve these problems and survive?

Imagine if humans could use the kinds of features you observed at the Museum to make our lives easier. We are not as fast as a dire wolf or as strong as a ground sloth. We don't have sharp claws like a saber-toothed cat. But, we can mimic the survival solutions from the Ice Age to solve all kinds of human problems.

A human problem that can be solved with an Ice Age animal solution is:

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The Ice Age animal body part that we could mimic to solve this problem is:

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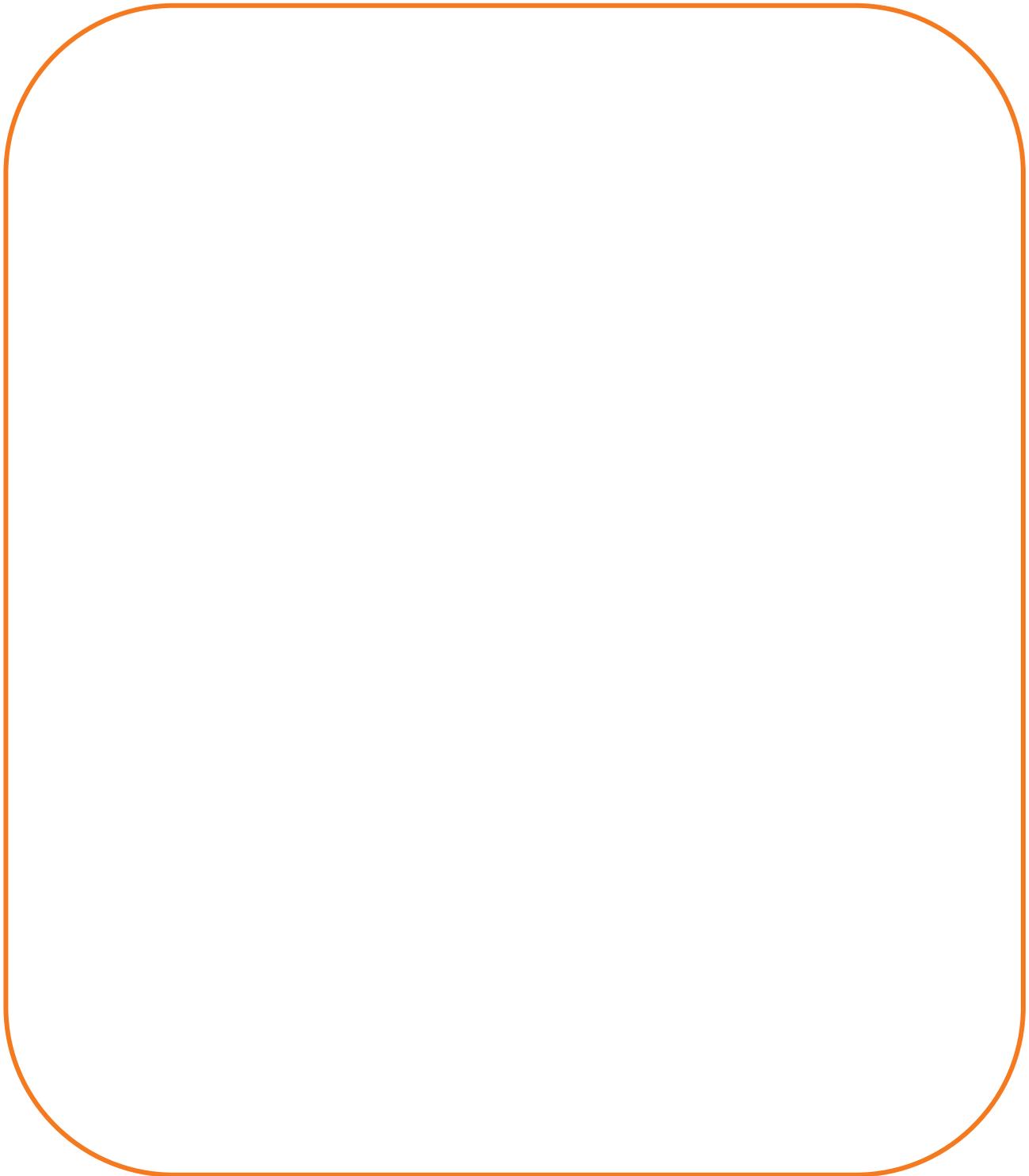
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## My Ice Age Invention

Draw your invention below!



## My Ice Age Invention

The name of my invention is \_\_\_\_\_  
\_\_\_\_\_.

It works by \_\_\_\_\_  
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