



BEFORE WE DROVE CARS WE RODE ANIMALS: A LOOK INTO THE HISTORY OF ANIMAL TRANSPORTATION

INTRODUCTION

Before the time when we could hop on a plane for a few hours to get to the other side of the world or take a quick drive to the store, humans relied on animal-based transportation. In this lesson students will examine the history of animal-based transportation and discover why many cultures increasingly rely on machines for transportation. Students will contrast modern methods of transportation with those of the past to examine the pros and cons how transportation has developed in the modern world. Finally, students will design their own imaginary animal with characteristics that will meet the transportation needs for their own lives. They will compare their designs to modern mechanical transportation in order to understand.

LESSON OVERVIEW

Grade Level & Subject: K – 4 Social Studies, Civics, Geography, Art

Length: 1 - 2 Class Periods

Objectives:

After completing this lesson, students will be able to:

- Evaluate the positive and negative attributes of various transportation methods
- Consider the abilities of animals to be used for transportation
- Comprehend the issues people are confronted with when deciding on a feasible transportation method
- Create their own ideal form of transportation

National Standards Addressed:¹

This lesson addresses the following [National Standards for History](#) from [The National Center for History in the Schools](#):

- **Content Standard: [NSS-USH.K-4.4 THE HISTORY OF PEOPLES OF MANY CULTURES AROUND THE WORLD](#)**
 - Understands selected attributes and historical developments of societies in Africa, the Americas, Asia and Europe

¹ <http://www.educationworld.com/standards>.

- Understands major discoveries in science and technology, some of their social and economic effects, and the major scientists and inventors responsible for them

This lesson addresses the following [National Geography Standards](#) from [The National Geographic Society](#):

- **Content Standard:** [NSS-G.K-12.1 THE WORLD IN SPATIAL TERMS](#)

As a result of their activities in grades K-12, all students should:

- Understand how to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.

This lesson addresses the following [National Standards for Arts Education](#) from the [Consortium of National Arts Education Associations](#):

- **Content Standard:** [NA-VA.K-4.3 CHOOSING AND EVALUATING A RANGE OF SUBJECT MATTER, SYMBOLS, AND IDEAS](#)

Achievement Standard:

- Students select and use subject matter, symbols, and ideas to communicate meaning

- **Content Standard:** [NA-VA.K-4.6 MAKING CONNECTIONS BETWEEN VISUAL ARTS AND OTHER DISCIPLINES](#)

Achievement Standard:

- Students identify connections between the visual arts and other disciplines in the curriculum

Materials Needed:

- **Reproducible #1 – Transportation Around the World**
- **Reproducible #2 – Animal Comparison: Who Travels Best?**
- **Reproducible #3 - Packet of Animal Facts**
- **Reproducible #4 – When is this Transportation Best?**
- **Reproducible #5 – When is This Transportation Best Answer Key**
- Blank white paper
- Colored pencils/crayons/markers
- World Map

Assessment:

Students will be assessed through the following activities:

- Participation in warm-up activity
- Participation in activity questions
- Thoroughness of reasoning and creativity in producing a picture of an ideal transportation animal
- Depth and insight involved in presentation of the animal each student has created
- Participation in Wrap-Up questions
- Participation and level of thought involved in extension activity

LESSON BACKGROUND

Relevant Vocabulary:

- **Fossil Fuels:** a fuel (as coal, oil, or natural gas) formed in the earth from plant or animal remains²
- **Fuel:** 1. Combustible matter used to maintain fire, as coal, wood, oil, or gas, in order to create heat or power. 2. Something that gives nourishment; food. 3. An energy source for engines, power plants, or reactors.³
- **Public Transportation:** Any form of transportation that charge set fares, run fixed routes, and are available to the public such as buses, subways, ferries, and trains.⁴
- **Transportation:** Any device used to move an item from one location to another. Common forms of transportation include planes, trains, automobiles, and other two-wheel devices such as bikes or motorcycles.⁵

Background Information:

For all of human existence, **transportation** has been of the utmost importance. From the transport of a nomadic community across barren lands to the current import of oil to America, human societies have always been forced to devise ways to move items from one place to another. It seems only natural that in a landscape so full of biodiversity, early humans would have turned to animals as a form of transportation. Many wild creatures have truly amazing traits that make them ideal for transport. For example, Peregrine falcons can regularly reach a flying speed of 60 miles per hour and can go as fast as 200 miles per hour when bulleting towards their prey⁶ and Alaskan huskies can travel 150 miles in one day.⁷ The trunk of the African elephant can lift 800 pounds⁸ and camels can go several weeks without water.⁹ There is such a large diversity of skills in the animal kingdom that it was just a matter of determining which animals had the best qualities and the most convenient dispositions for domestication.

² "Fossil Fuels." *Merriam-Webster Online Dictionary*. Retrieved June 30, 2011 from <http://www.merriam-webster.com/dictionary/fossil%20fuel>

³ fuel. (n.d.). *Dictionary.com Unabridged*. Retrieved April 05, 2011, from Dictionary.com website: <http://dictionary.reference.com/browse/fuel>.

⁴ public transportation. (n.d.). *Dictionary.com's 21st Century Lexicon*. Retrieved April 05, 2011, from Dictionary.com website: [http://dictionary.reference.com/browse/public transportation](http://dictionary.reference.com/browse/public%20transportation).

⁵ "What Is Transportation? Definition and Meaning, Business Dictionary." *BusinessDictionary.com - Online Business Dictionary*. Retrieved 05 April 2011 from <http://www.businessdictionary.com/definition/transportation.html>.

⁶ "Frequently Asked Questions." *Peregrine Watch*. Retrieved June 30, 2011 from <http://falconcam.travelers.com/falcon-faqs.html>

⁷ "Description and Origin of the American Husky." *Mushing*. Retrieved June 30, 2011 from <http://www.mushing.be/alaskanhusky.html>

⁸ "How Much Can an Elephant Lift?" *Elephant*. Retrieved June 30, 2011 from http://www.elephant.se/how_much_weight_can_an_elephant_lift.php

⁹ "Bactrian Camel." *National Geographic Animals*. Retrieved June 30, 2011 from <http://animals.nationalgeographic.com/animals/mammals/bactrian-camel/>

The first animal to be domesticated was the dog approximately 31,000 years before present (B.P.)¹⁰ The domestication of the dog was followed by livestock animals that could be used both for meat and for transporting people and goods such as the sheep, goat, cow, horse, camel and llama. The horse was perhaps one of the most important domestications, for it was especially important in warfare and colonization. During wartime, messages and troops were transported easier and quicker with the power of domesticated horses. This important advantage during wartime helped contribute to the strength and longevity of the Persian Empire, as opposed to empires seen previously. Horses allowed for a sophistication in technique, weaponry and strategy that was not seen previously.

During times of peace, the domestication of horses also allowed societies to travel further across lands to exchange ideas and technology more quickly and consistently. This helped quicken the pace of development for many societies that might not have come into contact as easily if limited by transportation. The basic standard of living for many people improved with the use of horses, especially in regards to the increase in trading capacity. Horses were very expensive to purchase and care for, and thus they became a symbol of power and status.¹¹ Horses were also beneficial to the medical community. Doctors were more quickly able to reach their patients, which saved many lives.

When the automobile was invented in 1885,¹² animal transportation gradually became obsolete for most cultures. In the United States, it is very rare to see a cattle drawn plow or a horse and buggy. For the most part, cars, trucks, ships and planes have replaced animal transportation. This replacement has both pros and cons. Mechanized transport has created a global market place in which people in the United States can have access to stylish clothes from Europe, coffee from Central America, bananas from South America, tea from Asia and oil from the Middle East all in their own American communities. However, replacing animal transport with machines has polluted our environment through the burning of **fossil fuels**. Learning about transportation is important for students because it is part of everyday life. Studying an era so different from our own when people could not hop in the car to get to a grocery store or their friends house, will help students understand the world they live in and think about transportation in their own lives.

Resources:

Horses: Introduction *PBS: Public Broadcasting Service.*

<http://www.pbs.org/wnet/nature/episodes/horses/introduction/3153/>.

Animals, Animal Pictures, Wild Animal Facts *National Geographic*

<http://animals.nationalgeographic.com/animals/>.

"The History of Transportation" *Judith Herbst, Google Books*

<http://books.google.com/books?id=u2g6Jqvz5R0C>.

Camels *New Jersey City University*

<http://faculty.njcu.edu/fmoran/camels.htm>.

¹⁰ "Dog History." *Archaeology*. Retrieved June 30, 2011 from

<http://archaeology.about.com/od/domestications/qt/dogs.htm>

¹¹ McLaughlin, J. Andrew. "The Impact of the Equine Revolution." 2001. Retrieved 06 April 2011 from

<http://visopsys.org/andy/essays/equine-revolution.html>.

¹² "Who Invented the Automobile." *Everyday Mysteries from the Library of Congress*. Retrieved June 30, 2011 from

<http://www.loc.gov/rr/scitech/mysteries/auto.html>

LESSON STEPS

Warm-up: *Thinking about Transportation*

1. What transportation do you and your family use? *Answers will include cars, walking, subways, bus, planes, trains, bicycles.*
2. What other kinds of transportation do people around the world use? *As students answer, display a copy of the world map and located each place as students answer or as additional answers are supplied by the teacher. Name common ones they might not have said in the above response.*
3. After students have come up with as many ideas as they can, mention these lesser known forms of transport. As each is mentioned, show the corresponding picture from
Reproducible #1 – Transportation Around the World.
 - a) In India, auto rickshaws, small three wheeled vehicles are the most popular and inexpensive form of hired transportation. These vehicles can fit into small alleyways and pass cars stuck in traffic.
 - b) In Pakistan, large decorated trucks are used to transport people, livestock, and building materials.
 - c) Feluccas are the sailboats that have been used to travel the Nile River in Egypt since Pharaohs; they use the breeze and the river's current to move.
 - d) Segways are electrically powered and a common form of simple and fun transportation introduced to the public in 2001 in the United States.¹³
4. Ask students, "Have you ever heard of animals being used for transportation? What types of animals?" *Answers will vary but may include: Horses, camels, elephants, llama, etc. Introduce others that were not mentioned, such as that elephants are extremely important in Thailand. They were once an essential form of transportation in battle and are now used for tours. Dogs pulling sleds over the ice were for hundreds of years the only form of transportation in Lapland and are still one of the most popular methods of travel. The horse has been used in Mongolia for about 6,000 years, and many people still use them. Humans are also a form of transportation used in Japan; human-pulled carts carrying other people are called Rickshaws and were first used in the 1800s when the social elite used them most commonly because human labor was less expensive than horses.¹⁴*
5. Tell students, "people used to walk everywhere, but they travelled slowly and couldn't travel very far each day. Bringing many things from one place to another was very difficult." Ask students, "What do you think happened when people started using animals for travel? *They could go farther distances, carry heavier loads on the animals' backs, meet more people, interact with different societies, learn new things, have more advanced warfare, hunt more easily and less dangerously, etc.*
6. Ask students, "In terms of transportation, how are cars, planes, trains, and buses different from animals?" *Answers will vary. They will include that vehicles are faster, more comfortable, less tiring, more spacious, run on gasoline instead of food and water as fuel, need to be repaired rather than nurtured..*

Activity One: *Creating your own Transportation Animal*

1. Start out by reading the following facts to the class.
 - Camels can carry 200 pounds and walk 20 miles a day in the desert.

¹³ "17 Wonderful Ways to Get Around The World (PHOTOS)." *Breaking News and Opinion on The Huffington Post*. Retrieved 20 April 2011 from http://www.huffingtonpost.com/2010/10/05/transportation-around-the-world_n_749886.html.

¹⁴ *ibid*

- Horses and camels travel at the same speed.
 - Camels can survive for a week or longer with no water and several months without food.
 - Camels have special eye coverings and can close their nostrils so sand doesn't get in.
 - Camels can survive in temperatures from -20 degrees F to 120 degrees F!¹⁵
2. Explain to the students that food is a form of fuel that people and animals need to survive, just as cars need gasoline.
 3. Tell students, "Camels have many good qualities for transportation, but there are also some drawbacks. Can you think of some?" *They require a lot of food and water when they do eat and drink; they aren't big enough to carry more than one person; they aren't extremely fast; you have to spend time training them, etc.*
 4. Show **Reproducible #2 – Animal Comparison: Who Travels Best?** on an overhead projector. Have the class fill it out together.
 5. Ask students, "Wouldn't it be great if you could create the perfect transportation animal? What do you think this animal would be like?" *Answers will vary but may include ideas about the animal being fast, not needing a lot of fuel, big, comfortable, easily trainable, can go long periods of time without fuel, strong, doesn't get tired quickly, can survive in all different places and temperatures, can fly, can swim, look cool etc.*
 6. Give students time to do some research using **Reproducible #3 – Animal Facts** and the Internet to discover important transportation strengths and weaknesses of various animals. Have them look for things such as "fastest animal", "largest animal", etc. Use the information section as a resource to talk to them about the attributes of different animals.
 7. Pass out blank paper, and instruct the kids to draw their perfect transportation animal and label its different parts. Would it fly, run, or swim? What special powers would it have? What would it eat and drink? Tell them that their animals can contain parts of existing animals or imaginary characteristics that would allow them to provide the best transportation.
 8. Allow the students to present their creations to the class and explain how their animal functions and why it would be a good transportation animal.

Wrap Up: *Thinking about the Impossibility of Perfection*

1. Ask the students, "Do any animals that are used for transportation remind you of any machines we use for transportation today?" *Answers will vary but may include ideas about animals with wings being similar to airplanes or bigger, stronger animals like elephants being used to haul heavier materials like trucks.*
2. Have the students fill out the tables in **Reproducible #4 – When is This Transportation Best?** and help them if necessary.
3. Have students compare their answers.

Extension: *What's Best for your Town?*

1. Have the students consider their own town. What type of climate do you live in? Do you live in a city, the country, the suburbs? *Answers will vary.*

¹⁵ "San Diego Zoo's Animal Bytes: Camel." *Welcome to the San Diego Zoo*. N.p., n.d. Retrieved 30 March 2011 from <http://www.sandiegozoo.org/animalbytes/t-camel.html>.

2. How does this affect the modes of transportation people use? *Answers will vary but if students live in a city they will more likely use a subway system, if they live in the country or the country they might depend on cars, etc.*
3. As a class, discuss the different types of transportation used in their town and write them on the board. Have the students add other forms of transportation they think would be good ones.
4. Take a vote on what the students think would be the best one to use in their town.

CONCLUSION

During this lesson, students examined the many attributes involved in choosing an ideal form of transportation for a given situation. To learn about past forms of history and solidify ideas about how transportation evolved, students investigated animal-based transportation methods. Students also designed their own “ideal” transportation animals and presented their ideas to the class. They used critical analysis to study similarities between transportation animals and the various modes of transportation used today. Students then used the knowledge they acquired about the preferred features of a transport method to analyze the transportation system in their own town and brainstorm ways it could be improved.

LESSON PLAN CREDITS

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Transportation around the World







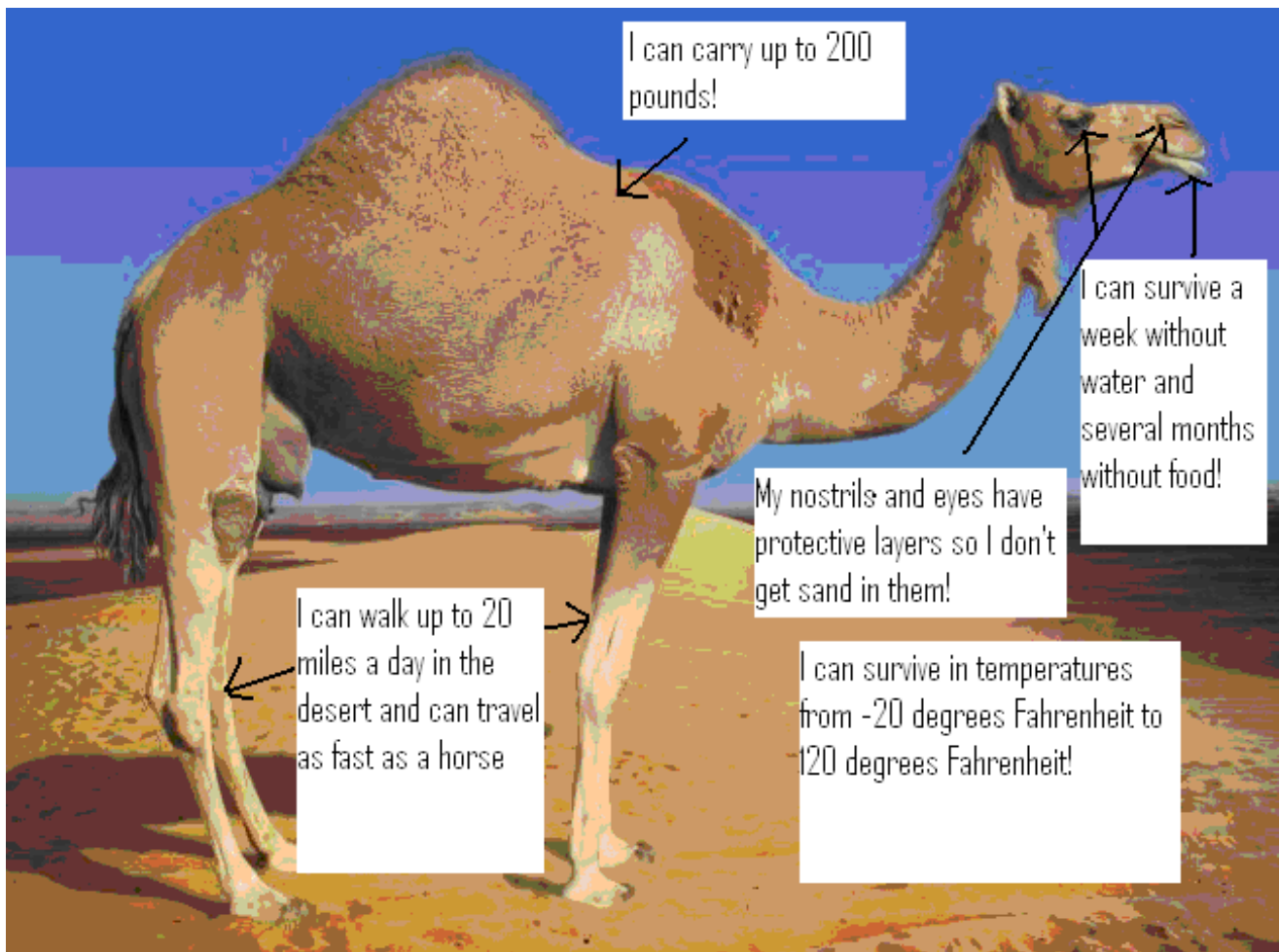


Animal Comparison: Who Travels Best?

	What are the pros of using this animal for travel?	What are the cons of using this animal for travel?	What characteristics of this animal would you want to change to make it better for transportation?
Animal of your choice #1: _____			
Animal of your choice #2: _____			
Animal of your choice #3: _____			
Animal of your choice #4 _____			

ANIMAL FACTS

Camel¹⁶¹⁷



¹⁶ "Camel Pictures and Facts." *Fohn.net*. Retrieved 20 April 2011 from <http://fohn.net/camel-pictures-facts/>.

¹⁷ "San Diego Zoo's Animal Bytes: Camel." *Welcome to the San Diego Zoo*. N.p., n.d. Retrieved 30 March 2011 from <http://www.sandiegozoo.org/animalbytes/t-camel.html>.

Peregrine Falcon¹⁸¹⁹²⁰

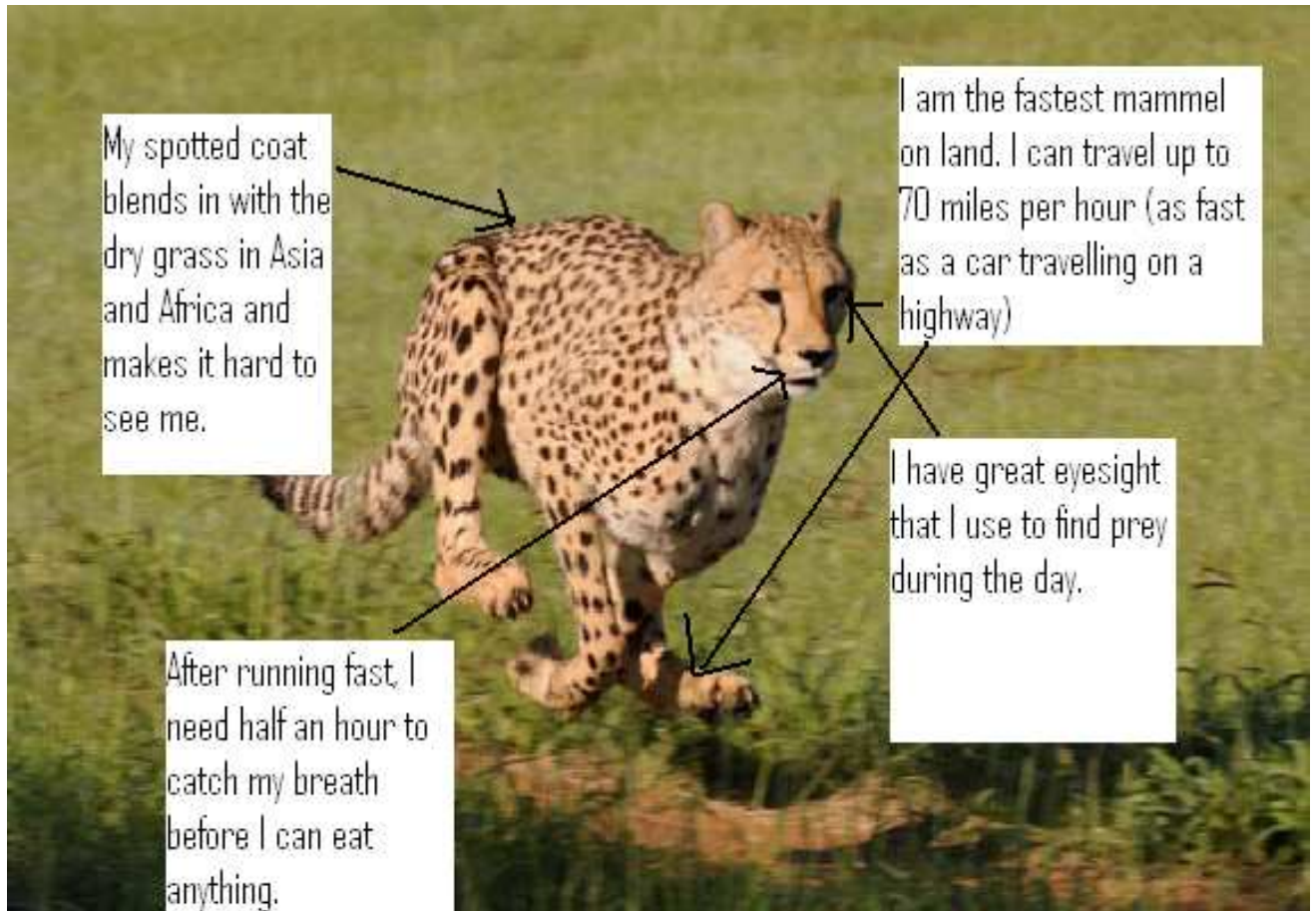


¹⁸ "Super Animals: Fast Fliers, Heavy Lifters, and High Jumpers." *Daily Nature and Science News and Headlines* | *National Geographic News*. Retrieved 06 April 2011 from http://news.nationalgeographic.com/news/2006/06/060623-super-animals_2.html.

¹⁹ "Peregrine Falcon." *The Cornell Lab of Ornithology All About Birds*. Cornell University. Retrieved 20 April 2011 from http://www.allaboutbirds.org/guide/Peregrine_Falcon/lifehistory.

²⁰ "Peregrine Falcon." *Utah Birds*. Retrieved 20 April 2011 from <http://www.utahbirds.org/birdsofutah/BirdsL-R/PeregrineFalcon6.htm>.

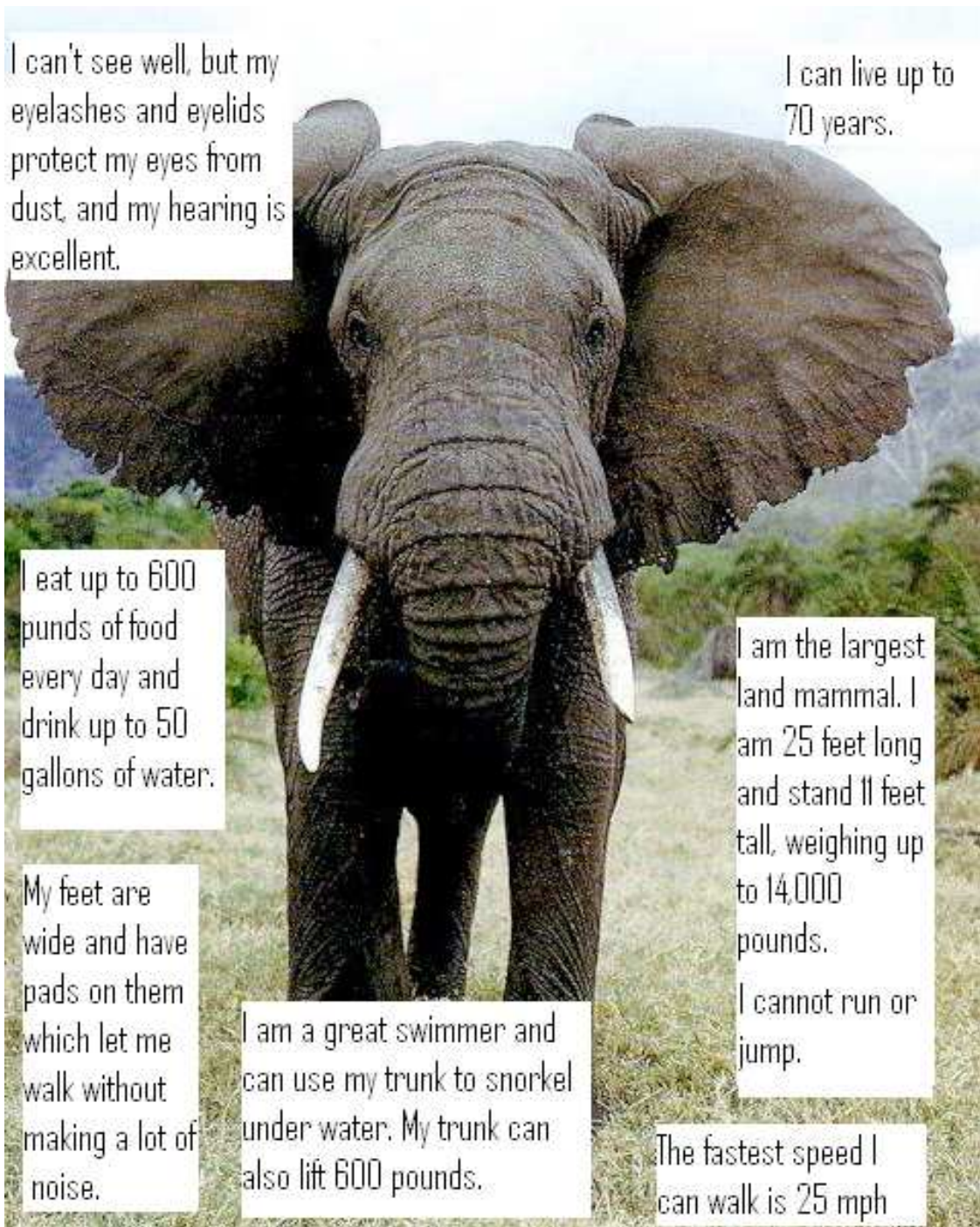
Cheetah^{21,22}



²¹ "Cheetah Facts and Pictures -- National Geographic Kids." *Kids' Games, Animals, Photos, Stories, and More -- National Geographic Kids*. Retrieved 20 April 2011 from <http://kids.nationalgeographic.com/kids/animals/creaturefeature/cheetah/>.

²² "Run for the Cheetah - Global Bros - National Geographic Kids." *Main Blog - National Geographic Kids Blogs*. Retrieved 20 April 2011 from <http://kidsblogs.nationalgeographic.com/globalbros/2009/02/run-for-the-cheetah.html>.

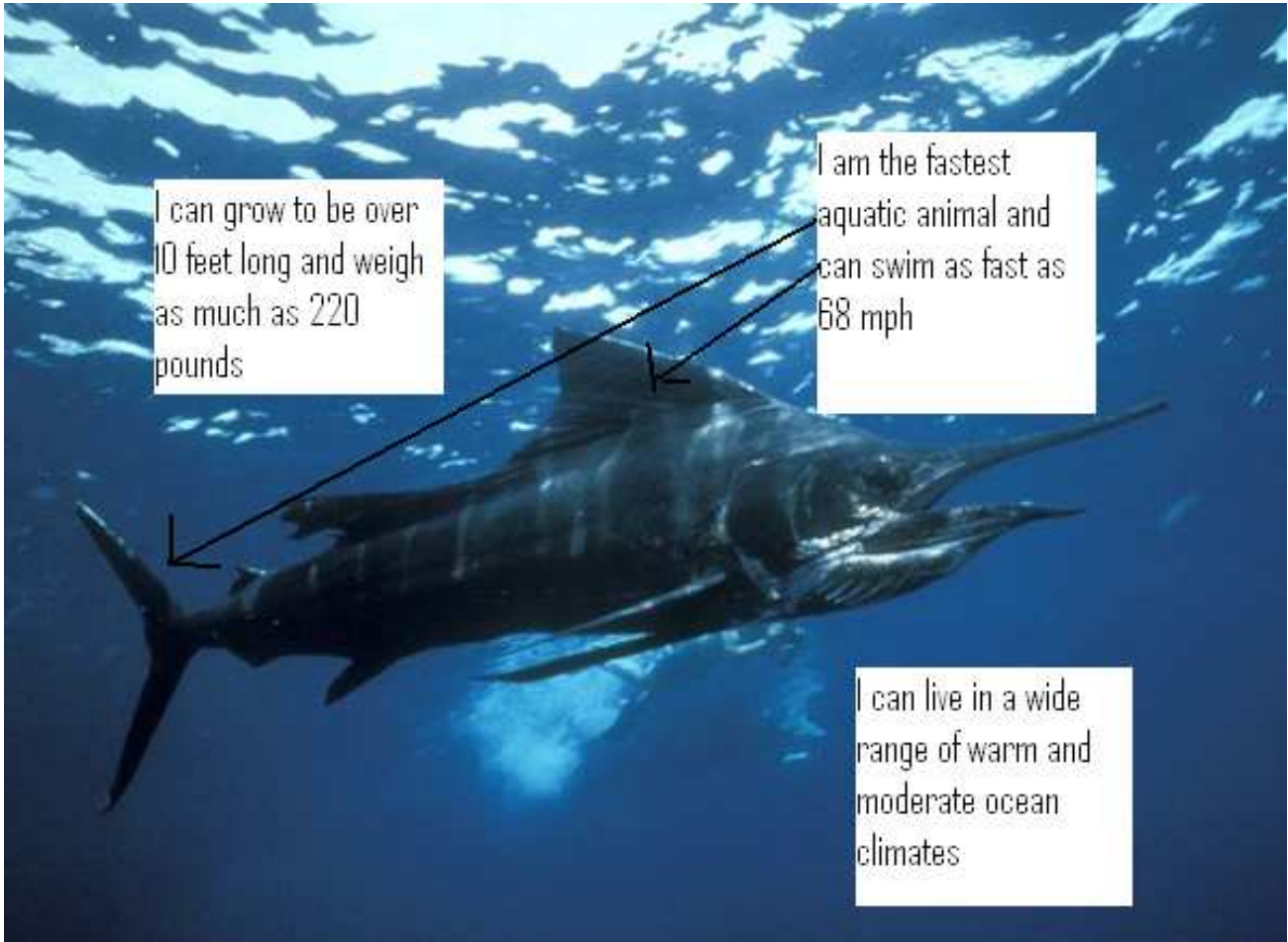
Elephant²³²⁴



²³ "Super Animals: Fast Fliers, Heavy Lifters, and High Jumpers." *Daily Nature and Science News and Headlines* | *National Geographic News*. Retrieved 06 April 2011 from http://news.nationalgeographic.com/news/2006/06/060623-super-animals_2.html.

²⁴ "African Elephant." *BioWeb Home*. Retrieved 20 April 2011 from http://bioweb.uwlax.edu/bio203/s2007/shah_rach/.

Sailfish²⁵



²⁵ "Sailfish, Sailfish Pictures, Sailfish Facts - National Geographic." *Animals, Animal Pictures, Wild Animal Facts - National Geographic*. Retrieved 20 April 2011 from <http://animals.nationalgeographic.com/animals/fish/sailfish/>.

Reproducible #4 – When is This Transportation Best?

	When is this method of transportation the most useful? Why?	When is this method of transportation difficult for travel? Why?
Bike		
Walk		
Car		
Bus		
Airplane		

Reproducible #5 – When is This Transportation Best Answer Key

	When is this method of transportation the most useful? Why?	When is this method of transportation difficult for travel? Why?
Bike	<i>In cities with bike lanes, on quiet roads, for short distances, etc.</i>	<i>If there is no lane for bicyclists, if you are in a hurry, etc.</i>
Walk	<i>In cities and towns with sidewalks, for very short distances, etc.</i>	<i>If you have to travel a long way, for people with physical disabilities, etc.</i>
Car	<i>For long distances, in places with highways, etc.</i>	<i>When the price of gas is very high, etc.</i>
Bus	<i>In cities, on long trips (Greyhound), etc.</i>	<i>If you are in a hurry, if you live in a rural areas where buses do not come very often, etc.</i>
Airplane	<i>For very long distances, to travel across oceans, etc.</i>	<i>If you have to go a short distance, etc.</i>