

ELEPHANT ADAPTATIONS PROMETHEAN CENTER

INVESTIGATIONS IN SCIENCE 6

Science Anchors

Science anchors are ongoing engaging tasks that students can work on independently. They are curriculum based, clearly defined and differentiated for students. Students can work on science anchors as they complete work at varying rates, when the teacher is working with a small groups of students, at the beginning or end of a class period, or when they are waiting for teacher assistance. Sample science anchor tasks include: reading and responding to text, journaling, learning or interest centers, listening or viewing centers, independent research or projects and hands-on minds-on science kit tasks.

Purpose

This Promethean center science anchor task was developed to help students deepen their understanding of adaptations over time and how scientists use evidence to determine the degree of relatedness among species and individuals.

Directions

Read about the Paleomastodon and African elephant. Observe the Paleomastodon and African elephant displayed on the Promethean Board. Highlight the similarities and differences on the images. Record your observations on the table provided. Provide possible reasons for your observations.



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Elephant Adaptations Promethean Flipchart Center

Anchor Task 8

Overview

This anchor task is to be used by students as they are learning about adaptation, survival and fossils.

Goals

Students should know

organisms have similarities and differences.

some organisms have a better chance of surviving than others.

scientists use fossils to learn about and document the Earth's biological and geologic history including how life and environmental conditions have changed.

Students should understand

that similarities among species and individuals can be used to infer the degree of their relatedness. (Traditional methods of classification such as physical and morphological similarities are constantly being challenged by increasing genetic evidence. Many species that were lumped together years ago because they looked similar have now been reclassified and found to be unrelated.)

best-suited organisms and groups of organisms survive.

Students should be able to

compare the African elephant to its ancient ancestor the Paleomastodon and explain possible reasons for the similarities and differences.

Resources:

- One of each of the Elephant Adaptations Promethean Flipchart Center resources per student
- One Elephant Adaptations Promethean Flipchart Possible Answers resource in an envelope
- The Elephant Adaptations flipchart page displayed on Promethean Board
- Optional-Active link on flipchart page to National Geographic Africa WildCam
<http://video.nationalgeographic.com/video/wildcamafrika/>


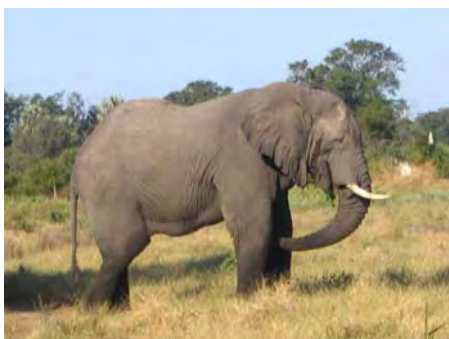
INVESTIGATIONS IN SCIENCE 6

Elephant Adaptations Promethean Flipchart Center

Anchor Task 8

Directions:

Read about the Paleomastodon and African elephant below. Observe the Paleomastodon and African elephant displayed on the Promethean Board. Highlight the similarities and differences on the images. Record your observations on the next page.

Paleomastodon	African Elephant
	
<p>The Paleomastodon is an ancient ancestor of the African elephant. Scientists have reconstructed it based on current evidence including their knowledge of today's living elephants.</p> <p>Scientists have determined that the Paleomastodon lived in North Africa around 38 million years ago. Based on the structure of the skull scientists have inferred that the Paleomastodon had a trunk. It is also believed that the Paleomastodon stood 3.5-6.5 feet tall and had four tusks (2 in the upper jaw and two in the lower). Its lower tusks were probably used for feeding and the upper tusks for feeding and defense.</p> <p>According to Dr. Richard Swann paleontologist and author of <i>Fossils: What They Tell Us of Plants and Animals of the Past</i> the characteristics of the Paleomastodon are not well known because an entire skeleton has not been found.</p>	<p>African elephants are the largest land mammals on Earth. They are larger than Asian elephants and have bigger ears. The shape of their ears resembles the continent of Africa. Their ears radiate heat to help keep them cool.</p> <p>They also have long trunks that contain about 100,000 muscles. African elephants use their trunks to smell, breathe, drink, trumpet and grab things. Their trunk has two finger like structures on the end to help them grab small things.</p> <p>African elephants eat 300-600 pounds of food a day. They eat grasses, leaves, twigs, branches, bark, fruit and flowers.</p> <p>An elephant pregnancy is the longest mammal pregnancy. It lasts about 22 months. A cow or female elephant usually has one calf every 2-4 years. Elephants mate year round.</p>

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Elephant Adaptations Promethean Flipchart Center

Anchor Task 8

Directions:

Record and provide possible explanations for your observations in the table below. When you are finished compare your work to the Possible Answers sheet in the envelope. Record additional information that interests you.

What similarities and differences do you see?	Provide possible reasons for your observations.

Think About It:

Why is there more information available on the African elephant than the Paleomastodon?

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Possible Answers

Similarities/Differences	Possible Reasons
<ul style="list-style-type: none"> • African elephant's neck is shorter and trunk may have been longer • Both have trunks 	Longer trunk needed to eat and drink
<ul style="list-style-type: none"> • African elephant has two large tusks, Paleomastodon has four tusks (all smaller than the African elephant's) • Both have tusks 	Tusks needed to eat (e.g. rip bark of trees, dig roots, lift twigs and leaves) and defend
<ul style="list-style-type: none"> • African elephant is much larger (average 10 feet tall and weighs roughly 6 tons) • Paleomastodon is 3.5-6.5 feet tall 	
<ul style="list-style-type: none"> • Both have ears 	Ears regulate body temperature, enable to hear, help swat flies
<ul style="list-style-type: none"> • Both have tails 	Tails swat insects
<ul style="list-style-type: none"> • Both have broad and flat feet 	Broad and flat feet help support body weight
Additional Elephant Adaptations	
<ul style="list-style-type: none"> • African elephant grows six sets of teeth 	Due the amount (up to 300-600 lbs. a day) and type of food that the African elephant eats such as grass it needs multiple sets of teeth during its lifetime. An elephant that lives more than 65 years is at risk of starving when their last set of teeth wear out. The Paleomastodon was a browser and ate twigs and leaves, not grass which is very tough and wears down teeth.
<ul style="list-style-type: none"> • African elephants mate year round 	Male and female African elephants do not live together in the same herds. Mating year round helps stabilize the population.
<ul style="list-style-type: none"> • African elephant has wrinkly skin 	Deep folds in the skin greatly increase the surface area which helps regulate the African elephant's body temperature.

Remember these are possible reasons. Little is know about the Paleomastodon. Scientific knowledge is based on current findings and changes as new information is discovered.

Elephant Adaptations

Anchor Task 8

Flipchart Page



<http://commons.wikimedia.org/wiki/File:Paleomastodon.jpg>

Paleomastodon



http://en.wikipedia.org/wiki/File:Elephant_in_Botswana.JPG

African Elephant



Click on the globe to try observe an African elephant.