

# Other Subjects



# CHEETAH COMPUTATIONS

**SUBJECT AREA:**

Mathematics

**TOPICS:**

Activity 1:  
Number facts  
Averages  
Unit conversion

Activity 2:

Fractions  
Percentages

Activity 3:

Acceleration  
Velocity

**DURATION/TIME:**

Activity 1: 30 min  
Activity 2: 30 min  
Activity 3: 30 min

**RECOMMENDED PREPARATION:**

Review the 'cheetah fact sheet' in the Reference section

**MATERIALS NEEDED:**

Graph paper

**LOCATION:**

Classroom

**KEY WORDS TO REVIEW:**

Facts  
Average  
Conversion  
Unit  
Fraction  
Percentage  
Acceleration  
Velocity

## OBJECTIVE:

Learners will solve mathematical problems by using the cheetah as a guide.

## LESSON

## ACTIVITIES:

**ACTIVITY 1:**

Covers the topics number facts, averages and unit conversion. There are questions for the learners and an answer key for the teachers.

**ACTIVITY 2:**

Covers the topics fractions and percentages. There are questions for the learners and an answer key for the teachers.

**ACTIVITY 3:**

Covers the topics acceleration and velocity. There are questions for the learners and an answer key for the teachers.



### Learning Outcomes

This activity includes possible mathematics problems that centre on the cheetah. Topics include number facts, averages, unit conversions, fractions, percentages, acceleration, and velocity.

### Teaching the Lesson

These mathematics problems can be used on their own or in conjunction with the other activities in a science class. For background on cheetahs, refer to the fact sheets, especially the 'Cheetah Fact Sheet' in the Reference section.

### Cheetah Computations:

#### Activity 1 - number facts, averages and unit conversion

1. A cheetah can cover 7-8 meters in each stride. If a large cheetah that covers 8 meters in a stride were to run 200 meters, how many strides would it take? At what speed is the cheetah running? (Assume a cheetah runs 4 strides/sec.) (**Answer: 32 m/sec.**)

A second cheetah can cover only 7 meters in a stride. How many strides would it take to run 200 meters? How fast is the cheetah running? How many seconds more does it take the second cheetah to run 200 meters? (**Answer: 28 m/sec.**)

2. At maximum speed (110 km/h), how long will it take a cheetah to run a distance equal to the diameter of the Earth? (The earth's diameter is 12,700 km). (**Answer: 115 hr.**)
3. If a cheetah runs 110 km/h, how many seconds will it take for the cheetah to run 300 meters? (**Answer: 9.8 sec.**)
4. If a cheetah and a human were to run 100 meters, how long would the cheetah wait at the finish line for the human to finish? Assume the cheetah runs 30 m/sec and the human 10 m/sec. **Note:** To increase the difficulty level of this problem give learners the speed in km/h and ask them to convert the speed to m/sec. (**Answer: 6.7 sec.**)
5. If a cheetah kept in captivity eats 2 kg of meat a day, how many kilograms of meat will it eat in a year? How many grams? (There are 365 days in a year) (**Answer: 730 kg/year, 730,000 g/year**)
6. If a cheetah weighs 300 g at birth and 45 kg when full grown, how much weight will it gain? (**Answer: 44.7 kg or 44,700 g**)



7. If a cheetah is 219 cm from the tip of its nose to the end of its tail and its tail is 84 cm long, how long is the cheetah's body? (**Answer: 135 cm**)
8. If the gestation period (pregnancy) for a cheetah is 95 days, would a cheetah be pregnant for 20 weeks? (**Answer: 13.6 weeks, no**)
9. In the captive population in 1992, 180 cubs were born in 55 litters. What was the average litter size? If you were to round this figure to a whole number, what would the average litter size be? (**Answer: 3 cubs/litter**)

*Activity 2 - fractions and percentages*

1. In the Serengeti National Park, 20 cheetah cubs are born in a study area and 90 percent die before they are 3 months old. How many of the cubs survive? (**Answer: 2 cubs**)
2. Namibia has the largest number of cheetahs in the world. A total of 2,500 wild cheetahs live in Namibia. The world's population of wild cheetahs is approximately 15,000 animals. What percentage of the total population lives in Namibia? If two-fifths of the cheetahs found in Namibia die or are killed, how many will be left in Namibia? How many cheetahs will be left in the world?  
(**Answer: 20%, 1,500 in Namibia, 14,000 world**)
3. In 1996, there were 2,500 captive cheetahs in the world. What percentage of the world population of cheetahs does this represent? (Assume the total wild population is 15,000 animals) (**Answer: 17% of the world population**)
4. Cheetahs successfully catch half of the prey they hunt. How many times would a cheetah have to hunt in order to catch 5 animals? (**Answer: 10 attempts**)
5. The following is a list of all the cheetahs in one study area that had cubs, the number of cubs each one had, and the number that survived the first 3 months.

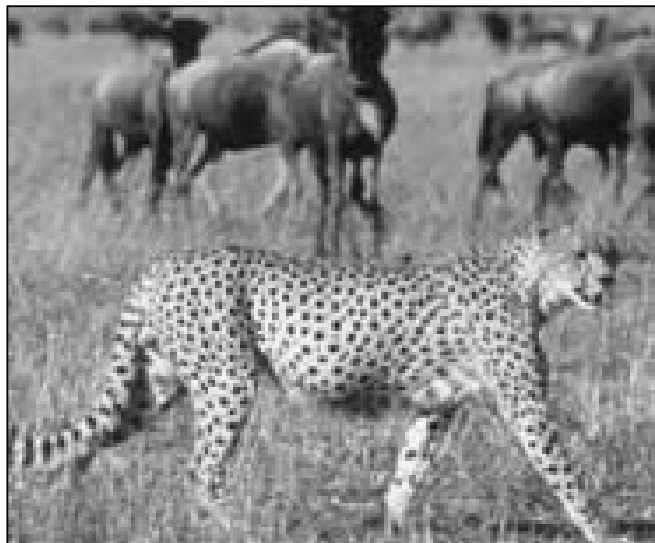
<u>Cheetah</u>	<u># of Cubs Born</u>	<u># of Cubs Alive after 3 Months</u>
Malkia	3	1
Sukari	6	0
Gizzy	2	2
Khama	5	3
Tamu	4	4

- How many cubs were born in this area? (**Answer: 20 cubs**)
- What was the average number of cubs born? (**Answer: 4 cubs/litter**)
- How many cubs survived the first 3 months? (**Answer: 10 cubs**)
- What percentage of the cubs did not live to be 3 months old? (**Answer: 50%**)
- Which mother successfully raised the most cubs? (**Answer: Tamu**)
- Which of the mothers raised the highest percentage of her cubs?  
(**Answer: Gizzy and Tamu**)



*Activity 3 - acceleration and velocity*

1. If a cheetah can go from 0 km/h to 72 km/h in 2 seconds, what is its rate of acceleration? (Assume a constant rate of acceleration.) If prior to acceleration the cheetah's initial velocity was 5 m/sec, what is its rate of acceleration over 2 seconds?  
**(Answer: 10 5m/sec<sup>2</sup>, 7.5m/sec<sup>2</sup>)**
2. What is the distance in meters travelled by a cheetah accelerating from 0 km/h to 72 km/h in 2 seconds? What is the distance travelled if the cheetah's initial velocity was 5 m/sec?  
**(Answer: 20 metres travelled, 25 metres travelled)**
3. Assume a cheetah runs at 20 m/sec and a wildebeest at 15 m/sec, the wildebeest is 60 meters ahead of the cheetah, how long before the cheetah catches up with the wildebeest?  
**(Answer: 12 sec.)**
4. A resting cheetah sees a wildebeest 60 meters away. How long before it catches the wildebeest? (Assume the cheetah can accelerate at 20 m/sec<sup>2</sup>.) **(Answer: 16.7 sec.)**



# HOW FAST IS A CHEETAH?



**SUBJECT AREAS:**

Physical Education  
Mathematics

**DURATION/TIME:**

Discussion: 10 minutes  
Activity 1: 35 min

**RECOMMENDED  
PREPARATION:**

Activity 1:  
Review the sheet 'a cheetah's  
speed' in the Reference section

Activity 2:  
Set up a 28 meter track and  
photocopy the worksheet 'how fast  
is the cheetah?' for each learner.

**MATERIALS NEEDED:**

Activity 2:  
Track  
Clock/watch (with a second hand)  
Photocopies of worksheets for each  
learner

**LOCATION:**

Classroom &  
Outdoors

**KEY WORDS TO REVIEW:**

Adaptations  
Unique  
Stride  
Sprinter

## OBJECTIVE:

Learners will compare their speed to the cheetah's and develop an appreciation for the cheetah's unique adaptations.

## LESSON

## ACTIVITIES:

**ACTIVITY 1:**

Learners will discuss the cheetah's speed and the adaptations cheetahs have that make them the fastest land animals.

**ACTIVITY 2:**

Learners will compare their speed to the speed of the cheetah's by running on a 28 meter track and timing themselves for various activities. Learners will complete the worksheet 'how fast is the cheetah?' with the information gathered.



### Learning Outcomes

The learners will develop an appreciation for the cheetah's unique adaptations and amazing speed by comparing their speed to the cheetah's.

### Teaching the Lesson

Outside setup a 28 meter track. You will also need a stopwatch or clock with a second hand and a tape measure.

#### Activity 1 – a cheetah's adaptations for speed

Have the learners review the fact sheet (found in the Reference section) 'the cheetah's speed' to review the unique adaptations cheetahs have that allows them to be the fastest land animal. This information will allow the learners to complete the worksheet 'how fast is the cheetah?'

#### Activity 2 – how fast is the cheetah?

Learners will time themselves in various events on the 28 meter track in order to complete the worksheet.

#### Time the learners on the following events:

- Run 28 meters (on two legs)
- Run 28 meters (on four legs)

#### Also:

- Measure the learner's distance of one stride
- Take a breathing rate when the learners are resting
- Run for three minutes, then take a breathing rate

#### Answers to Worksheet – how fast is the cheetah?

Note: answers will vary depending on individual times

1. A sprinter can run 40 km/h.
2. Individual answer
3. Individual answer  
It takes cheetah 7 strides to cover 56 meters.
4. A cheetah's breathing increases by 90 breaths per minute.  
It is a 60% increase.  $(90 / 150 * 100)$   
Individual answers





Worksheet - how fast is the cheetah?

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Instructions:** Today you are going to compare your speed to that of the fastest animal on land, the cheetah. Remember, the cheetah has many special adaptations to its body that help it run so fast. As you are running and working on the problems today, think of the differences between your body and the cheetah's which help it run so much faster than you! Review the fact sheet 'the cheetah's speed' with your teacher before you begin in order to help you answer some of these questions.

**Cheetah Olympics:**

1. A cheetah can run up to 110 km/h.  
A sprinter can run \_\_\_\_\_ km/h.
2. At 100 km/h, a cheetah can run 28 meters in 1 second.  
I can run 28 meters on two legs in \_\_\_\_\_ seconds and on four legs in \_\_\_\_\_ seconds.  
How many seconds faster can a cheetah run this distance? \_\_\_\_\_  
How much faster can a cheetah run this distance in a percent? \_\_\_\_\_  
*(Example: If you run 28 meters in 9 seconds, the cheetah is 8 seconds faster.  
Divide 8 by 9 to find the percent that the cheetah is faster.)*
3. A cheetah can cover 8 meters in one stride.  
I can cover \_\_\_\_\_ meters in one stride.  
*(A stride is one cycle of sequential footsteps,  
that is, two steps for a human and four steps for a cheetah.)*  
How many more meters can a cheetah cover in a stride than you? \_\_\_\_\_  
How many more strides does it take you to cover 8 meters? \_\_\_\_\_  
How many strides does it take a cheetah to run 56 meters? \_\_\_\_\_
4. A cheetah's breathing rate goes from 60 breaths per minute to 150 breaths per minute after running.  
How much does the cheetah's breathing increase? \_\_\_\_\_  
What percentage increase is this? \_\_\_\_\_

Count your breath rate before and after running for 3 minutes. To count your rate, place your hand on your chest where your bottom ribs meet. Count one breath for each time your chest rises. Count the number of breaths you take in one minute.

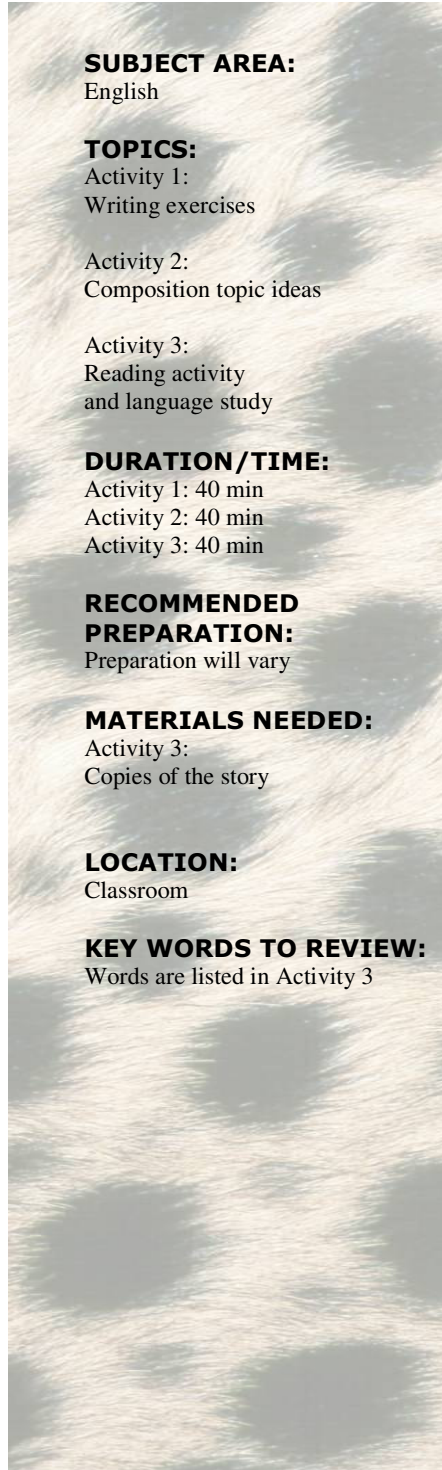
- What is your resting breath rate per minute? \_\_\_\_\_  
What is your breath rate after running for 3 minutes? \_\_\_\_\_  
How much did your breathing rate increase? \_\_\_\_\_  
What percentage increase is this? \_\_\_\_\_





# WRITING ABOUT CHEETAHS

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## OBJECTIVE:

Learners will develop language skills and expand their vocabulary through creative writing and thinking.

## LESSON

## ACTIVITIES:

### ACTIVITY 1:

There are 7 different ideas listed for writing exercises for learners

### ACTIVITY 2:

There are 4 ideas listed for composition topics

### ACTIVITY 3:

Read the story 'how the cheetah got its spots' and answer the 'language study' worksheet.



### *Learning Outcomes*

These activities are designed to develop language skills and to help learners realize their relationship with nature through creative writing and thinking.

### *Teaching the Lesson*

The expression of our relationships with nature is an important way for us to learn more about how we feel toward the natural world and to clarify these relationships. Creative writings, poems, essays, and compositions provide learners with the means to share their attitudes, beliefs, and fears about the environment and the plants and animals with which they share the world. Words and phrases associated with wildlife conservation and environmental issues have implied and emotional connotations as well as literal meanings. Therefore, an understanding of vocabulary words associated with wildlife conservation and the environment is necessary to express these ideas.

Suggested activities in this subject area are focused on the development of communication skills and expansion of the learners' vocabularies. Composition topics are designed to encourage learners to explore their relationships with the natural world, understand their responsibilities as stewards of the land, and appreciate the importance of predators in their societies.

The vocabulary list used in these activities is located in the Reference section. Educators and learners may wish to review the reference materials within this section in order to provide background information for essays and compositions.

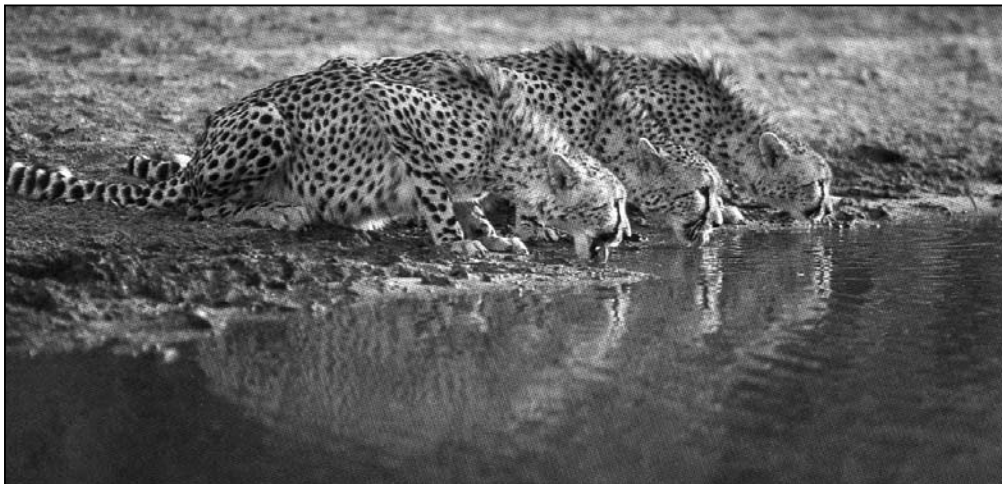




*Activity 1 - writing & reading exercises*

1. Write down all the adjectives your class can think of to describe a cheetah. Have each learner write a poem or short paragraph using 10 to 15 of these words.
2. Have your learners write a short story or poem about predators, their habitats, and/or threats to their survival. Have your learners read the poems and stories to the class.
3. Read to your class or have your learners read the story in the worksheet 'how the cheetah got its spots.' Answer the questions at the end of the story.
4. What African folk tales involving the cheetah or other predators do you know? Learners can collect traditional stories by talking with elders and storytellers in their community. You can divide the stories into categories depending on their content.

Build a library and share these stories with teachers and learners from other regions. Send copies of myths, stories, and sayings to the Cheetah Conservation Fund (CCF).





5. Chat with a Cheetah

By interviewing people and writing articles for newspapers and magazines, we learn more about the world around us. Explain to your learners how journalists find out information about subjects by interviewing people.

Have your learners imagine they are reporters interviewing a cheetah. Write down questions that a reporter would ask a cheetah about its habitat, the food it likes to eat, fears about extinction, threats from humans, and how it feels about the misconceptions humans have of the species.

Have the learners take turns interviewing and being interviewed. While they are being interviewed they will play the role of a cheetah and answer questions about their behaviours, habitats, adaptations, and other interesting topics. As the interviewers asking the questions, your learners can learn more about a particular aspect of the cheetah and its lifestyle. You may want to expand interviews to include other predators, prey species, farmers, and wildlife managers. Allow time for learners to research the cheetah; encourage the use of reference materials, contact with non-government organisations, and government officials. As interviewers they should take notes just like a journalist. After taking turns interviewing and being interviewed, have your learners write articles for newspapers and magazines, draw illustrations, and then publish a cheetah magazine. Send copies of the newspaper to CCF for possible publication in our international newsletter.

6. Have your learners learn the vocabulary words found at the end of the story and use them in a sentence. For words that may be used as verbs or nouns, ask learners to write two sentences using the words in both forms.

7. Complete the worksheets ‘composition topics’ and/or ‘language study.’





## Activity 2 - composition topics

1. Have your learners write a composition about a cheetah's or another predator's perspective on people.
2. Why should we save cheetahs and predators for the future? Consider some of the following points:
  - a) Aesthetic value - beauty and uniqueness of species.
  - b) Ethical/Moral value - humans have been responsible for the extinction of many species. Plants, insects, animals, and fungi are each unique and represent millions of years of evolution, but humans can destroy these species in a short time. Because we have caused many problems for these species and threatened their survival, we are obligated to help endangered species recover.
  - c) Ecological value - all living organisms fulfil a unique part of delicate, natural systems; humans depend on animals and plants for survival in ways we do not fully understand. Besides their role as food sources, organisms break down wastes and return elements to the system. Without these elements, life on earth would eventually end. The future of our planet is dependent on this important role of plants and animals.
  - d) Scientific value - wildlife contributes to human health through medicine, medical research, etc. By destroying plant and animal habitats, we risk an immeasurable loss. The possible benefits to humans could compensate for the cost of their conservation.
  - e) Economic value - income can be generated from utilizing wildlife in a sustainable manner. Some say that the best way to save wildlife is to make it pay for itself. What are the good and bad points of this argument? Sustainable utilization requires sound management and planning. Utilizing wild species or developing tourism in wild areas can bring new sources of income to people trying to improve their standards of living and is another reason to preserve wildlife.





3. The following are some famous quotes concerning wildlife conservation and species extinction. You may want to have your learners memorize a few or write an essay or composition using the quote as the thesis.

*It is also true that when there is no wildlife left in the land the rain does not come...Because wild animals are Gods animals, if He looks down and sees the animals under the trees without food, He will send rain.*

-Herero/Himba belief

*Never kill the cat that cries.*

-Ovambo saying

*When the sky has been swept clean of eagles  
And the winds carry echoes of the past,  
What will you answer when the children ask,  
'Where are the animals? Did you see them go?'*

-Tom Knothe

*What is man without beasts? If all the beasts were gone, man would die from great loneliness of spirit, for whatever happens to the beasts also happens to man. All things are connected.*

-Chief Seattle

*Destroyed buildings can be rebuilt; destroyed works of art may possibly be replaced by new creations; but every animal and every flower which becomes extinct is lost forever in the most absolute of all deaths.*

-Joseph Wood Krutch

*...everyone shares a deep need for meaning. Everyone wants to know where he or she belongs, how he or she fits into the world. I am convinced that some of the essential answers can and must come from the source that shaped our origins and still underpins our lives: nature.*

*As we work to reinforce connections in the environment, so we build connections of our own. As we care for natural communities, so we strengthen our own communities' sense of well-being. As we heal the living world around us, so the healing begins inside. All this, too, is part of biodiversity. What I don't understand is why the hope held out by environmentalism has not captured more attention...Here, in plain sight, is a means of restoring a sense of wholeness.*

-Douglas Chadwick

4. The management of natural resources to provide for future generations requires long-term planning; otherwise, animals that are endangered today may be extinct by the time our children or grandchildren are adults. While we may have legal ownership of some resources, for example wildlife and real estate, and control of their use during our lifetimes, ethically we are not the owners of these resources, but rather stewards for future generations. As stewards of the African environment, how will you provide a future for predators and other wildlife on commercial farmlands and in rural areas?



Story - how the cheetah got its spots

***Stories are important tools for learning. They teach us about our past and share how we feel about our world. This story is based on an African tale on how the cheetah got its spots. Words underlined in the text are in the vocabulary list at the end of the story.***

One day two children, Moffet and Elisabeth, were walking in the bush. In the distance they saw a water hole where three big cats were drinking. In order to get a better look at the animals, they tried to approach the water hole. As soon as they stepped closer, the predators saw the two children and ran away.

Elisabeth said, "Moffet, did you see how fast those cheetahs ran? And how well their coats concealed them in the thick bush?"

"Those were not cheetahs," Moffet exclaimed, "they were leopards! You better stay away from them, they are very strong animals."

*Leopard*



The two argued all the way back to their village. Elisabeth was sure the three cats were cheetahs. Moffet insisted they were leopards. The two children decided to speak with the headman to find out about cheetahs and leopards. Hopefully, he could help put an end to their argument.

The headman, a wise old man, wanted to help the two children. He asked Moffet and Elisabeth about the animals at the water hole. Elisabeth described them in great detail.

"The bodies of the three cats were slender with long legs. Their coats were the colour of dry grass and black spots covered their bodies. Their heads were small and they seemed to be crying. When we approached them, they sprinted away, running faster than any animal I have ever seen."

"Crying?" exclaimed Moffet "They were not crying."

The headman, being very wise, asked, "Why do you think they were crying, Elisabeth?"

*Cheetahs*



Elisabeth answered, "Because, wise headman, the long black lines on their faces looked like tear marks."

Moffet agreed with her description of the animals. But, he thought "tear marks" was a silly way to describe the black lines. The headman told the children that they had seen three cheetahs drinking at the water hole. Elisabeth could not help saying, "I told you so, Moffet."

The headman continued, "The cheetah is one of the most unique animals found on this earth. Thousands of years ago, we could find cheetahs throughout the world; in North America, Asia, Europe, and of course, Africa.



There were a great many cheetahs all over Africa. Today, the populations have declined because people feared big cats and hunters killed cheetahs for their beautiful skins."

"Where do most of the cheetahs live?" Elisabeth wondered.

"Namibia is the cheetah capital of the world; it has more cheetahs than any other country in Africa. Even here, our cheetahs are becoming less and less. Humans and cheetahs live on the same land. Most humans do not want to share the land with the cheetah. Farmers remove cheetahs from their land if they think the cheetahs are eating their young livestock. And people kill cheetahs even when the cats are not eating livestock."

"Cheetahs are beautiful animals. It seems wrong to kill them out of fear," Moffet said.

"Headman, could you tell us how the cheetahs that Elisabeth and I saw at the water hole got their spots?"

"I will be happy to tell you how the cheetah got its spots," the headman said. And this is his story:

A very long time ago when the earth was first created, all the animals came down onto the savannah. The animals, birds, and insects were all different shapes and different colours. When the cheetah first came to earth, just like all the other animals, it shook its body and stretched its legs, and took a deep breath of the new clean air. The cheetah thought it felt very good to be alive. Each animal had to get used to its own body, so the cheetah started running and found out that it could run very, very fast.

The cheetah ran and ran across the vast plains of the world. After a time of wandering the plains alone, the cheetah became lonely and decided to look for friends of its own kind. One day, the cheetah, with its great eyesight, spotted some large cats off in the distance and eagerly went running as fast as she could toward these cats. As she was running toward them, one of the cats, which was much, much larger than the others, stood up and roared. The loud noise frightened the cheetah and she dug her claws into the dirt and came to an abrupt halt. The cat was a big male lion, and he roared out to the cheetah in a very low booming voice, "Who are you and what do you want?"

*Lion*



The cheetah, which is much smaller in size than a lion and who by nature is a very shy and timid animal, said, "I am lonely and have been searching the savannah trying to find friends of my own kind."

The lion roared, "Well, you are not a lion! Look at your legs and body; you are much thinner than we are. And look at your feet; you have claws like a dog's. Your claws do not retract all the way back into your feet like ours do. You are not a cat, you are a dog. So, you better run away fast and try to find someone in your own family."





The cheetah lowered her head and put her tail down, and crept away feeling a bit discouraged. She thought big cats were very unfriendly. The cheetah continued her search, looking for a friend of her own kind. The days went by. Then one day, the cheetah saw a pack of wild dogs playing in the sun. The cheetah went racing up to the pack. The whole pack was yelping and barking furiously. The cheetah stopped immediately, and the pack leader yelped at her, "Who are you and what do you want?"

The cheetah began to tell the wild dogs her story about trying to find a family of her own. During her search, she was scared by a lion and saddened when he told her that the cheetah was not a cat but a dog. The whole pack of wild dogs howled in laughter, and barked at her, "You are not a dog at all. Look at your round head and ears, and your rough tongue. They are like a cat's. Your tail is long just like other cats. You are not a dog at all!" The pack chased the cheetah off, biting at her heels.

This time the cheetah raced away very fast because she was scared. After running a safe distance from the dogs, the cheetah laid down to rest under a big camel thorn tree. She felt sad. She thought about how the lion roared and did not want her, and how the wild dogs yelped and bit at her feet, and she felt sadder and sadder. The cheetah felt so sad that she started to cry. She was very lonely.

The cheetah did not realize that any other animals were near her. A giraffe had walked up quietly while the cheetah was crying. The giraffe, looking down at the cheetah with its big brown eyes, asked, "Why are you crying?" The cheetah was very surprised when the giraffe spoke. The cheetah looked up tearfully at the giraffe and proceeded to tell her sad story about the lions roaring and telling her she was not a cat, and the wild dogs chasing her and saying she was not a dog.

*African Wild Dogs*



Sniffing, the cheetah said, "I have been sitting here crying, and I have cried so long and so hard. Look at my beautiful face, the tears have burnt marks in my face."

The giraffe, hearing the cheetah's story, also began to cry. And the giraffe's tears fell so far that they burnt spots in the cheetah's coat.

A bird, which was flying by the camel thorn tree, saw the beautiful cheetah and chirped, "I have travelled throughout this land. And you, cheetah, are the most splendid and unique of all the cats I have seen."

The headman concluded his story and said, "The cheetah has had spots ever since that lonely day. And it chirps like a bird to show how proud it is of being the most unique of all cats."



**‘How the cheetah got its spots’ discussion ideas:**

1. What can you tell about the cheetah from the story?
2. Why do you think the cheetahs ran away when they saw Moffet and Elisabeth?
3. What marks on the cheetah’s face made Elisabeth believe that the cheetah was crying? In the headman’s story how does the cheetah say it got these markings?
4. What reasons did the headman give for why there are fewer cheetahs in the world today?
5. Which country has the most cheetahs in the world? Can you name other countries where cheetahs are found?
6. What characteristics of the cheetah made the lion say that it was a dog? And what features did the wild dog say made the cheetah a cat? Is the cheetah a dog or a cat?
7. What markings of the cheetah help it hide in the dry grass?
8. Why do you think humans are fearful of predators?

**Vocabulary List:**

<b>Abrupt</b>	sudden
<b>Approach</b>	to come near or nearer to
<b>Cheetah</b>	the fastest land mammal on earth; today, it is found only in 26 African countries and Iran (in Asia); the cheetah has a thin body with long legs
<b>Chirp</b>	a short high-pitched sound, as of a small bird
<b>Conceal</b>	to hide, to keep from discovering or seeing
<b>Crept</b>	moved slowly
<b>Describe</b>	to tell about in detail
<b>Decline</b>	to slowly become less in number
<b>Frighten</b>	to make suddenly afraid, cause fear
<b>Leopard</b>	solitary cat found in Africa and Asia; it is a powerful, stocky cat with muscular limbs and a coat with small black spots and spots in a circle
<b>Predator</b>	an animal that hunts and kills another animal for food
<b>Proceed</b>	to continue on
<b>Realize</b>	to understand or be aware of
<b>Retractable claws</b>	nails on an animal's foot (claws) which can be pulled back into the animal's foot
<b>Savannah</b>	a large treeless area, grassland
<b>Species</b>	a group of animals or plants of the same kind, that give birth to young like themselves. The leopard and cheetah are two different species of cat
<b>Slender</b>	thin or lean
<b>Sprint</b>	to run very fast; a short run at top speed
<b>Surprise</b>	to occur without warning, something that is not expected
<b>Timid</b>	shy, fearful
<b>Wise</b>	having knowledge, knowing much information
<b>Yelp</b>	a short bark or cry



Worksheet: how the cheetah got its spots - language study

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. Use the following words or expressions in sentences:

*running faster than*  
*out of fear*  
*savannah*

2. For the following words, write a word that has the same meaning and a word that has the opposite meaning.

*abrupt*  
*conceal*  
*retract*  
*timid*

3. Find three words or phrases on the first page of "How the Cheetah Got its Spots" that describe the cheetah.

4. Make up the conversation between the cheetah and giraffe as you think it might have sounded.

5. Change the following sentences from the past tense to present tense:

Moffet, did you see how fast those cheetahs ran? And how well their coats concealed them in the thick bush?

**Activities: Choose One**

1. Make up your own story or poem of how the cheetah got its spots. Act out the story with your friends. Draw pictures to illustrate your story.
2. Ask elders and community leaders about stories they were told about cheetahs or other predators, their beliefs about the species, or if they have ever seen cheetahs. Write down the stories you're told.
3. Tell a story about being kind to animals. Discuss why it is important for humans to conserve animals.
4. Write to environmental groups asking about a specific animal and what you can do to help conserve the species.
5. Learn more about predators and their adaptations and report to the class about what you found. Why do predators play such an important role in ecosystems?
6. Write to your President, and the Minister of Environment and Tourism. Thank them for their commitment to protecting Africa's environment and encourage them to maintain southern Africa's cheetah population.



7. Write an Animal Cinquain. A cinquain is a five-lined oriental poem that will help you describe a cheetah or other predator in a few words.

**Cinquain Form**

Line 1

\_\_\_\_\_

Animal Name

Line 2

\_\_\_\_\_

Two words that describe the animal

Line 3

\_\_\_\_\_

Three action words or words expressing one action

Line 4

\_\_\_\_\_

Four word phrases that tell how or what the poet feels about the animal

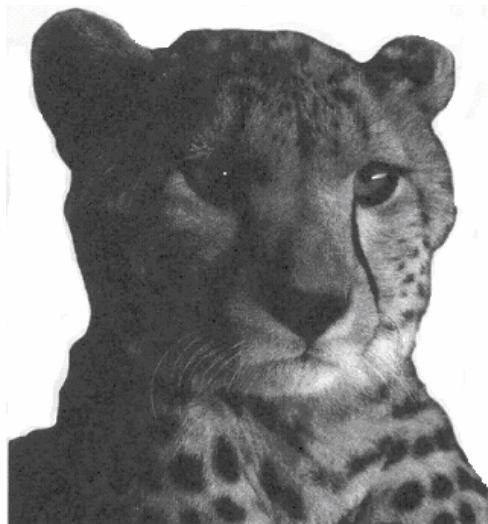
Line 5

\_\_\_\_\_

Word that sums up the animal

Example:

Cheetah  
Spotted Sphinx  
Swift African Hunter  
The cat that cries  
Unique





*Answer key to worksheet: how the cheetah got its spots – language study*

*Note: Answers will vary*

1. Use the following words or expressions in sentences:

*running faster than  
out of fear  
savannah*

**Examples:**

The cheetah was running faster than a Mercedes.

People kill carnivores out of fear.

The savannah is full of wild prey for the cheetah to hunt.

2. For the following words, write a word that has the same meaning and a word that has the opposite meaning.

**Examples:**

abrupt - sudden, hasty, hurried (synonyms)

gradual, slow (antonyms)

conceal- hide, mask, camouflage (synonyms)

expose, reveal (antonyms)

retract - withdraw, recede, take back (synonyms)

reveal, expose, bare (antonyms)

timid - shy, quiet, apprehensive (synonyms)

brave, unafraid, confident (antonyms)

3. Find three words or phrases on the first page that describe the cheetah.

*Slender, long legs, coats were the colour of dry grass, they seemed to be crying, long black lines on their faces, tear marks, etc.*

4. No specific answer to this question.

5. Change the following sentences from the past tense to present tense:

*Moffet, did you see how fast those cheetahs ran? And how well their coats concealed them in the thick bush?*

*Moffet, can you see how fast those cheetahs run? And how their coats conceal them in the thick bush?*

6. No specific answer to this question.

7. No specific answer to this question.

# MAPPING THE CHEETAH

**SUBJECT AREAS:**

Geography  
Social Sciences  
Agriculture

**DURATION/  
TIME:**

Activity 1: 20min  
Activity 2: 20 min  
Activity 3: 20 min  
Activity 4: 20 min

**PREPARATION  
NEEDED:**

Review the 'cats of the world' sheet in the Reference section.

Activity 1 -4:  
Photocopies of map worksheets for each learner

**MATERIALS NEEDED:**

Activity 1 -4:  
Colouring materials (pencils, crayons)  
Photocopies of map worksheets for each learner

**LOCATION:**

Classroom

**KEY WORDS  
TO REVIEW:**

Protect  
Distribution  
Population  
Vegetation  
Region  
Geography  
Delta

## OBJECTIVE:

Learners will learn about cheetah populations by studying different maps.

## LESSON

## ACTIVITIES:

**ACTIVITY 1:**

Map worksheet on 'cheetahs of Namibia.' Learners have a colouring activity and questions to answer.

**ACTIVITY 2:**

Map worksheet on 'cheetahs of Botswana.' Learners have a colouring activity and questions to answer.

**ACTIVITY 3:**

Map worksheet on 'cheetahs of Zimbabwe.' Learners have a colouring activity and questions to answer.

**ACTIVITY 4:**

Discuss the 'broad vegetation regions of Africa' map and have learners complete the 'cheetah distribution throughout Africa and Asia' worksheet. Learners have a colouring activity and questions to answer.



## Learning Outcomes

These activities deal with the distribution of the remaining cheetah populations throughout Africa and Asia. Learners are asked to get specific information from world and local maps concerning geography and the location of human and cheetah populations. Maps, worksheets and answers are all provided in this lesson.

## Teaching the Lesson

This activity is designed to give learners a better understanding of where people and cheetahs live. Each worksheet contains a detailed map with areas of cheetah population drawn in. Learners should begin by shading or colouring in the areas of cheetah population before answering the questions. More detailed questions can be added to these worksheets to better integrate the topic of study.

### Activity 1 - 'cheetahs of Namibia' worksheet

#### Answer Key to worksheet

"*Cheetahs of Namibia*": (1) Otavi and Otjiwarongo; (2) No; (3) north-central farmlands; (4) Orange and Kunene Rivers; (5) Yes; (6) surveying people who live in area and sightings of cheetahs and their spoor.

### Activity 2 - 'cheetahs of Botswana' worksheet

#### Answer Key to worksheet

"*Cheetahs of Botswana*": (1) Yes; (2) a delta is a fertile area of land formed at the mouth of a river, the Okovango Delta is a good habitat for cheetahs because the water and vegetation support a wide range of prey species; (3) Ghanzi, Mamuno, Maun; (4) Central Kalahari Gemsbok National Park, Kruger National Park; (5) North.

### Activity 3 - 'cheetahs of Zimbabwe' worksheet

#### Answer Key to worksheet

"*Cheetahs of Zimbabwe*": (1) Zambezi River, Lake Kariba, Limpopo River; (2) Hwange National Park, Yes; (3) Yes; (4) Yes, there is less competition from larger predators such as lions and hyenas; (5) No.

### Activity 4 - cheetah distribution throughout Africa and Asia

Maps and worksheets are provided to learners in order to better understand the broad distribution of cheetahs throughout Africa and Asia. Answer key is in lesson.

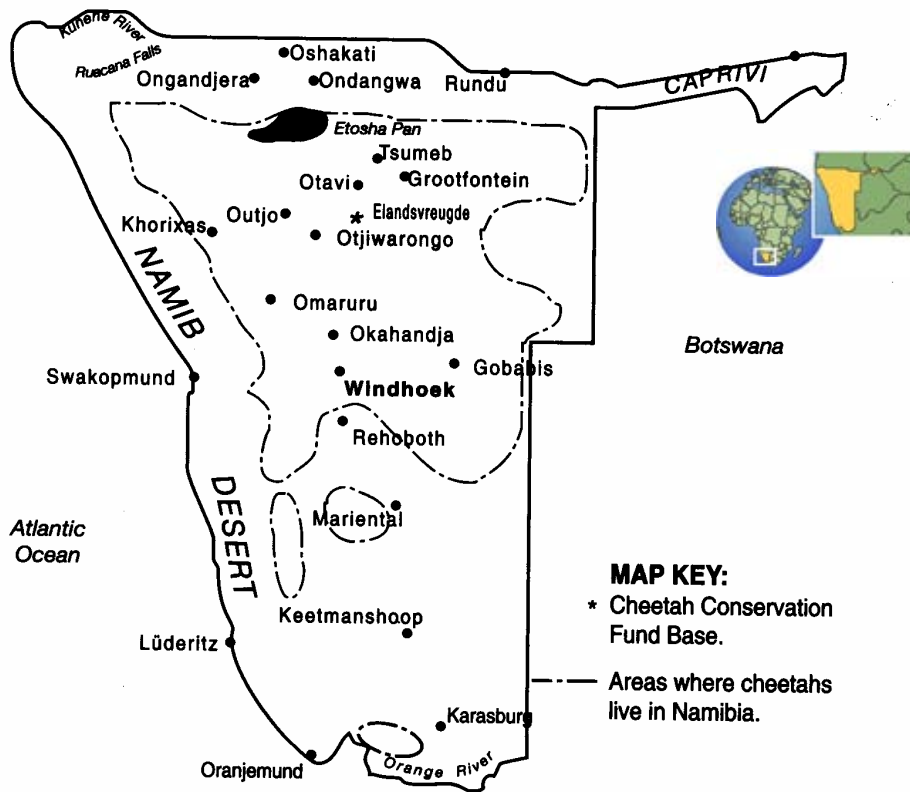
1. Begin by asking the learners to look at the 'broad vegetation regions of Africa' map. Using what they know about the best habitats for cheetahs (review the 'cheetah fact sheet' found in the Reference section if necessary), ask learners to predict the regions that cheetahs would most likely be found.
2. Have the learners complete the worksheet 'cheetah distribution throughout Africa and Asia' using the map of Africa provided.



Worksheet - cheetahs of Namibia

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Instructions:** Colour in the areas on the map where cheetahs live and answer the questions using the information provided on the map.



**Map Questions:**

1. Name the two towns closest to the Cheetah Conservation Fund's base at Elandsvreugde.
2. Are cheetahs found in Oshakati and Ondangwa?
3. Which region inhabited by cheetahs is Namibia's largest?
4. Name two rivers that cheetahs live near.
5. Do the Namibian and Botswana cheetahs form a geographically connected population?
6. How do you think researchers have discovered where cheetahs live in Namibia?

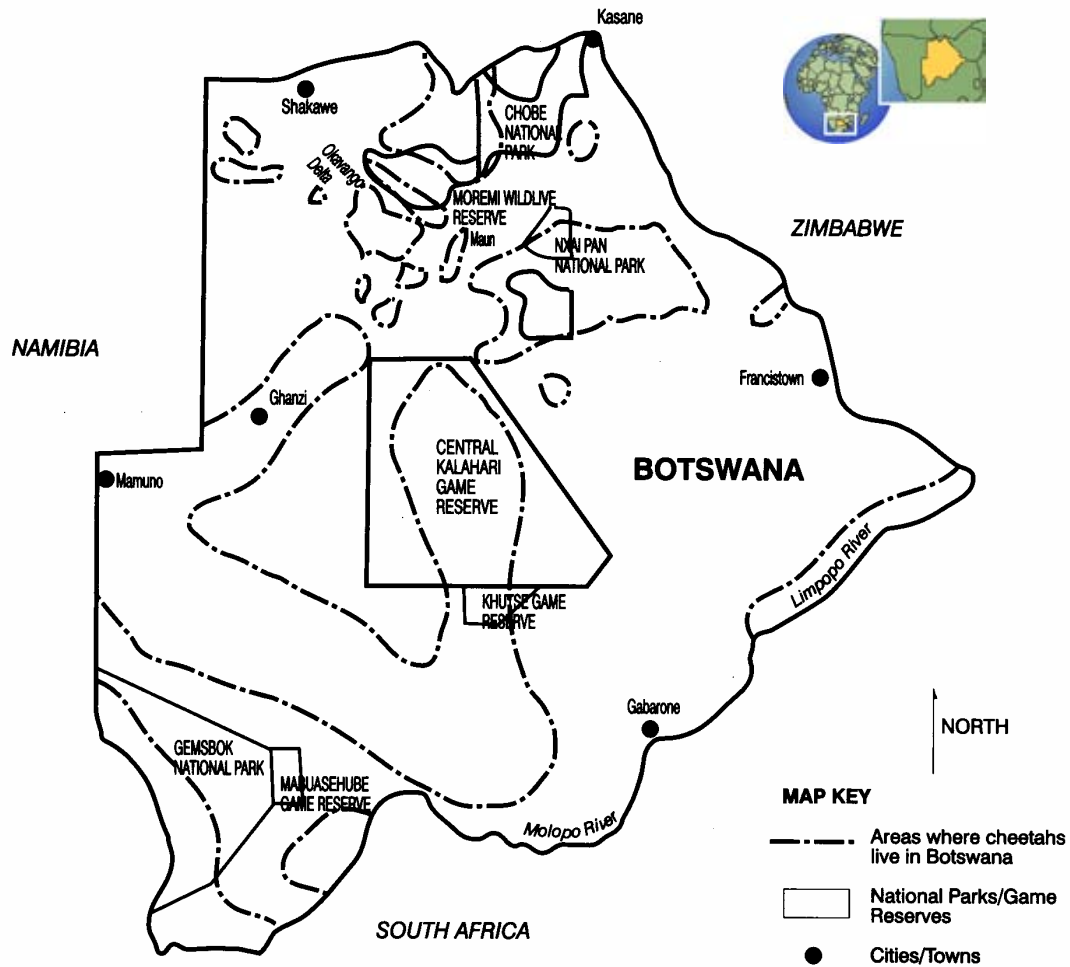




Worksheet - cheetahs of Botswana

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Instructions:** Colour in the areas on the map where cheetahs live and answer the questions using the information provided on the map.



**Map Questions:**

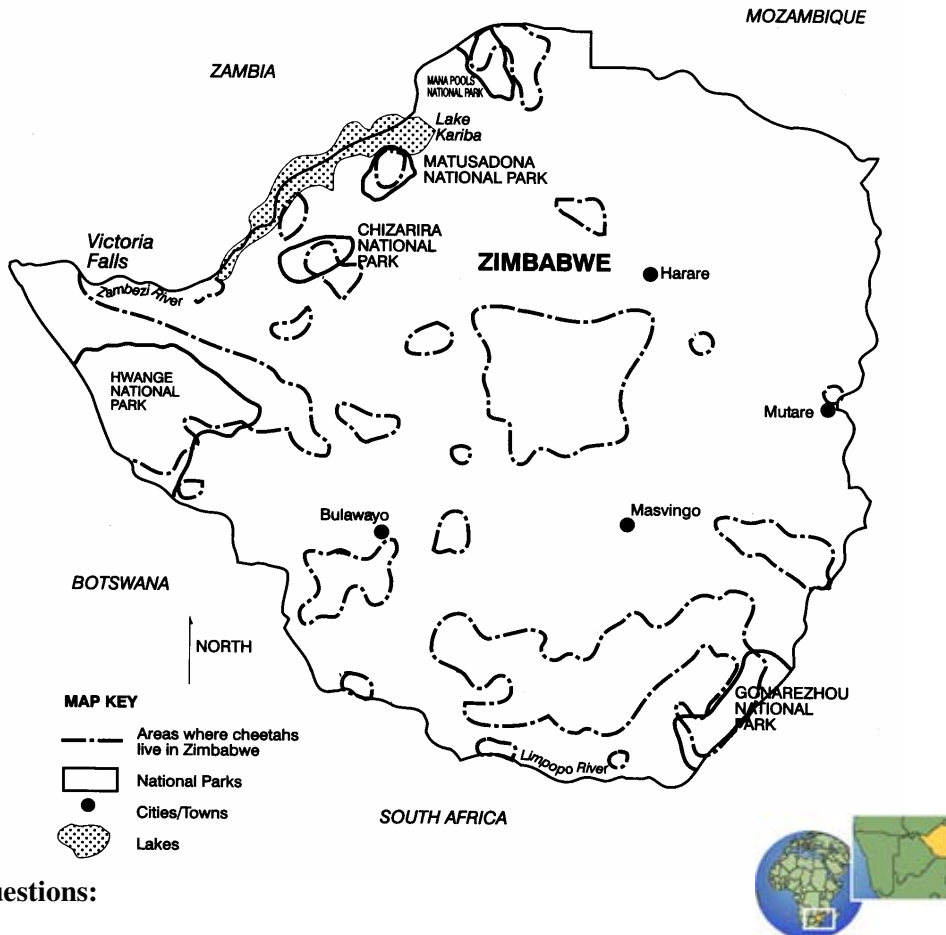
1. Do cheetahs in Botswana form a geographically connected population with cheetahs in Namibia?
2. What is a delta? Why might the Okavango Delta be a good habitat for cheetahs?
3. What three towns are within the range of the cheetah in Botswana?
4. What is the largest game reserve in Botswana? Do cheetahs live there?
5. What river do cheetahs live near?



Worksheet - cheetahs of Zimbabwe

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Instructions:** Colour in the areas on the map where cheetahs live and answer the questions using the information provided on the map.



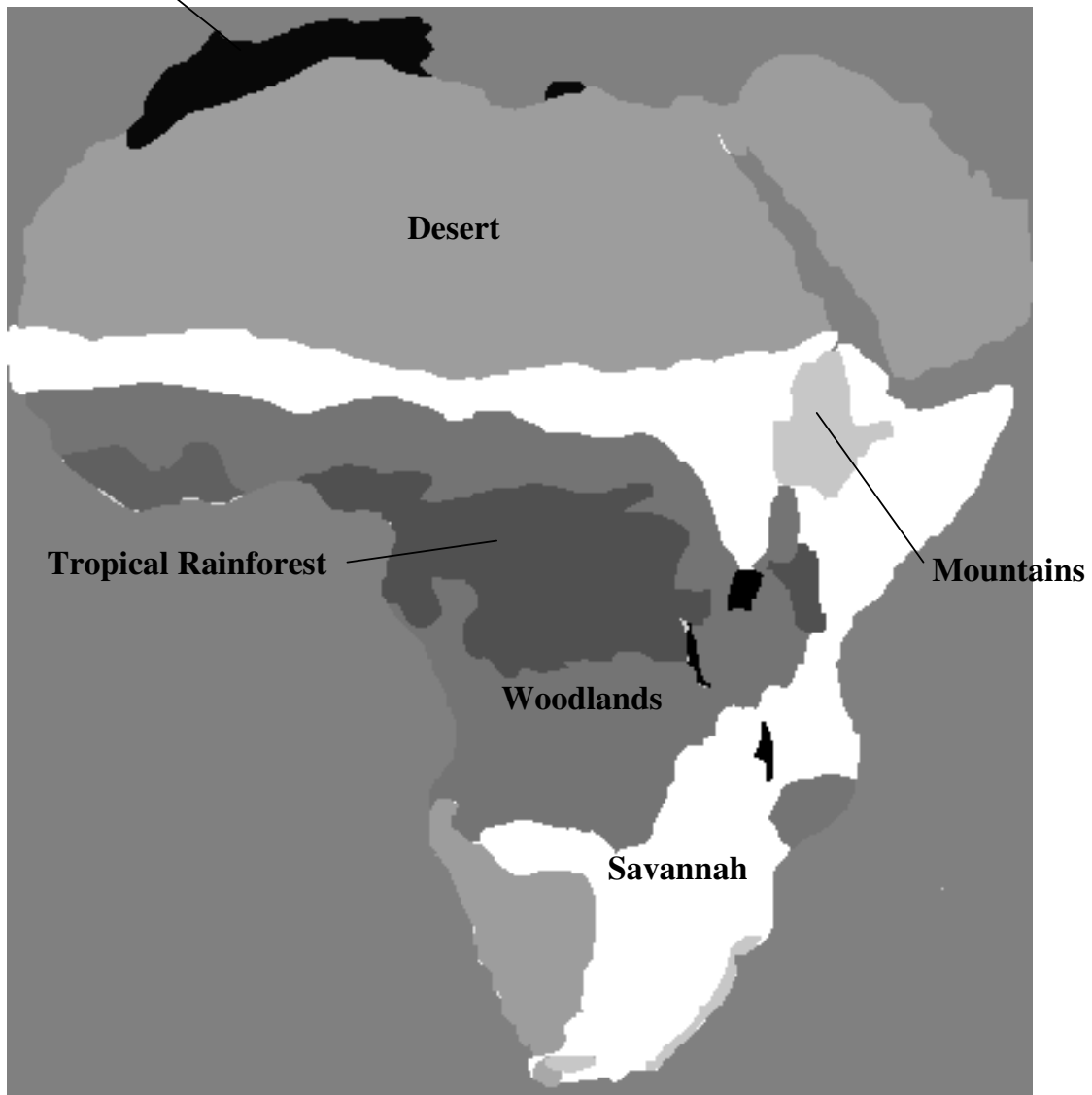
**Map Questions:**

1. What large sources of water do cheetah populations live near in Zimbabwe?
2. What is the largest national park in Zimbabwe? Do cheetahs live there?
3. Are cheetah populations in Zimbabwe geographically connected to cheetah populations in Botswana?
4. Are cheetahs living outside of protected national parks in Zimbabwe? If so, why might this occur?
5. Are any of the cities listed on the map within areas where cheetahs live? If so, name the cities.



BROAD VEGETATION REGIONS OF AFRICA

**Mediterranean Scrub**





COUNTRIES OF AFRICA

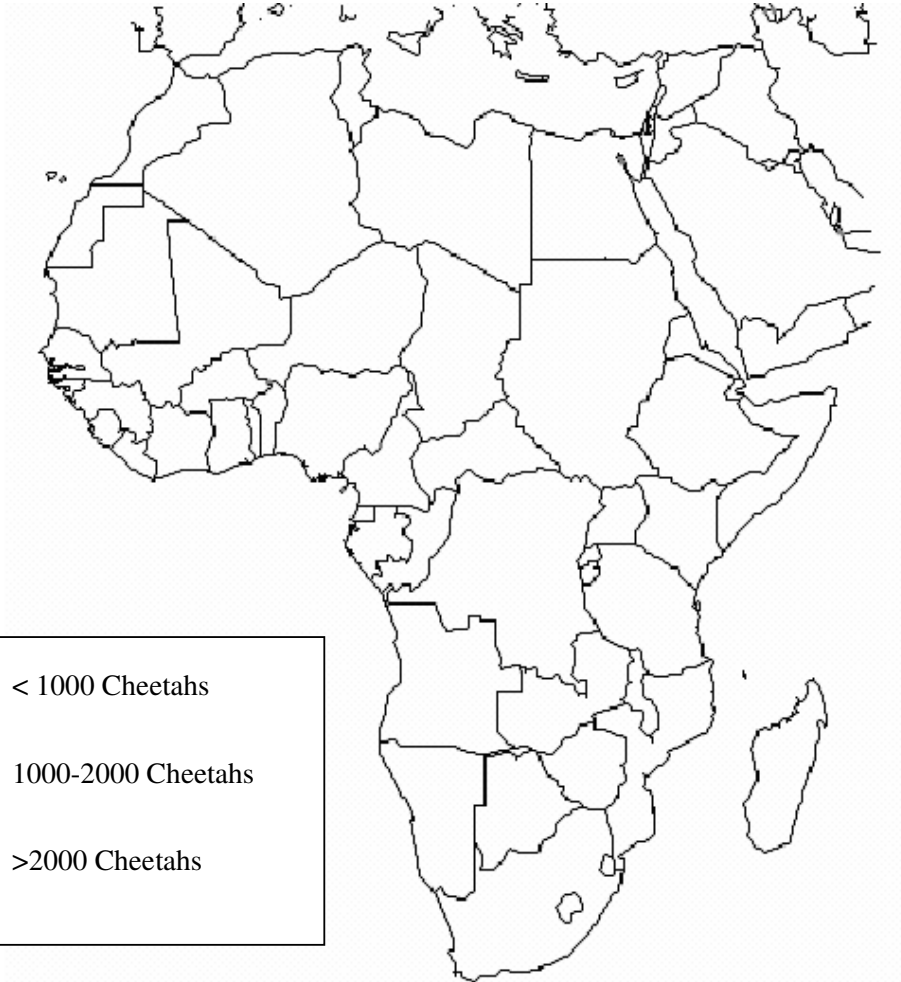




Worksheet - distribution of cheetahs in Africa and Asia

Name: \_\_\_\_\_ Date: \_\_\_\_\_

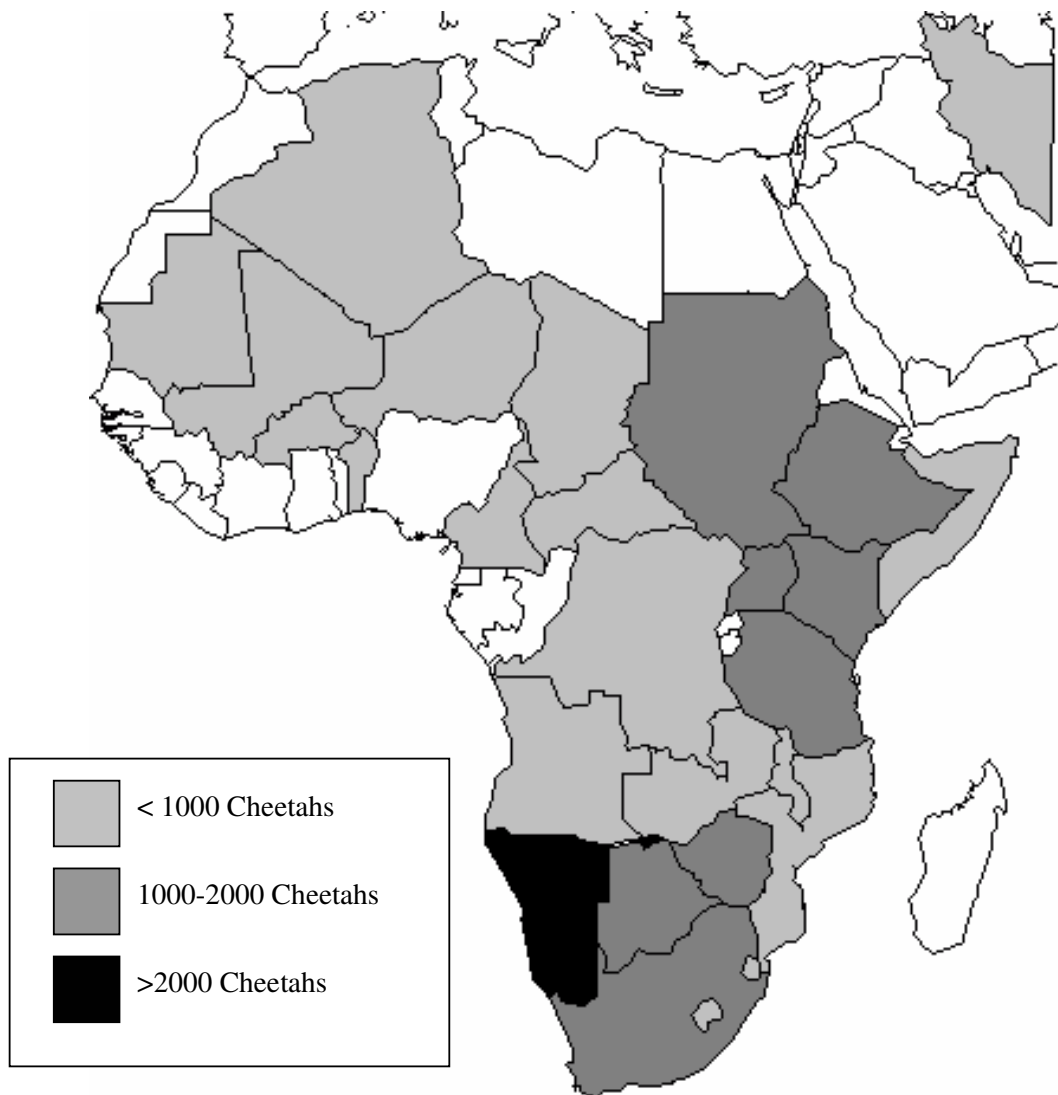
**Instructions:** This map will help show where cheetahs live today. Begin by choosing 3 colours or shades for the key below. Shade all countries with cheetah populations of < 1000 one colour, between 1000 and 2000 another, and over 2000 another. Be sure to label each country with its name.



Country	# of Cheetahs	Country	# of Cheetahs
Algeria	100	Malawi	100
Angola	500	Mali	500
Benin	100	Mauritania	500
Botswana	1,500	Mozambique	100
Burkina Faso	100	Namibia	2,500
Cameroon	50	Niger	500
Central African Republic	50	Somalia	300
Chad	500	South Africa	1,000
Democratic Rep. of Congo	300	Sudan	1,500
Ethiopia	1,000	Tanzania	1,500
Kenya	1,500	Uganda	300
Iran	100	Zambia	100
Malawi	100	Zimbabwe	1,000



Answer key to worksheet - distribution of cheetahs in Africa and Asia



# CHEETAHS THROUGHOUT HISTORY



**SUBJECT AREAS:**

Social Science  
History

**DURATION/TIME:**

Activity 1: 15 min  
Activity 2: 20 min

**RECOMMENDED PREPARATION:**

Activity 1:  
Review 'the cheetah's history' sheet in the Reference section.

Activity 2:  
Make photocopies of the worksheet 'cheetah history' for each learner

**MATERIALS NEEDED:**

Activity 2:  
Worksheet

**LOCATION:**

Classroom

**KEY WORDS TO REVIEW:**

Prehistoric  
Migrate  
Extinct  
Evolve  
Timeline

## OBJECTIVE:

Learners will discover the history and movement of the cheetah and predict the cheetah's future.

## LESSON

## ACTIVITIES:

**ACTIVITY 1:**

On prehistoric cheetahs, cheetah history and movement.

**ACTIVITY 2:**

Learners construct a timeline of the in the worksheet 'cheetah history.'



### *Learning Outcomes*

Learners will discover the prehistoric history of the cheetah and its movement from North America to its present home in Africa. An activity to create a timeline of cheetah history is also included.

### *Teaching the Lesson*

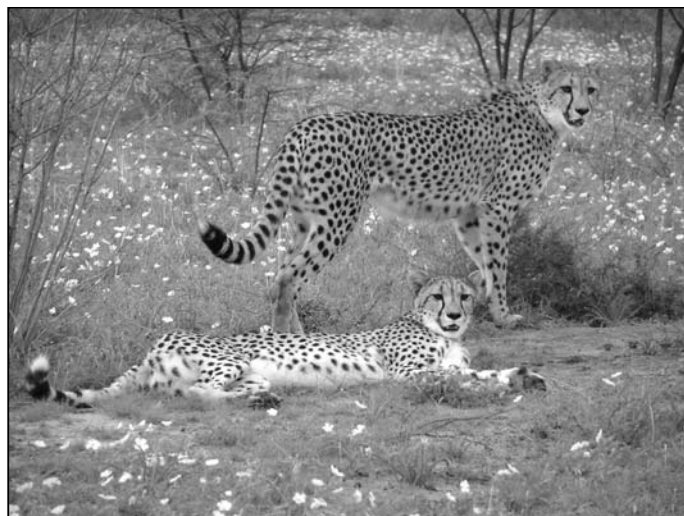
#### *Activity 1 - discussion on prehistoric cheetahs*

Cheetahs were once one of the most widely distributed of all land mammals. They migrated over land and ice bridges from North America into the southern regions of the Commonwealth of Independent States (formerly the Soviet Union), eastern Asia, and through deserts and steppe regions into the Middle East, southern Europe, and Africa.

Using the map on the following page, discuss with learners the movement of cheetahs in prehistoric times. Make special note of how the cheetah actually evolved in North America, but now has become extinct in all of its former home ranges except for Africa and Iran. Also, ask the learners how they could have made it through the Bering Strait between North America and Asia. (During the Ice Age this was a land bridge of frozen ice).

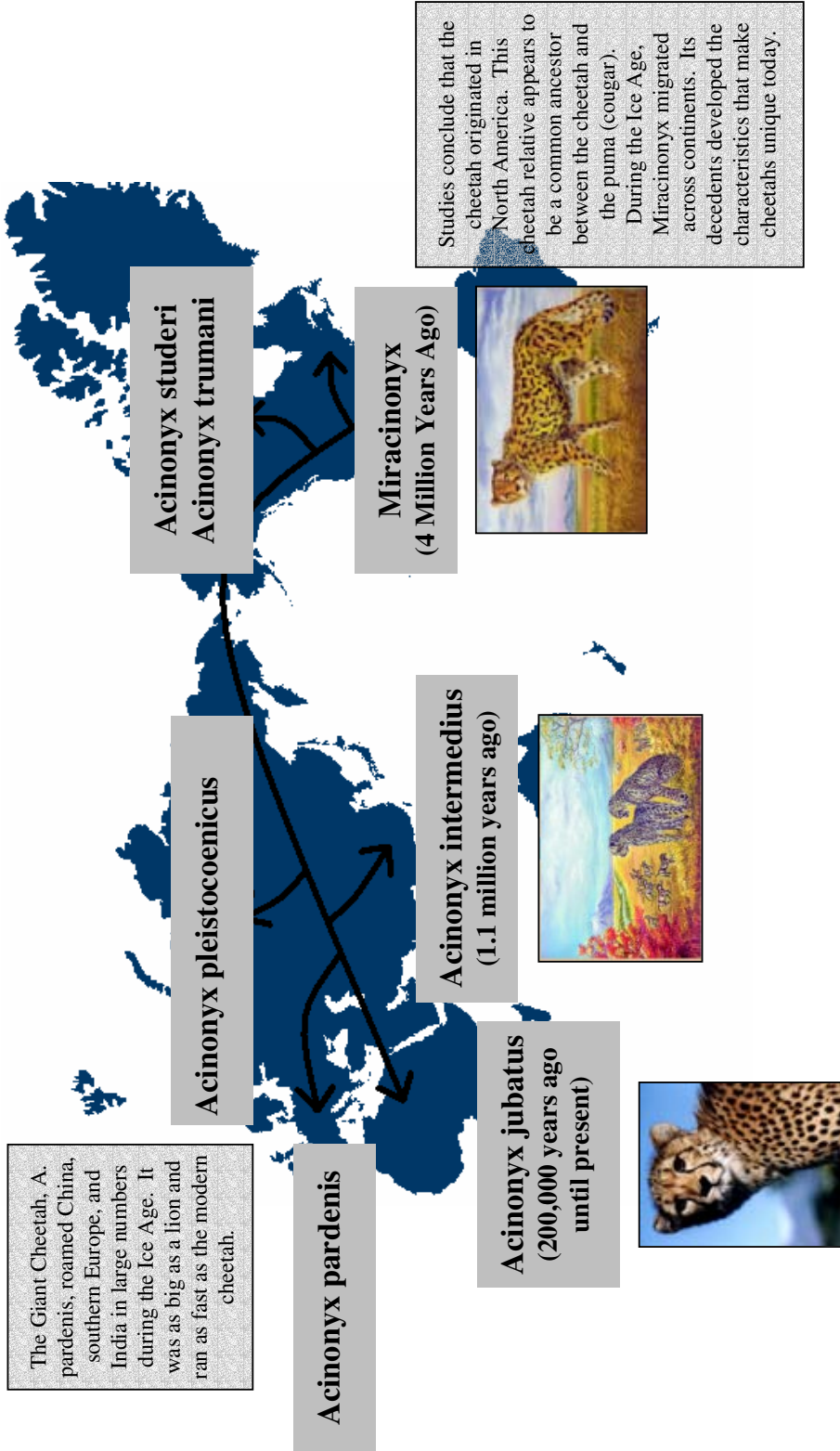
#### *Activity 2 - cheetah history*

Review with the learners the purpose of a timeline in understanding history. Have them complete the worksheet 'cheetah history' and create a timeline of the cheetah's history. Any other historical events can be added to better integrate it into any time period study.





# The Prehistoric Range of the Cheetah 4 Million Years Ago





Worksheet – cheetah history

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Instructions:** Draw a timeline referencing changes in cheetah history to historic events and scientific discoveries. Start the timeline 4 million years ago.

**Events to consider for a cheetah history:**

- 3,500,000 to 4,000,000 years ago, cheetahs first appear.
- 15,000 to 20,000 years ago, during the Pleistocene Epoch, cheetahs cross land bridges from North America into Asia, Europe and Africa and live on all 4 continents.
- 10,000 years ago, cheetahs become extinct on every continent except Africa and Asia, causing a genetic bottleneck.
- 5,000 years ago, African cheetah population splits into East African and southern African subspecies. Sumerians begin taming cheetahs for hunting at Court.
- 1,500 years ago, Italians use cheetahs to hunt for sport.
- 1,000 years ago, over-hunting causes sharp decline in the southern African cheetah, making it more inbred than the East African cheetah.
- 500 years ago, Akbar the Great keeps 9,000 cheetahs in Court, during his 49 year reign.
- 100 years ago, India and Iran begin to import cheetahs from Africa for hunting purposes.
- 46 years ago, the Indian cheetah becomes extinct and the first cheetah reproduces successfully in captivity.
- 26 years ago, the cheetah is placed on Appendix I of C.I.T.E.S.
- 14 years ago, Namibia gains independence and the Cheetah Conservation Fund is established to help protect wild cheetahs.

## Arts

# IDEAS FOR ART ACTIVITIES

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### *Learning Outcomes*

Learners will be introduced to the natural world, animals and animal behaviour through arts drama and music.

### *Ideas for arts activities:*

- 1) Act out the story of how the cheetah got its spots. The story can be found in the English section of this book. Present the story to your school.
- 2) Write a song about the cheetah and sing it at your school's morning assembly.
- 3) Write a song about the cheetah and use traditional instruments and dance to tell the story. Perform the song and dance at your school.
- 4) Do drawings and illustrations of cheetahs and share these drawings at a school art show. Invite parents and community members to the event and have someone give a speech on conservation and the plight of the cheetah.
- 5) Write and decorate a poem about the cheetah. Send the poem to the Cheetah Conservation Fund and to a local government official.
- 6) Host a 'cheetah day' at your school. Have learners dress in 'spots' and host an Olympic competition with running contests.
- 7) Make a cheetah sculpture out of materials found in your village or town.
- 8) Paint rocks with cheetah images and give away the rocks as prizes.
- 9) Make a poster about good livestock management techniques (refer to the 'farmer and cheetahs' lesson in the Conservation section of this book.) Share these ideas with parents, community members, farmer's associations and conservancies.
- 10) Design a t-shirt (with a cheetah on it!) for your school's conservation club
- 11) Make a mobile with images of a cheetah and its habitat. Hang the mobiles on your classroom.
- 12) Paint a cheetah mural on a wall at your school.
- 13) Make cheetah illustrations or sculptures and sell the items. Use the funds to support your school's conservation club.