

Lesson Plan 3

Life Cycles

CRITICAL OUTCOMES

CO#3: Organize and manage oneself and one's activities responsibly and effectively.

CO#5: Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation.

LEARNING OUTCOMES

LO#1: The learner will be able to act confidently on curiosity about natural phenomena, and to investigate relationships and solve problems in scientific, technological and environmental contexts.

Process-skills:

Recording information (graphing)

Identifying trends

ASSESSMENT STANDARD

Learner evaluates data and communicates findings

TEACHING THE LESSON

Review life cycle background information found on page 27.



ACTIVITY 1 - cheetah and me

The major purpose of this activity is for students to recognize similarities between cheetah cubs and human babies as well as develop mathematic skills.

Procedure

1. Begin discussion with students about cheetahs. Ask them to guess how much a cub (baby cheetah) might weigh when it is born. Students can write down their guess on a piece of paper. Call for their guesses. Ask for their ideas about how long mother cheetahs are pregnant, what baby cheetahs eat when they are born, how much they might weigh when they are a year old, how many brothers and sisters they might have who are their same age, how much they weigh when they are full grown and how long they live.
2. Following discussion, post the Weight and Age Relationships for Cheetahs Chart and provide as a handout found on page 25. Review with students any of the background information not covered in the class discussion. Ask students to plot the cheetah's weight and age.
3. Ask the students to plot their own weight at the same ages as the cheetah shown on the chart. They will be required to estimate for years past their present age. Ask the students to graph both sets of data.
4. Ask the students to compute the following, and include their results with their graph and drawing:
 - A. How much weight did the cheetah gain at each interval that is, from birth to four months, 12 months to two years, etc.
 - B. How much weight did you gain during the same intervals?
 - C. How many times more weight did the cheetah gain during each period?
5. In discussion, ask the students to comment on the similarities and differences between the lifecycles of cheetahs and people.

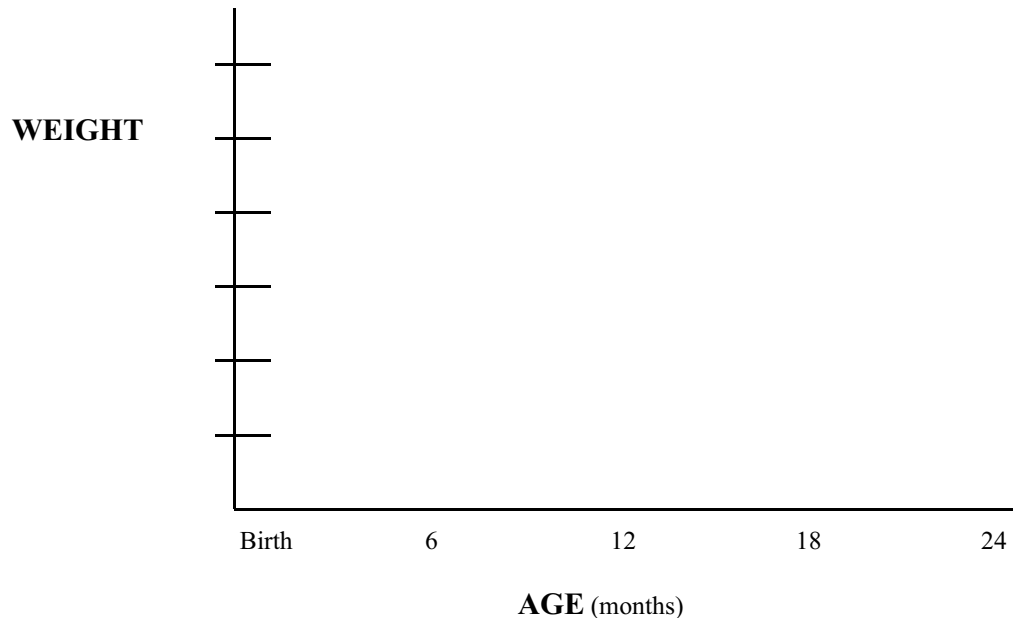




WORKSHEET - cheetah and me

Name: _____ Date: _____

WEIGHT AND AGE RELATIONSHIPS FOR CHEETAH AND ME

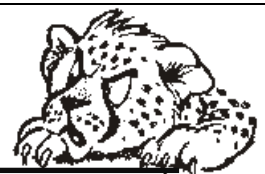


Weight and Age Chart

CHEETAH		CHILD	
AGE	WEIGHT	AGE	WEIGHT
Birth	0.3kg	Birth	3.5 kg
2months	3kg	2 months	5.5 kg
4 months	7kg	4 months	6.5 kg
6months	12kg	6 months	8 kg
12 months	25kg	12 months	10kg
18 months	30kg	18 months	11
24 months	35kg	24 months	12
adult	35 – 40 kg	4 years	16
		8 years	26
		12years	43
		16years	60
		Adult	63 -

Development chart

STAGE OF DEVELOPMENT	CHEETAH	HUMAN
Gestation	90-95 days	9 months
Open eyes	4-14 days	From birth
First tooth	3 weeks	6 months
Milk teeth – will teachers know what milk teeth are?	6 weeks	By 30 months
Permanent Teeth	8 months	By 13 years
Weaning	Starts at 6 weeks	6 months to one year
Walk	3 weeks	12 – 16 months
Life span	8-12 years	70 years





ASSESSMENT

Checklist for graph:

Assessment statements	Yes	No
Graph has a heading		
Both Axis are labeled (eg. weight vs age)		
Axis labels are correct		
Axis labels include the relevant measurements (eg. grams vs months)		
Axis are divided into relevant intervals		
Data is plotted accurately		
Both sets of data are plotted		
Both sets of data are distinguishable from each other		
The graph is neat and legible		

Rubric:

1	2	3	4
The learner could not do the exercise, showing an inability to transfer the information onto a graph.	The learner was partially successful at transferring the information into graph format. The graph was not very neat or accurate.	The learner accurately conveyed the information into graph format. The graph was correctly and neatly set out.	The learner exceeded expectations showing a deeper understanding of the information and volunteering conclusions.

Language links:

LEARNING OUTCOMES	ASSESSMENT STANDARDS
LO3: Reading and Viewing	Interprets and discusses more complex visual texts and can change text from one form into another
LO4: Writing	Transfers information from one form into another
LO5: Thinking and Reasoning	Processes information

Mathematics links:

LEARNING OUTCOME	ASSESSMENT STANDARDS
LO1: Number Operations and Relationships	Solves problems that involve comparing
	Estimates and calculates by selecting operations appropriate to solving problems
LO5: Data Handling	Draws a variety of graphs to display and interpret data





BACKGROUND – life cycle

The average life expectancy for cheetahs in captivity is 10-12 years although some may live longer. In the wild there has not been much research done regarding life expectancy although it is thought to be slightly less, possibly only 7-8 years. Longevity and survival of the cheetah depends upon availability of suitable habitat and its ability to hunt successfully.

Female cheetahs reach sexual maturity between 20-24 months and males between 2-3 years. Cheetahs do not have a particular breeding season. The sexes have a courtship period of up to three days. After breeding the male will leave the female. Gestation period is between 90-95 days. Litters vary in size from 1-8 cubs, with an average of 3 cubs. Birth takes place in bushy thickets, tall grass, rock cavities or “borrowed” burrows. Cheetah cubs are born blind and helpless around 150-300g and up to 30 cm long. Newborn cubs can move enough to reach mother's teats and suckle, turn their heads, spit and give soft churring calls. Cheetah cubs develop more quickly than any young of any other big cat, gaining about 50 g daily. Cubs open their eyes between 4 and 14 days (average 10 days). Cubs can crawl in about 2-3 days and walk at three weeks.

For first 6 weeks of their lives, the cubs are hidden in dense vegetation. The mother returns at night to suckle and groom the cubs. Cubs get their upper and lower canines at three weeks, full set of milk teeth at 6 weeks and their permanent set of teeth by 8 months. Cubs will nurse from 2-3 months with weaning usually beginning around 6 weeks. Cubs begin eating meat at 4-6 weeks. At 6 weeks cubs begin to follow their mother, but return to their den until about 8 weeks.

After 8 weeks they will follow her continuously bedding down for the night wherever they are. From 6 weeks to 3-4 months is the most vulnerable time for cubs, with predation and starvation being the major causes of death. Cubs also succumb very easily to disease.

The mortality rate amongst cubs is very high, with on average only 10% surviving the first year. Young cheetahs play spirited, athletic games consisting of stalking, pouncing, chasing, boxing, wrestling, and tug-of-war. Play is more related to hunting tactics than fighting. When cubs are about 18 months old the mother leaves them. They usually remain in a sibling group for another six months. At about 2 years the female cubs come into estrous and leave the group. Young males may remain together, forming a life-long coalition, or separating.

When a cheetah cub reaches one year of age, cubs weigh about 25 kg. A mature cheetah weighs 34-54kg and has a shoulder height of 73+ cm. The male tends to be slightly larger than the female.

Table 2: Table of Weight vsAge

The amounts for the cheetah have been rounded up for convenience; that for the child has been averaged for boys and girls and rounded to the nearest ½ kg.

CHEETAH		CHILD	
AGE	WEIGHT	AGE	WEIGHT
Birth	0.3kg	Birth	3.5 kg
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18 months	30kg	18 months	11
24 months	35kg	24 months	12
adult	35 – 40 kg	4 years	16
		8 years	26
		12years	43
		16years	60
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Table 3: Table of Physical Development

STAGE OF DEVELOPMENT	CHEETAH	HUMAN
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