Camel Lesson Plan

Summary

In this lesson, students explore camels as a subject of study, learning about their evolutionary origins, unique adaptations, and their role in human history. The class will review how camels survive extreme environments, how they contributed to trade and warfare, and the ecological issues caused when they were introduced to new lands.
https://www.youtube.com/live/-x7sd00_qM4?si=VyGZMXVxug1ajE5O

Objective

Students will be able to explain camel adaptations for survival, identify their evolutionary history, and evaluate their role in human societies past and present.

Standards

NGSS MS-LS4-4: Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving.

CCSS.ELA-LITERACY.RST.6-8.2: Determine the central ideas of a text and provide an accurate summary.

C3.D2.His.2.6-8: Classify series of historical events and developments as examples of change and continuity.

Materials

- Vetted 9 Fun Facts on Camels
- Worksheet
- Optional: projector or printed images of camels, whiteboard, student notebooks

Activity

- Provide students with the 9 Fun Facts list.
- Read through the list together, pausing to discuss each fact.
- Have students complete the worksheet, answering short-answer and fill-in-the-blank questions.
- Facilitate a class discussion about how camel adaptations are examples of survival in extreme environments and how humans have relied on them.

Introduction

Begin the lesson by asking students what they already know about camels and their humps. Clarify misconceptions such as the idea that humps store water. Introduce the focus of the lesson: how camels evolved, adapted, and influenced human history.

Assessment

- Students complete the worksheet accurately.
- Participation in class discussion demonstrates understanding of camel adaptations and historical significance.
- Students explain in their own words how camels exemplify biological and historical adaptation.

Rubric

Criteria	Excellent (4)	Good (3)	Fair (2)	Poor (1)
Content Understanding	Demonstrates clear understanding of camel adaptations and history	Shows mostly accurate understanding with few errors	Shows partial understanding with some errors	Limited or inaccurate understanding
Discussion Participation	Actively contributes to discussion with relevant points	Contributes occasionally with some relevance	Contributes rarely with limited relevance	Does not contribute or is off-topic
Worksheet Completion	All questions answered accurately and completely	Most questions answered accurately	Some questions answered with limited accuracy	Few questions answered or mostly incorrect
Technology Connections	Consistently integrates digital tools effectively	Uses digital tools with minor issues	Uses digital tools with significant support	Rarely or never uses digital tools

9 Fun Facts

1. Camels evolved in North America about 44–50 million years ago, spread into Asia and South America, and went extinct in North America. Yet they remained genetically flexible enough to interbreed across species lines, producing hybrids with odd humps, and even camel-llama crosses called “camas.”
https://betterplaneteducation.org.uk/factsheets/camel-camel-history

2. Camels belong to the family Camelidae, which includes llamas, alpacas, vicuñas, and guanacos. They are set apart by their unique two-toed feet with big pads instead of hooves, their split lips built for gnarly plants, and the habit of regurgitating cud and spitting when annoyed.
https://www.britannica.com/animal/camel

3. Males stand taller and bulkier than females, with thicker necks and shaggier coats, and during mating season they turn bizarre. Male dromedaries inflate a pink throat sac called a dola and push it out of their mouths like a balloon while making loud gurgling sounds. At the same time they whip urine-soaked tails and foam copious saliva, a cocktail of behaviors female camels apparently find irresistible.
https://www.todayifoundout.com/index.php/2015/02/hey-baby-gross-pink-sac-hanging-mouth-turn/

4. Camels can lose 30% of their body water and keep going (most mammals die at 15%). One key is their oval red blood cells. Most mammals have round ones that clump like marbles when blood gets thick from dehydration. Camel cells are stretched like tiny pills, so even when the blood gets syrupy, they slide past each other smoothly without clogging. This keeps oxygen moving and prevents strokes or organ failure even in extreme dehydration.
https://www.nhm.ac.uk/discover/how-do-camels-survive-in-deserts.html

5. Camels can drink 114 liters (30 gallons) of water in one go, and they store it in the fat of their humps. They hold onto that water by producing urine as thick as syrup, poop so dry it can be burned immediately, and by reclaiming moisture from each breath using folds inside their noses.
https://www.britannica.com/story/do-camels-store-water-in-their-humps

6. Camels do things all other land mammals cannot. Wild Bactrian camels can drink salty water that would kill every other land mammal, and all camels have armored mouths lined with cone-shaped papillae that let them crunch through thorny branches like potato chips.
https://www.yahoo.com/entertainment/camels-eat-cacti-super-gross-230013082.html

7. Camel body temperature can swing 6°C daily without harm, delaying sweating until 49°C (120°F). Their coat does not trap heat, it insulates and blocks the sun's heat from reaching their skin, and even shifts lighter in summer to reflect sunlight. Their long legs lift their bellies away from scorching sand that can hit 70°C (158°F). And when they lie down, they rest on a thick, calloused pad on their chest called the "pedestal." Instead of pressing their whole underside into the hot ground, this pad props them up just enough to let air circulate beneath, cooling them without effort.
https://www.nhm.ac.uk/discover/how-do-camels-survive-in-deserts.html

8. Domestication made camels vital for survival and trade. Their water-conservation superpowers make them better than cattle in a warming world. When people introduce them where they do not belong, like Australia, they multiply into destructive invasive herds.
https://www.bbc.com/travel/article/20180410-the-strange-story-of-australias-wild-camel

9. Camels were the backbone of the Silk Road, carrying goods and ideas across continents. They also served as weapons of psychological warfare, since their smell and appearance terrified horses. Cyrus the Great famously used camels at the Battle of Thymbra in 547 BCE to rout enemy cavalry.
https://factsanddetails.com/china/cat2/sub90/item1104.html

Worksheet

Name: _____ Date: _____

Review

1. Where did camels first evolve and what happened to them there?

2. Which animals are part of the camel family?

3. What is unusual about male dromedaries during mating season?

Discussion

4. Why can camels survive losing 30% of their body water when most mammals cannot?

5. How do camels store water differently than most people think?

6. Why are camels' mouths considered "armored"?

Data Analysis

7. At what temperature do camels begin to sweat, and how does their coat help them survive desert heat?

8. What problems did feral camels cause in Australia?

Reflection

9. How did camels shape human history on the Silk Road and in battle?

10. What can we learn from camels about surviving in harsh environments?