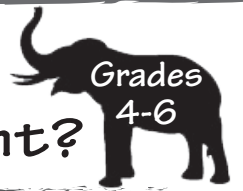




How are mammoths and African and Asian elephants alike and different?



This lesson will introduce students to the family of elephants, alive and extinct. They will identify differences and similarities between African elephants, Asian elephants, and their distant relatives, the mammoths. They will examine physical traits and complete an activity sheet with the appropriate characteristics for each species.

Subject Area: Science

Background Information: Pages 4-5

Vocabulary: adaptation, climate, forest, herbivore, mammoth, mammal, niche, savanna, trunk, tusks

Students will be able to:

- Interpret the elephant evolutionary tree;
- Distinguish between African and Asian elephants and mammoths;
- Describe the habitats where each of the species lives(d).

Materials:

- Activity Sheet 4: Elephant and Mammoth Traits Infographic
- Activity Sheet 5: Elephant and Mammoth Trait Chart
- Elephant Evolutionary tree chart

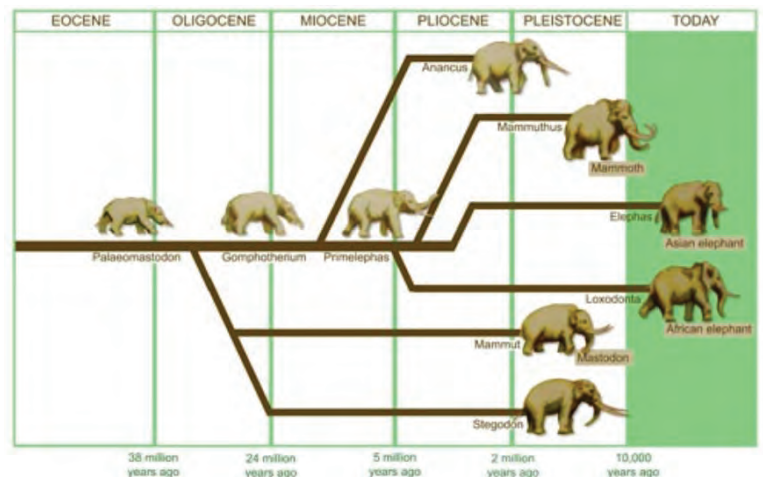
Learning Activities

Preparation

1. Lead a short discussion with the class to understand their current knowledge of elephants. Ask students to define the term trait. A trait is a feature that an animal possesses. What are some elephant traits? Write their ideas on the board. *Elephants have ears, trunks, large bodies, big brains, tails, tusks, etc.* What do you think is the one trait that makes an elephant an elephant? *Yes, the trunk.*

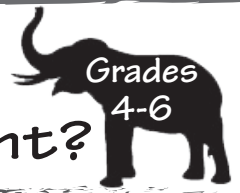
2. Elephants are classified in the Order Proboscidae and in the Family Elephantidae. Have students examine the chart at: <http://www.sanparks.org/parks/kruger/elephants/about/evolution.php>. Name the most recent, direct relative of the modern day African and Asian elephant? *Primelephas*. What happened to African and Asian elephants after *Primelephas*? *They evolved along separate lines in different parts of the world.*

3. Let's take a look at mammoths, an early relative of the elephant. Visit http://www.ucmp.berkeley.edu/mammal/mammoth/about_mammoths.html to see an image of the mammoth. What features does it share with modern day elephants? *Pillar-like legs, tusks and an extended flexible nose (trunk), tails, large bodies. They share many elephant traits and evolved alongside mammoths.* What features did mammoths have that were different from modern day elephants? *Mammoths had fur and very long, up-curved tusks and are extinct.*





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4. Present the Habitats and Diet PowerPoint (available as a separate download in this lesson). Students will learn the habitats and diet of modern day elephants and their distant cousin the mammoth. After the PowerPoint, lead a short discussion to review what they have learned. Ask students in what habitats are African and Asian elephants found? *Savannas and forest.* Where were mammoths found? *Tundra grasslands.* Continue to explain that in the past, all elephants were adapted to living in the vast grasslands. As climate changed, hunting pressure and human populations grew, elephants adapted to different habitats for survival. Today, African elephants are found on African savannas, Asian elephants live in the tropical forests and mammoths were residents of the Ice age tundra grasslands. Their habitats supplied them with the resources they needed to survive such as food and water.

Activity

5. Break students into small groups. Print off one copy of each activity sheet for every group and distribute them to each group.
6. Students will use the information on Activity Sheet 4 to identify the adaptations found on each species in the chart on Activity Sheet 5. There are thirteen traits applicable to each species. Use the Answer Key included in this lesson.

Discussion

7. After every group has completed their activity sheet, you will lead a summary discussion using the questions below on elephants and mammoths to encourage the students to critically think about adaptations, their purpose, and the relationships between these species.

SUMMARY DISCUSSION

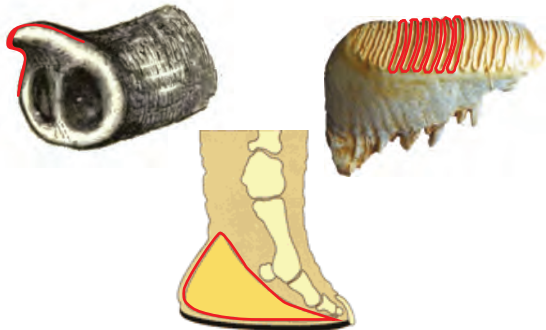
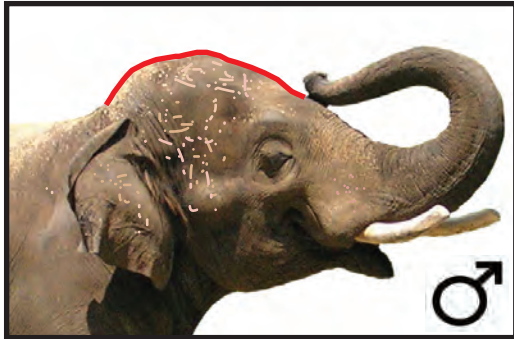
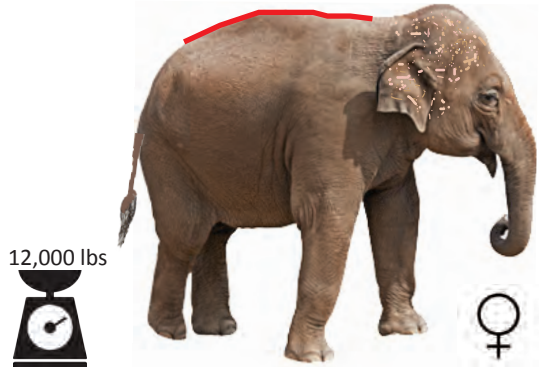
8. Review the elephant traits list from the beginning of this lesson to see if their knowledge has changed. Correct any misinformation students might have guessed. What would we add to the list or take away? *Did they say thick padded feet, ridged molar teeth, dipped shaped backs, different shaped skulls. Any additions to mammoth traits? Long, up-curved tusks, small ears, fur.*
9. Why do African and Asian elephants have different traits?
African and Asian elephants split apart from the evolutionary tree 5 million years ago. Since then, they have remained relatively the same except for a few different adaptations such as ear size, dental pattern, small difference in body shapes. These minor changes in traits are just part of the normal evolutionary process influenced by environmental factors that ensures survival in their natural habitat.
10. Based on Activity Sheet 5, how many traits do each species share with the other two? *African elephants and Asian elephants share 5 out of 13 traits. African elephants and mammoths share 6 out of 13 traits. Asian elephants and mammoths share 9 out of 13 traits.* What does this information tell us about the relationships between the species? *Asian elephants and mammoths are more closely related in the elephantidae family than any other pairing. This is confirmed when you look at the evolutionary chart showing that the Asian elephant and the mammoth were together for a longer period of time than the African elephant which split off almost 500,000 years earlier.*

Extensions

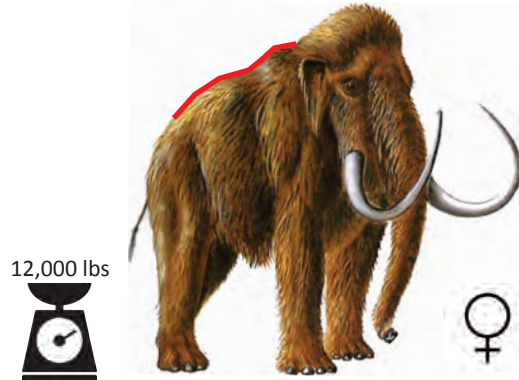
- <http://www.elephantconservation.org/>
http://www.upali.ch/differences_en.html
<http://blog.ted.com/2013/05/30/10-fascinating-facts-about-woolly-mammoths/>

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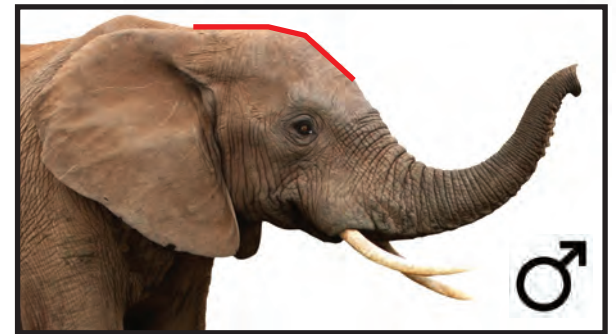
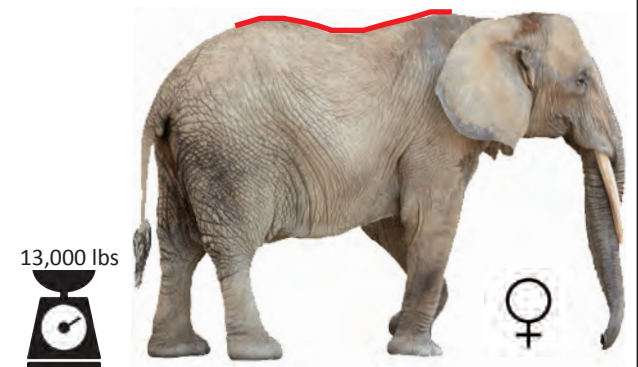
Asian Elephant



Mammoth

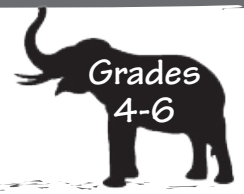


African Elephant





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Activity Sheet 5

Using Activity Sheet 5 as a visual guide, identify each trait that is applicable to each species below.

- Mammal
- Trunk
- Thick padded feet
- Tail
- Large terrestrial animals
- Small ears
- Large ears
- Oval-ridged teeth

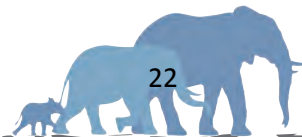
Mammoth

- Diamond-ridged teeth
- Two trunk-fingers
- One trunk-finger
- Humped back
- Dipped back
- Sloped back
- Domed head
- Flat head

Asian elephant

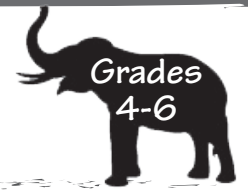
- Males only large tusk
- Males & females large tusk
- Light colored freckles
- Fur
- Wrinkles
- Savannah habitat
- Forest habitat
- Tundra grasslands habitat

African Elephant





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Answer Key

Mammal
 Trunk
 Thick padded feet
 Tail
 Large terrestrial animals
 Small ears
 Large ears
 Oval-ridged teeth

Mammoth

Mammal
Trunk
Thick padded feet
Tail
Large terrestrial Animals
Small ears
Oval-ridged teeth
One trunk-finger
Sloped back
Domed head
Male/female tusk
Fur
Tundra grasslands

Diamond-ridged teeth
 Two trunk-fingers
 One trunk-finger
 Humped back
 Dipped back
 Sloped back
 Domed head
 Square head

Asian elephant

Mammal
Trunk
Thick padded feet
Tail
Large terrestrial animals
Small ears
Oval-ridged teeth
One trunk-finger
Humped back
Domed head
Males only tusk
Light color freckles
Forest habitat

Males only large tusk
 Males & females large tusk
 Light colored freckles
 Fur
 Wrinkles
 Savannah habitat
 Forest habitat
 Tundra grasslands habitat

African Elephant

Mammal
Trunk
Thick padded feet
Tail
Large terrestrial animals
Large ears
Diamond-ridged
Two trunk-fingers
Dipped back
Square head
Male/female tusk
Wrinkles
Savannah habitat

