

	Date	Test/Quiz	Title	possible score	Student score	Average
Mop 1.	4/2	Test	Chap 21+22	100	96	96%
Mop 2.	5/7	Quiz	Chap 23	50	50	97%
3.	5/19	Test	Chap 23-24	100	100	100%
4.	5/3	Project	Research Report Apollo	100	100	
5.	6/3	Quiz	Chap 18	50	47	
6.						
7.						
8.						
9.						

HOMEWORKS 100%						
DATE	TITLE	GRADE		DATE	TITLE	GRADE
1.	4/19	p5171-5172	10	11.		
2.	5/4	Flower Picture	13	12.		
3.	5/10	p504 Soil Definition	10	13.		
4.	5/11	p516 #3	10	14.		
5.	5/20	p556 Simon Hecker	10	15.		
6.	5/24	p218 Sailing	10	16.		
7.	6/7	p268-270	10	17.		
8.				18.		
9.				19.		
10.				20.		

Progress Report 100%

	Date	Test/Quiz	Title	possible score	Student score	Average
1.	1/23	Quiz	Chap 6	50	50	100%
2.	2/6	Test	Chap 6	100	95	96%
3.	2/18	Quiz	Chap 19	50	53	99%
4.	3/5	Test	Chap 19/20	100	100	99%
5.	3/19	Quiz	Chap 21	50	50	99%
6.	3/30	Project	Design a Martin	50	50	
7.						
8.						
9.						

HOMWORKS

	DATE	TITLE	GRADE		DATE	TITLE	GRADE
1.	1/26	Dobe !kung	9	11.	8/29	Vocab	10
2.	1/28	Chap 6 Plants	10	12.	3/30	Martin	Above 9
3.	2/2	Unit 2 Reading	10	13.			
4.	2/10	Chap 19 ^{Moon Facts}	10	14.			
5.	2/11	Chap 19 ^{Moon Theory}	10	15.			
6.	2/24	Chap 20 p6152 ¹⁵⁴	10	16.			
7.	2/26	Chap 20 ^{p449 Kepler}	10	17.			
8.	3/8	Chap 21 ^{p459 Comments}	10	18.			
9.	3/17	Space Timeline	20	19.			
10.	↓	↓ ^{counts 2x}	↓	20.			

	Date	Test/Quiz	Title	possible score	Student score	Average
1.	11/7	Quiz	Chap 3	50	50	100%
2.	11/21	Test	Chap 3	100	94	96%
3.	12/5	Quiz	Chap 4	50	50	98%
4.	12/17	Quiz	Chap 5	50	50	98%
5.	1/9	Test	Chap 5	100	100	98%
6.						
7.						
8.						
9.						

HOMEWORKS

	DATE	TITLE	GRADE		DATE	TITLE	GRADE
1.	11/10	Chap 3 Bioms	10	11.	1/14	Chap 6 p114	70
2.	11/12	Chap 3 p56-157	10	12.	1/12	Design Primate	20
3.	12/1	Ch 4 Sci Log	10	13.	↓	↓ Counts 2x	↓
4.	12/2	Chap 3 Sign Test	10	14.	1/20	Artist Comparison	0?
5.	12/2	Chap 4 p 87 #4	10	15.			
6.	12/10	Chap 5 p 95 #1,4	12	16.			
7.	12/11	10 facts on Darwin	10	17.			
8.	12/18	Chap 5 p 18-101	10	18.			
9.	1/6	Primate Questions	10	19.			
10.	1/12	Chap 6 Sci Log	10	20.			

SCIENCE GRADES

CLASS

Grade	Score	Student Name	Average
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

HOMEWORKS

Grade	Date	Title	Grade	Date	Title
1			1		
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		
9			9		
10			10		

Michael Plasmeier

1st Quarter

A 99% Final?

SCIENCE GRADES

	Date	Test/Quiz	Title	possible score	Student score	Average
1.	9/10	Quiz	Chap 1	50	50	100%
2.	9/26	Quiz	Sci. Method	50	50	100%
3.	10/1	Test	Chap 1	100	98	99%
4.	10/10	Quiz	Metric System	50	50	99%
5.	10/27	Test	Chap 2	100	100	100%
6.	10/23	Summary	Mag. Article	50	50	100%
7.						
8.						
9.						

HOMEWORKS out of 10

	DATE	TITLE	GRADE		DATE	TITLE	GRADE
1.	9/11	Chap 1 Cartoon	10	11.			
2.	9/15	N. Cycle	10	12.			
3.	9/17	Chap 1, p 23	10	13.			
4.	9/24	Chap 1 p 26 #3	10	14.			
5.	9/25	Lab Results	10	15.			
6.	10/16	Chap 2 Food web	10	16.			
7.	10/28	Chap 3 p 46	10	17.			
8.	10/29	Chap 3 511-513	10	18.			
9.	11/3	Chap 3 519	()?	19.			
10.	11/5	Graph Quest	10	20.			

7th Grade Science

T. Capista

Course Overview

Goals:

- To familiarize students with basic concepts concerning Science.
- To improve science skills through hands-on laboratory investigations, as well as reading/writing activities related to current science issues.
- To prepare a research report on a science topic using library and other resources.

Text: Science Plus. pub. Holt, Rinehart, Winston 1997

Content:

- 1st Quarter: Unit 1 - Interactions Unit 2 - Diversity
Ecosystems, energy flow, classification, evolution theory
- 2nd Quarter Finish Unit 2 Unit 6 - Earth Science (Fossils)
Unit 7 - Astronomy
- 3rd Quarter Finish Unit 7, Research Report
- 4th Quarter Unit 8 - Plants Unit 4 - Forces and Motion

Grading:

- Tests - major test after each chapter (100 pts each).
Quizzes - one or two per chapter (50 pts each).
Homework - text readings, questions, worksheets, three or four times a week. (15-30 minutes)
Writing assignments - Science log entries, article summaries of **Science World** magazines or other periodicals
Research Report - two/three week project involving library research bibliographic cites, etc... (two/three pages typed, 100 pts)

Final Exam:

Given at the end of the year, to be cumulative and to count one-ninth of the student's final grade.

Extra Credit:

Available until last week of each quarter if no more than 2 homeworks have been missed. See teacher for papers.

How to help your child:

Check work nightly, question for understanding, ask to see tests and quizzes, help to keep notebook organized, check homework hot line, call teacher with questions.

Voice Mail - 610-853-5900 x5222

Web site: <http://www.haverford.k12.pa.us/hms> follow links to teacher pages, click on Capista

HOW TO SUCCEED IN SCIENCE CLASS

T. CAPUSTA

A. What you need for class.

1. Writing utensil
2. Science notebook (Ring binder , large or narrow spine for handouts) *lin*
Trapper keepers are NOT recommended. The folders will not keep your work organized. Papers MUST be in order in a ring binder
3. Science text book should be left at HOME. We will have classroom editions available for use in class.

B. Behavior Expectations.

1. Be in your seat and quiet when the late bell rings.
2. Take care of pencil sharpening, drinking fountain, rest room needs before class. Exceptions should be kept to a minimum to avoid class disruption.
3. Show respect and courtesy to fellow students and the teacher - especially when someone in the class is speaking.

C. How to get good grades.

1. Pay attention in class.
2. Make constructive contributions to class activities.
3. Ask questions when necessary.
4. Complete all assignments ON TIME and with evidence of effort. (Quality counts!)
5. Keep up by reviewing daily, studying for tests and quizzes.
6. Make up all work missed due to absence.

D. How to get help.

1. Ask and you shall receive.

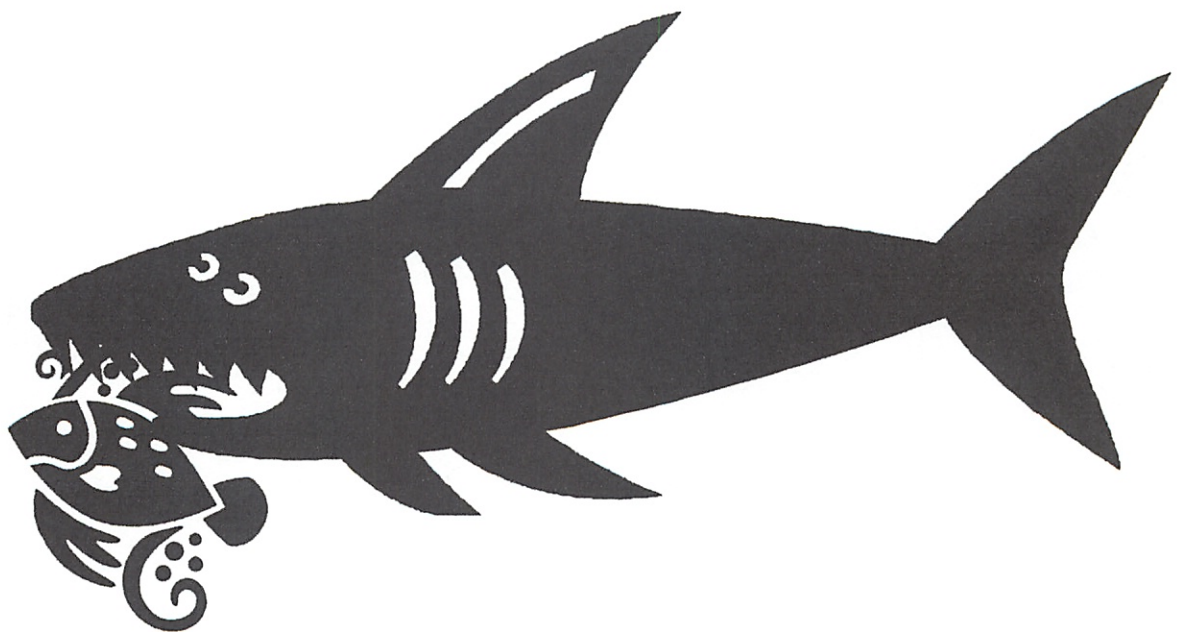
E. Important concepts to keep in mind this year.

1. Science is a means to learn about the universe. We try to answer questions.
2. No one has all the answers.
3. Many of the "answers" we now have may turn out to be wrong.

Science

Unit 1

Interactions



Chapter One - Questions
Pre-Teaching p 4

SCIENCE LOG

1. What are the important "players" in this environment? Are they all alive? Can they all be seen?

The players are the animals, the trees, flowers and the water. (Everything) they are not all alive and can not all be seen.

Air
Sunlight

2. What are some roles these players play?

Hawk eating the mouse
Deer drinking water
Sun warms water

The water lets animals drink.
The air lets most things breathe.
The sun light lets grass grow.
The hawk eats mouse

3. What are some of the interactions that can occur between the players?

Exploration 1 Worksheet, continued

Questions

1. The illustration below shows the connections a group of students made in playing the game.

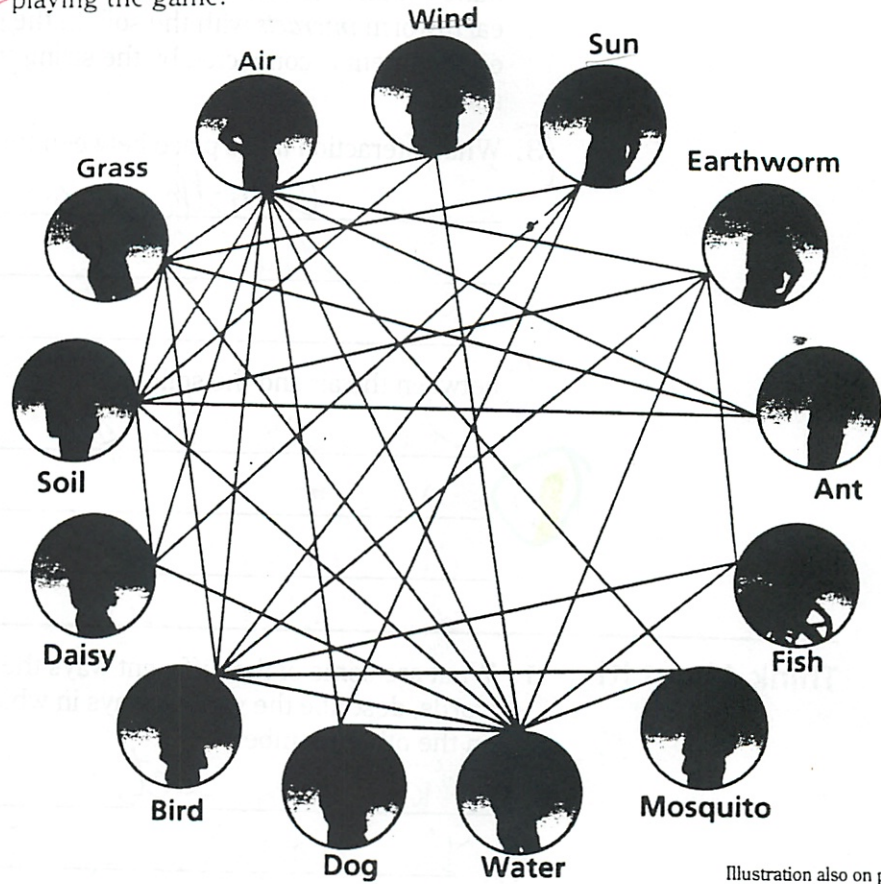


Illustration also on page 7 of your textbook

Best Answer

- a. What does the circle look like?

The circle looks like a polygon.

spider web

- b. Does any living thing in the circle exist alone?

No, living things need air and water.

- c. Would removing mosquitoes from the circle make any difference? How?

Yes, the birds eat mosquitoes so the bird would have less food.

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Exploration 1 Worksheet, continued

2. Why does the string connect the earthworm and the soil? The answer is quite simple: the earthworm lives in the soil and gets its food there. The earthworm *interacts* with the soil. In the game, wherever one part of the environment is connected by the string to another part, there is an interaction.

3. What interaction takes place between the earthworm and the bird?

The earthworm is food for the bird.

between the air and the soil?

The air helps keep the soil alive.
 air in soil
 wind blow soil

Think About It!

1. What are some of the different ways the connected pairs interact? In other words, describe the various ways in which one member of a pair depends on the other member.

The sun lets the daisy grow.

The dog needs the sun to stay warm.

The fish lives in water.

2. Are all of the possible interactions shown in the diagram on the previous page of this worksheet? If not, describe what other interactions could take place.

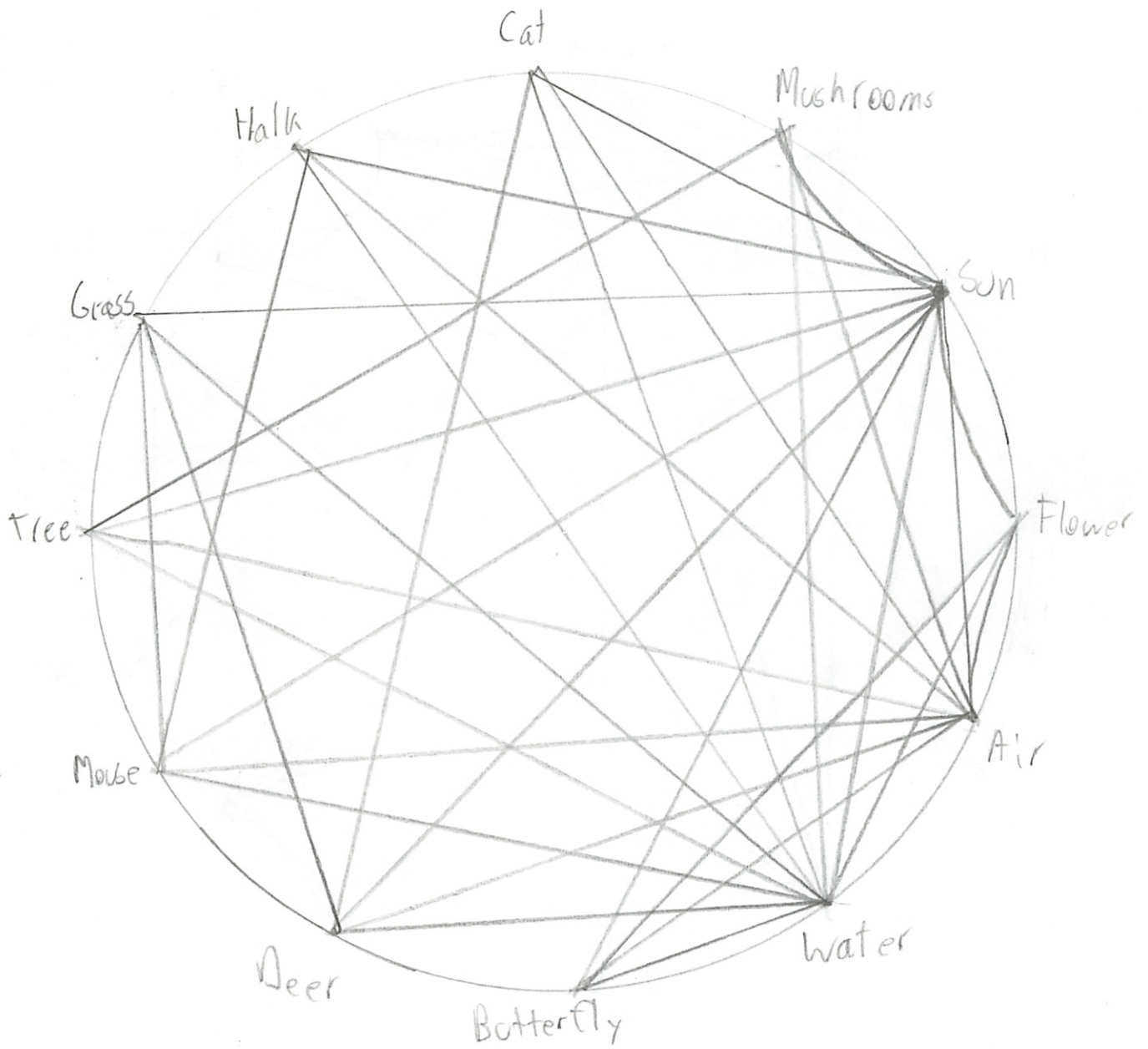
No, the bird could eat the ant. The sun provides light to many animals.

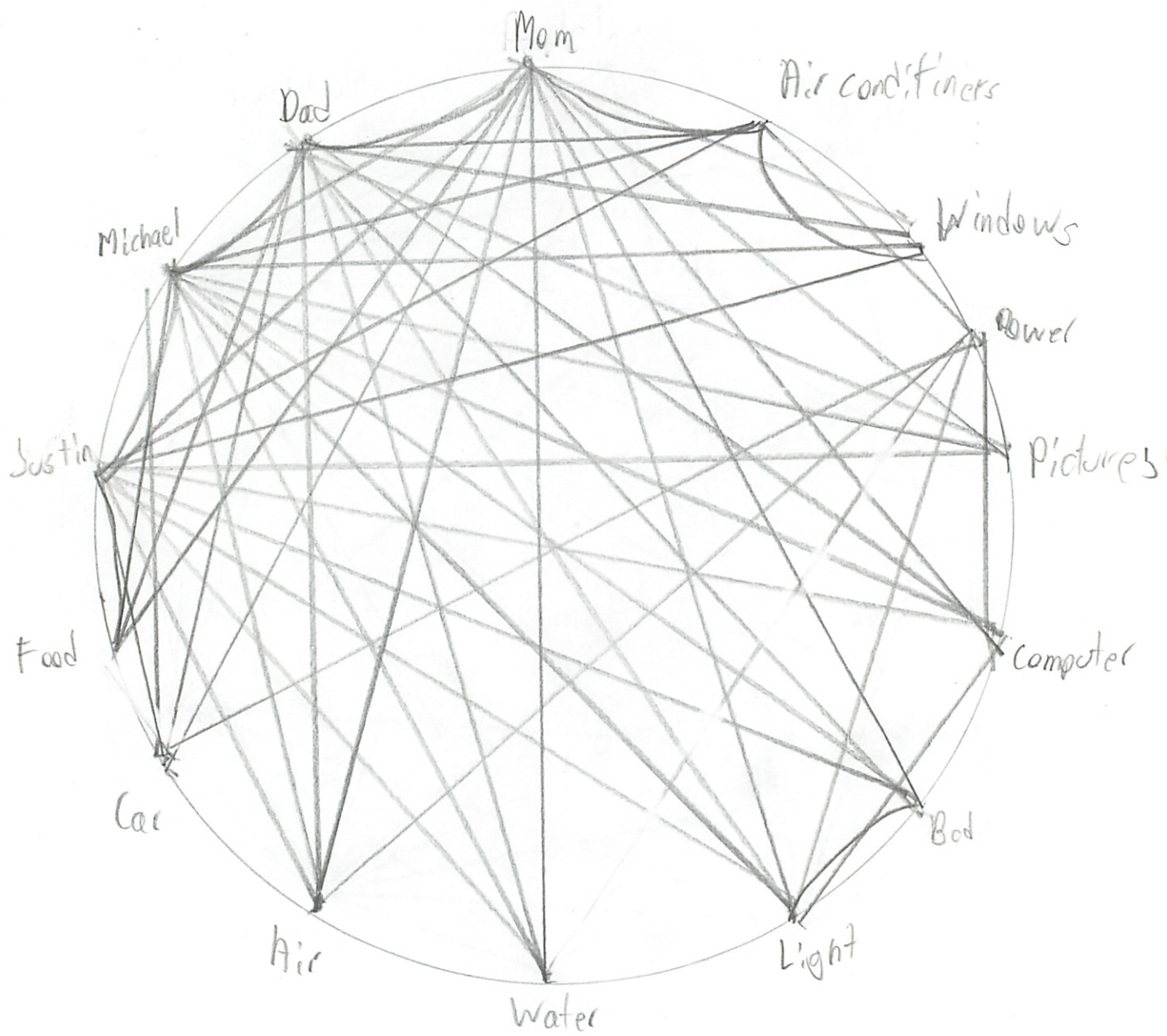
Dog attack bird

Bird fly in wind

Mosquito bite dog

Interactive Diagram





michael Plasmeier

SCIENCE Chapter 1 Review

A. Define the following terms based on your science log descriptions:

1. **Observations** - info. from 5 senses
 - a. qualitative observation - observation or description w/o numbers
 - b. quantitative observation - " " " w/ "
2. **Inference** guess or conclusion based on observations
3. **Hypothesis** - educated guess
4. **Environment** - surroundings
5. **Biotic** - alive, or once alive, came from something alive
6. **Abiotic** - not alive, never alive
7. **Niche** - relationship between the organism + its surroundings
8. **Habitat** - the place where the organism lives
9. **Biosphere** - a layer that all organisms live, all environments
10. **Ecosystem** - a group of organisms and their environment, w/ interactions
11. **Population** - a group of organisms or animals of the same species

B. Answer the following questions:

1. Give 2 examples of interactions between the following things:
 - a. plant to plant - mass grow on tree
The tree is shading the fern
the pollen makes other plants
 - b. animal to animal - the hawk eats the mouse
cat eats deer
 - c. abiotic thing to animal - the water provides nourishment to the deer
the sun provide light for the mouse

Chapter 1
Resource Worksheet

Table of Habitats and Niches, page 11

Complete the following table by describing the niches of the organisms shown on page 11 of your textbook as thoroughly as you can.

Organism	Habitat	Description of niche	
		How it uses other things (living and nonliving)	How it is used by other things in its environment
robin	Open areas, lawns, bushes, trees, air, or ground	Uses bush or tree for a nesting site or for protection. Uses twigs and grass for nest. Eats worms and insects for food.	Eaten by larger birds, snakes, or cats. Eggs eaten by other birds. Parasites—mites and lice—live in its feathers.
turtle	Ponds, grass, land, rocks, ground, water	pond for swimming Eats small fish, worms tall grass for protection lays eggs for sand Shade from rocks	Uses shells? We pet birds eat it eggs get eaten water live in them
spruce tree	forest, hillside, land, flat area, parks	rains for water sun for energy takes in Carbon Dioxide Releases oxygen Crack sidewalk	provides shade wood for paper bees eat it building houses (wood) fire wood (climbed up)
beetle	tree areas, fields, warm climate, bushes, land	wood for fuel plants for food leaves hind in plant	birds eat it collect it Victim of bug spray

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SCIENCE WORLD Assignment

Name Michael Plesmeyer

Date 9/12

Directions: Read the articles indicated below in the Sept. 13, 2002 Science World Magazine. For each article, describe the NICHE of the organism by identifying some interactions it has with its surroundings. How does it use its surroundings and how is it used by other things.

A. Killer Ants p. 4-5

List some interactions with surroundings:

1. Ant eats bugs
2. Ant drives out Animals
3. Ant make nests in soil
4. Ants battle spiders
5. Ants battle beetles

B. Short Take - Gladiator p. 7

Interactions:

1. Eats spiders
2. Lives in Soil

C. Termite Tower p. 12-13

Interactions:

1. Termite circulates air
2. _____
3. _____
4. _____

D. Bachelor Pad p. 15

1. _____
2. _____
3. _____
4. _____

(over)

E. Croak Frogs p. 18 -19

1. _____
2. _____
3. _____
4. _____
5. _____

A. Multiple Choice - Place the letter of the correct answer on the line provided.

1. B You count the legs on a spider. This is an example of:
 A. inference B. quantitative observation C. qualitative observation
2. A All the living things in an environment are considered to be:
A. biotic B. abiotic C. a niche D. habitat
3. A You see dark clouds in the morning and assume that it will rain later. Your idea about the rain is an example of:
A. inference B. qualitative observation
 C. quantitative observation D. ecosystem
4. B A tadpole lives in a pond. The pond is its:
 A. niche B. habitat C. biotic D. population
5. C All the squirrels in a woodland area make up a:
 A. niche B. habitat C. population D. ecosystem

B. Answer the following questions on the lines provided.

1. Give an example of an animal to animal interaction.

The hawk eats the mouse

2. Give an example of a plant to animal interaction.

The grass gets eaten by a deer

3. Give an example of a plant to nonliving thing interaction.

The plants leaves help the soil

4. Describe the niche of a frog.

eaten by a bird, eats small insects, swims in water, lays eggs

5. Give an example of a qualitative observation you might make when you enter the school each morning.

A new sign advertising the GI drive is up

50
A+
good

both must be living 9/10

1. Commensalism - (def.) One organism is helped, other not affected

(example) tree shades mushrooms, human milking cows

2. Mutualism - (def.) both organism benefit

(example) shark getting cleaned by little fish

3. Parasitism - (def.) parasite causes harm to the host

(example) mosquito sucking your blood

Problems to Consider (page 14-15)

Examine the pictures on pages 14 and 15 and read the captions. Then identify the types of relationships and explain your answers.

A. Mutualism, Bacteria gets energy, cows has food digested

B. Parasitism, Ichu eats the other big eggs

C. Commensalism, bugs get free ride, cat doesn't

D. (Same as A) Mutualism, bacteria get energy, termites gets digested help

E. Parasitism, Bug gets energy, hurts sheet

F. Parasitism, Natter takes food from other plants and eats them

G. Commensalism, Whale doesn't feel, Barcoles get free support

H. Commensalism, Remora get ride + food, shark doesn't feel

I. Mutualism, Ants get honeydew, aphids get protection

J. Parasitism, gets support + food, weakens tree

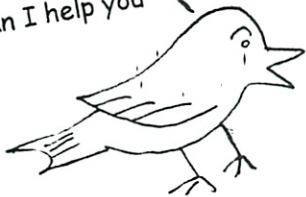
K. Commensalism, Orchids get support, tree no harm

L. Mutualism, Bacteria get shelter, Human get Vit. K7 removed water

Types of Interactions in Communities

1. COMMENSALISM -

Thanks Mr. Oak tree, for giving me a place to build my nest. Can I help you in any way?



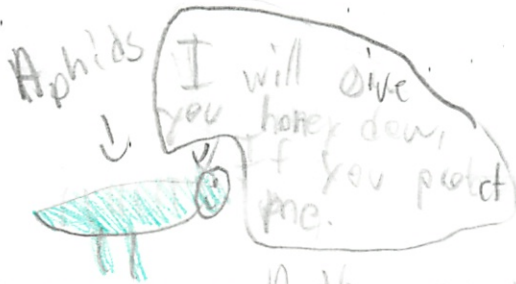
No thanks. I'm fine. Glad to be of service.



10

Why is this commensalism? One organism helped, other not affected

2. MUTUALISM -



Why is this Mutualism? Both organisms helped

3. PARASITISM -



Why is this parasitism? Eggs one organism helped, one hurt

Chapter - 1 Cycles

Water Cycle



Condensation

vapor cooling to
water drops

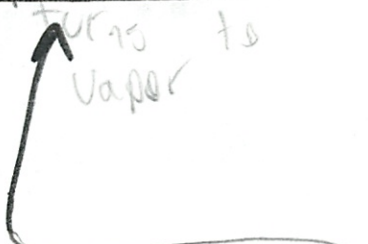


Rain, Sleet, Snow
Precipitation



Evaporation

water turns to
vapor



Plants - Use water
to make food

Animals - Use
water



Water

Oxygen - Carbon dioxide Cycle

Air

- Nitrogen - N 78%
- Oxygen - O₂ 21%
- carbon dioxide - CO₂ 1-2%

Oxygen

Plants and Animals

Use O₂ for respiration
(Get energy from Food)
CO₂ is waste gas

Plants

plants use CO₂ to make
food
O₂ is waste gas

Carbon dioxide

Nitrogen Cycle

Nitrogen in Air



Bacteria - in soil
Makes Nitrogen Compounds
that plants can absorb.

Bacteria
decays the wastes, returns N to air

wastes
from animals
being going to bathroom
N goes back to soil



plants
absorb N through roots



animals
eat plants to get N compounds

Nitrogen Cycle

Michael Plasmeier

(10)

9/15

Nitrogen is a gas that makes up 80% of the world's atmosphere. Nitrogen from being in the air is changed by certain plant roots. It is changed into nitrates and ammonia. The nitrate then becomes part of plants and animals. When the animal dies, the nitrogen is changed by soil particles. The nitrogen is changed back to ammonia and nitrates. The other soil bacteria changes the nitrates back into nitrogen gas, to complete the cycle.

Hydrogen Cycle

(10)

Hydrogen Cycle

Hydrogen is the most abundant element in the universe. It is a colorless, odorless, and tasteless gas. It is highly flammable and reacts with oxygen to form water. Hydrogen is used in a variety of applications, including as a fuel for rockets and in the production of ammonia and methanol. It is also used in the refining of petroleum and in the production of hydrogen peroxide.

The hydrogen cycle is a natural process that occurs in the atmosphere. It is a cycle of hydrogen atoms that are constantly being recycled. The cycle begins with the formation of hydrogen gas from the reaction of hydrogen and oxygen. This gas then reacts with oxygen to form water. The water then evaporates into the atmosphere, where it is broken down into hydrogen and oxygen by ultraviolet radiation from the sun. The hydrogen then reacts with oxygen to form water again, completing the cycle.

Ecosystems and Biomes

An Animal Adapted to Desert Life

The environmental conditions of the desert are harsh. Temperatures reach more than 40°C during the day, then drop below 15°C at night. The driest deserts get an average of 3 cm of rainfall each year, while the wettest receive no more than 25 cm.

In spite of these harsh conditions, many organisms survive quite well in the desert. Among them is the small rodent shown at the right. Its appearance and the fact that it can move by hopping have earned it the name kangaroo rat.



The kangaroo rat escapes the heat by spending its days in burrows underground. In the burrows, the temperature stays at about 13°C day and night all year long. At night, the animal goes to the surface for food. The kangaroo rat feeds mostly on dry grasses and seeds. There are some reports that it takes grasses into a special part of its burrow near the surface. There the plants are left to-dry and are then taken to storage areas deeper in the burrow.

One of the most unusual adaptations of the kangaroo rat is the way it gets water. Most desert animals drink water when it is available and have various adaptations for conserving water in the body. The kangaroo rat does not drink at all. In fact, a captured kangaroo rat drinks water only if it is taught to do so. Instead, this animal relies on "metabolic water." This is the water formed when food nutrients are broken down inside body cells. Not much water is formed, but it is enough for the kangaroo rat. The animal also conserves water by excreting very little water in its urine. Staying inside its burrow in the daytime also reduces loss of water from the body.

1. Name three ways the kangaroo rat is adapted to living in deserts. A kangaroo rat adapts in many ways. One is that it eats at night, it also lives in burrows. The rat can also make its own water.
2. Many desert animals live in burrows. How does this behavior adapt animals for living in deserts? The burrows let the animal cool off so it survives. Also to see in the burrow you need to see in the dark.
3. What is "metabolic water"? Does the human body produce it? Explain. Metabolic water is water that the rat makes in his own body. A human can do this in his body, but not enough.

this lets you hunt at night.

SCIENCE Chapter 1 Abiotic Factors - Heat, Moisture, Light (p.16-23)

A. HEAT

1. What is "range of tolerance for temperature?" Range of temp. where organisms can survive.

2. What are some adaptations that plants and animals have that help them survive very warm or very cold temperatures? optimum temp. the temp. that is the best

fur, fat, warm blooded, mud shade, stop growing, hibernation, store water, sweating

B. MOISTURE

1. Why do humans need water? get rid of water, body fluids, body tissue

2. Why do plants need water? necessary for photosynthesis (make food)

3. What two factors on the graph (page 20) determine the length of time that a human can survive? temp + water to drink

C. LIGHT

1. Why do plants need light? Source of energy for photosynthesis (make food)

2. Why can mushrooms grow in the dark? They don't use photosynthesis, there not even plants

3. Why do many short plants grow very quickly and flower in the early Spring? To flower before the trees grow leaves.

Michael Plasmeier

Some Light Thinking 9/17

- Geranium plants stored in the basement develop long stems.

Maybe the stems are longer to reach the light or to move places to take in the light.

- The grass under a trash can becomes yellow.

The grass under the trash can doesn't get enough sun to grow, so it dies.

- Most woodland flowers grow quickly and bloom very early each spring.

The flowers grow fast because they want to finish blooming before the tree puts shade over them.

- Plants that grow in the forest under branches are small and scarce compared to those in open spaces.

This is just a simple matter of light. Those under a branch don't get much light.

(1)

- Moss tends to grow more abundantly on the north side of trees than on the other sides.

The north side of a tree gets less sunlight, letting moss grow better.

SCIENTIFIC METHOD

9/18

A means to try to answer questions (or learn) about the universe.

STEPS:

1. Make observations: Using 5 senses

Examples: Observing a hurricane in ocean

2. Ask questions about the observations. Identify a problem.

Example: What is this how does it happen
Where will it hit land.

3. Do research about the problem (if possible).

Example: Close observation
History, Internet, Mag.

4. Make an educated guess about a solution.

Called a Hypothesis.

Example: Hurricane would hit W.C.

5. Test your hypothesis by doing ^{an} experiment.

Example: Can't just watch, test of idea

6. Draw conclusions about your hypothesis based on your experiments.

Example: Decide if hypothesis is correct.

7. Report your results (if important) to other scientists, journals,
internet

Name Michael Plasmer

Date 9/22

per. 5

Scientific Method - Variables and Controls in Experiments

A. VARIABLES: When conducting experiments, we often have **variables**, which are factors or conditions that change. They are usually what is being tested.

Example: If you were testing the effects of **fertilizer** on the growth of plants, your experiment would include different kinds of fertilizer. The fertilizer is the **experimental variable**. All other conditions of your trials should be kept the same. That is, same kind of plants, same soil, same amount of light and water. The only thing different is the variable (fertilizer). It is the thing **being tested**.

B. CONTROLS: Experiments also often need a "control." The control is part of the experiment that gives you something to compare your results to.

Example: Suppose your hypothesis is - "**I think plants grow best with fertilizer.**" If you grow ten plants and put fertilizer on all ten, they may grow well, but you don't know if the fertilizer had an effect or not. You have nothing to compare it to. Your experiment needs a **control**. The control would be for you to grow another ten plants and give them **NO fertilizer**. Now you have something to compare your fertilized plants to. The ten plants with no fertilizer represent the **control group**.

Below are sample HYPOTHESES. For each one, you must identify three things:

- a. What is the variable being tested in the experiment?
- b. What other factors must be kept the same?
- c. What is the control group?

Sample #1 below is done for you. Use it as a guide to completing the others.

1. SAMPLE - Hypothesis - **Earthworms prefer darkness:**

- a. Experimental variable - amount of light
- b. Kept the same - kind of worms, amount of food, kind of soil, temperature, moisture, ~~light~~ amount of soil
- c. Control group - keep some earthworms in light

2. Hypothesis - **Frogs prefer live food to dead or dried food.**

- a. Experiment variable - type of food
- b. Kept the same - frog, ^{food}inverment, kind of food (worms), time of day, part of the year, ^{temp}temp
- c. Control group - frog got dead food

3. Hypothesis – **Vitamin C helps prevent cold infections.**

a. Experimental variable - Vit. C

b. Kept the same ^{same type} people, environment, time, temp

c. Control group - some ^{get} no Vit. C

4. Hypothesis - **Alkaline batteries last longer than other kinds.**

a. Experimental variable - Types of batteries

b. Kept the same - same power waster, same environment
some amount of battery

c. Control Group - one get different kind (non alkaline)

5. Hypothesis – **Goldfish live longer if fed every other day.**

a. Experimental variable - Feeding times

b. Kept the same - amount of food, environment, time of day, gold fish

c. Control group - fish get fed everyday

Name Michael Plasmeier Date 9/22 Class _____

Methods of Scientists

All scientists have some special characteristics. They are curious people. This curiosity leads them to investigate things and events. Scientists use their senses to observe as they investigate. They think logically and are open minded. In seeking knowledge, the organized approach used by scientists is called the scientific method. List the six steps of scientific method below.

- Ask Questions
1. Make an Observation
 2. Collect Info about problem
 3. Form Hypothesis
 4. Test Hypothesis
 5. Accept or Reject Hypothesis
 6. Communicate results

A. Using the Scientific Method

A scientist observed that white mice that were fed seeds appeared to grow more than mice given leafy green and yellow vegetables. The scientist hypothesized that the protein in the seed was responsible for the growth. He designed an experiment to test his hypothesis. He divided 200 mice of the same age, size, health, and sex into two groups of 100 mice each. The mice were kept under identical conditions for fourteen days. One group was given a diet low in protein. The other group was given a normal protein diet. The mass of each mouse was recorded daily for fourteen days.

1. Which group of mice served as a control? Low diet of proteen
2. What was the variable? amount of proteen
3. What effect of a protein diet was tested? If they grow better mass of mouse
4. What other effects of a protein could have been tested? energy, strength, health, lifespan If high proteen helps
5. Why were large numbers of mice used in this experiment? to get a bigger average to, (more fair), stamp out defects some mice might be bad
6. If the results of the experiment did not show a marked change between the two groups, what should the scientist do next? They should try no, normal, and extra proteen

Enrichment

Name _____ Date 9/29 Class _____

The Scientific Method

In 1928, Sir Alexander Fleming was studying *Staphylococcus* bacteria grown in culture dishes. He noticed a mold called *Penicillium* also growing in some of the dishes. A clear zone existed around the mold. All the bacteria that had grown in this clear zone had died. In the culture dishes without mold, no clear areas were present.

Fleming reasoned that the mold must be producing a chemical that killed the bacteria. He decided to isolate this substance and then test it to see if it would kill bacteria. Fleming transferred the mold to a nutrient broth solution. This solution contained the materials the mold needed to grow and reproduce. He allowed the mold to grow, and then he removed the mold from the nutrient broth. Fleming added the nutrient broth in which the mold had grown to the bacteria. He observed that the bacteria were killed. Fleming added nutrient broth that had not had mold growing in it to another dish of bacteria. The bacteria in this dish were not killed. Fleming concluded that the mold produced a bacteria-killing substance in the broth. He called the substance that killed the bacteria penicillin.

1. Identify the problem Fleming wanted to solve. Why is there a clear area around the mold
2. What was Fleming's hypothesis? The mold is producing a chemical that kills bacteria
3. How did Fleming test his hypothesis? He treated bacteria w/ moldy broth + plain broth
4. What was the variable in Fleming's experiment? mold
5. What was the control? bacteria treated w/ plain broth
6. What data did Fleming obtain? Moldy broth killed bacterial plain didn't
7. What was his conclusion? A chemical in the mold is killing bacteria

Michael Elasmeyer

SCIENTIFIC METHOD - SEED INVESTIGATION

PURPOSE: Use the Scientific Method to investigate the ability of seeds to germinate in different conditions.

Procedure: The teacher will assign your group to investigate one condition for germination of seeds. The conditions to be investigated include: light, temperature, and moisture. After being assigned your variable, complete the questions below.

begins
to grow

1. State the problem or question your group is investigating. Will the radish germinate first at a hot or cold temperature.

2. What are some things that you already know about seed germination? The roots come out first, then the stem. They need water, sun.

3. What is your hypothesis? The room temp radish seed will germinate first

4. Describe the experiment that you will run to test your hypothesis. Remember to indicate any special conditions needed for the experiment. Your experiment should have steps of procedure.

- yes lids (all) - 4 sheets of towels

- 9 seeds (all)

- 4 ml water (all)

- fridge, computer monitor, shelf in room (location)

- no light (all) - wrapped in foil

5. What will be your variable? temperature

6. What will be your control? Room temp.

7. What do you think your data will show? I think the room temp will be best

Heat

JD

SEED INVESTIGATION - Data / Results

A. Complete the chart below for your group results.

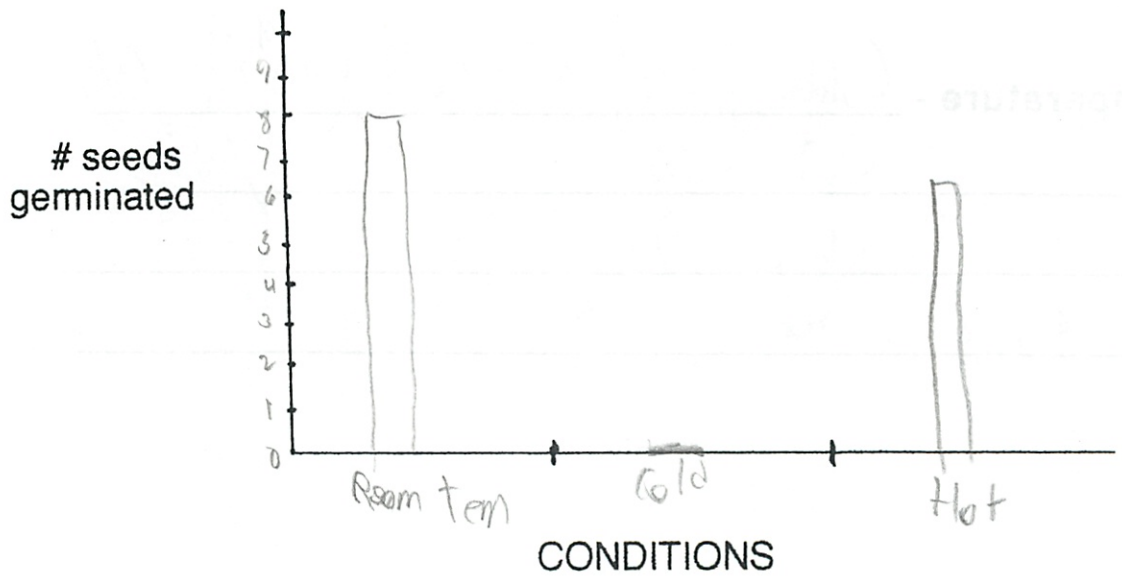
10

CONDITIONS	Hot	Cold	Room
# seeds ^{out of} 9 germinated	6	0	8

1. What conditions produced the most germination? The room temp. one grew the best

2. Other observations: Room temp, grew longer see roots
~~more~~, cold had most water left, hot was 95°F

B. Graph your groups results below:



C. Conclusions - Cold did not grow, Room temp is option temp for seeds, work is better than cold. I was correct in thinking that room temp was the best

Class Results

1. Light -

Light - 8	{ 9
Shade - 7	{ 9
Dark - 10	{ 10

It doesn't really matter for germination of seeds, because of the stored food

2. Moisture -

13 ml - 10	{ 20 drops - 0	{ 20 drops min
5 ml - 10	{ 50 drops - 10	{ 20 ml max.
0 ml - 0	{ 100 drops - 10	

Some water is needed.

3. Temperature -

Cold (40°F) - 0	{ Cold (40°F) - 0/9
R.T. - 10	{ RT - 8/9
Warm - 0	{ Warm - 6/9

Fridge is too cold, R.T. is best

p26 #3

Michael Plasmeyer

10

9/24

#3

	0°C	10°C	15°C	20°C	25°C
Day 5	0	2	4	1	0
Day 10	0	5	11	4	3
Day 15	0	8	18	12	7

Nothing grew at 0°C. At 10°C a few seeds grew, 15°C is the optimum growth temperature, with 18 seeds growing. At 20°C, it starts going downhill. At 25°C, less plants grow than at 15°C. Overall, most plants sprouted at Day 10-15, then 5-10.

#3

10

1/2

Minimum Maximum

Temp	10°C	20°C	30°C	40°C	50°C	60°C
1	0	1	2	3	4	5
2	0	1	2	3	4	5
3	0	1	2	3	4	5
4	0	1	2	3	4	5

#3

Nothing grew at 0°C. At 10°C, low temp. grew. 15°C is the optimal growth temperature with 18 seeds germinating. At 20°C, 17 seeds germinated. At 25°C, 16 seeds germinated. At 30°C, 15 seeds germinated. At 35°C, 14 seeds germinated. At 40°C, 13 seeds germinated. At 45°C, 12 seeds germinated. At 50°C, 11 seeds germinated. At 55°C, 10 seeds germinated. At 60°C, 9 seeds germinated. At 65°C, 8 seeds germinated. At 70°C, 7 seeds germinated. At 75°C, 6 seeds germinated. At 80°C, 5 seeds germinated. At 85°C, 4 seeds germinated. At 90°C, 3 seeds germinated. At 95°C, 2 seeds germinated. At 100°C, 1 seed germinated.

Science Quiz - Scientific Method

(50)

Matching - Choose the letter of the correct answer from the list on the right. You do not have to use all of the choices.

- 1. An educated guess. C
 - 2. When you decide if your hypothesis is correct. F
 - 3. The test of a hypothesis. B
 - 4. Part of the experiment used to compare changes. E
 - 5. The question a scientist is investigating. A
- A. the problem
 - B. experiment
 - C. Hypothesis
 - D. Variable
 - E. Control
 - F. Conclusion

AT
great!

Answer the questions on the lines provided.

1. A scientist believes that exercising for 30 minutes a day will cause the average person to lose about 2 pounds in one month. He designs an experiment to test this idea. He gets one hundred volunteers to participate. He weighs 50 of them, then has them exercise for 30 minutes a day for one month. He takes the other 50 people and has them avoid exercise for one month. At the end of the month he weighs all of them again and collects the data.

- A. What is the variable in the experiment? exercise
- B. What things must be kept the same as much as possible? activities, environment, ^{air} water, heat, food, community, same age people
- C. What would be the control? the people that don't exercise

2. You want to investigate the idea that red light will make plants grow best.

- A. What will be your variable? The red light
- B. What will be your control? Regular light
- C. What things should you try to keep the same? plant, water, heat or temp, time of year, air quality, brightness of light

Graphic

15. The graph shows the amount of grass produced during a 13-week period. (For example, the number 2 on the horizontal axis indicates the end of the second week.) Suppose that mice are the only consumers of this grass and that the mice and grass are not threatened by drought, parasites, disease, or predators. Answer the following questions based on the graph:

a. At the end of which week is there the greatest amount of grass?

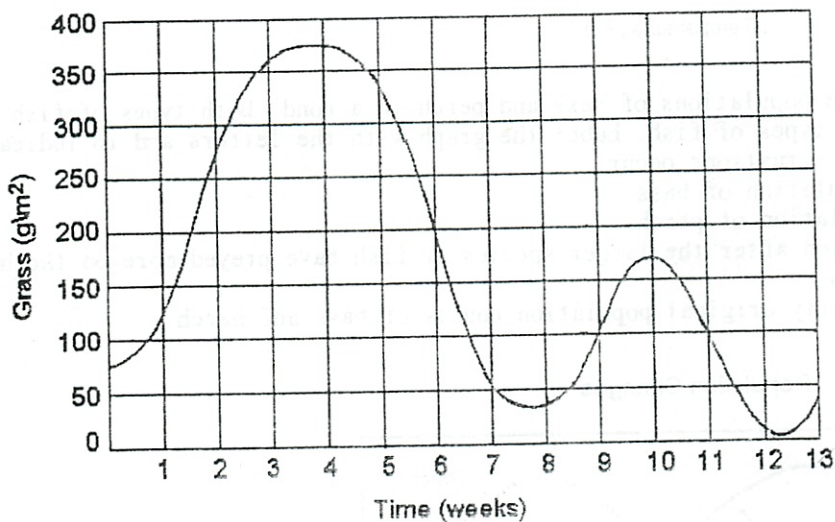
4

b. At the end of which week is there the least amount of grass?

12

c. Predict how the mouse population will change as a result of changes in the amount of grass available.

If there is less grass, mice can't reproduce as many or some die from not enough food.

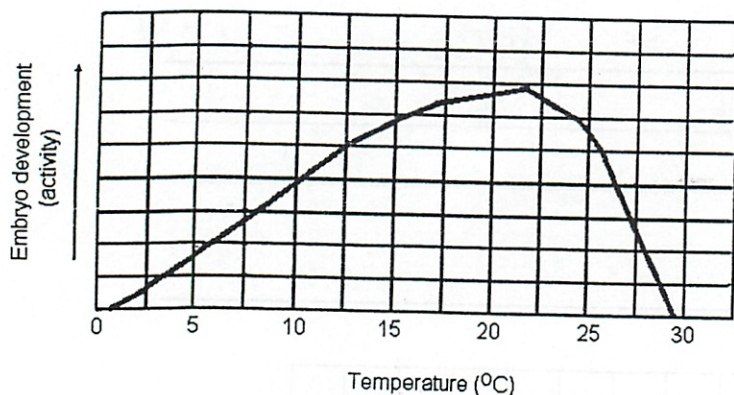


16. Study the graph of frog embryo development at different temperatures. Using the terms *range of tolerance for temperature* and *optimum temperature*, describe the information presented in the graph.

Optimum temp $22^{\circ}\text{C} = 72^{\circ}\text{F}$

Range of tolerance $0^{\circ}\text{C} \rightarrow 28^{\circ}\text{C}$

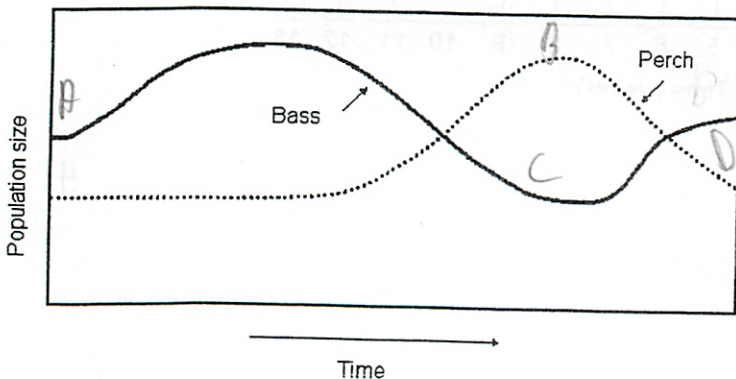
Development of Frog Embryos at Different Temperatures



17. This graph shows the populations of bass and perch in a pond. Both types of fish are preyed on by larger types of fish. Label the graph with the letters a-d to indicate where the following situations occur:

- the original population of bass
- the largest population of perch
- the bass population after the larger species of fish have preyed more on the bass than on the perch
- the return to nearly original population counts of bass and perch

Population Changes



Michael Plasmeier

Chapter 1 Review Questions

1. Describe the difference between biotic and abiotic. Biotic is living or once living, ^{came from} abiotic is never living or alive

2. Write a sentence using the words abiotic, biotic, and interaction.

The biotic deer had a interaction w/ the abiotic sun.

3. What does it mean to say an animal has a "range of tolerance for moisture?"

It means how much water the animals can have to survive

4. Give an example of:

helping each other a. mutualism - The bird building in the tree

help b. commensalism - The bee taking the pollen from the flower,

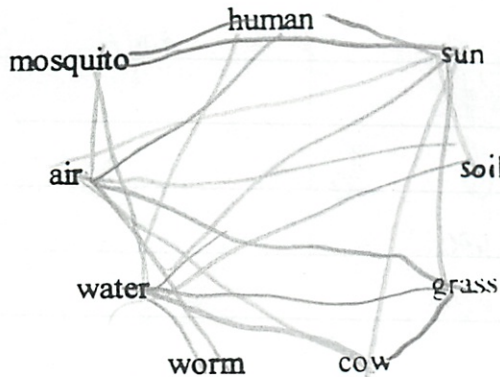
not killing something for food. c. parasitism - The tapeworm that takes food from a human

5. Describe the niche of an oak tree. owls live in it, gives

shade to animals, woodpeckers eat it, makes

6. Describe the habitat of a squirrel. woods, trees, land, ^{small} open areas

7. Draw lines connecting parts of the "Interaction Diagram below."



8. What is an organism's "optimum temperature." The temp. where it survives best

9. Why do plants need sunlight? to make chlorfill for food

10. Define qualitative and quantitative observations. qualitative - observation w/o numbers, quantitative - w/ numbers

11. Design an experiment to test the idea that plants grow better with fertilizer than without it.

a. State the problem -

~~Plants should grow better~~ Will fertilizer make plants grow better?

b. What is your hypothesis -

The plant w/ fertilizer will grow better

c. What will be your procedure -

Take 20 plants, ^{install} give 10 fertilizer, 10 ~~have~~ no fertilizer, put all on window sill, in 4 weeks which is taller

d. What will be your variable?

fertilizer

e. What will be your control?

plant w/ no fertilizer

12. Select an animal and describe its interaction with the environment. In your description, mention how this animal uses other things in the environment and how it is used by other things. Use the words habitat and niche in your description.

Study

Choice of animal

robin

Description of its interactions with its environment:

lives in trees (habitat) also open areas

eats worms + insects

preyed on by larger birds + animals

Eggs eaten by animals

lice live in feathers

Niche

Name Michael P. Casmer

Date _____

Science World Assignment - Scientific Method

Sept. 22, 2003

Read the Article on pages 11 - 13. Then describe the parts of the Scientific Method as used by biologist Dr. Bruce Means to investigate frogs in Florida.

1. What was the observation that led to his investigation?

There are less frog on 1 side of the hill

2. State his research question.

What caused the frogs numbers to drop.

3. What did his research tell him?

A paper company had cut down all the trees and put in a different kind

4. What was his hypothesis?

Sand-pine trees do not harm animals

5. What was his experiment?

Researched past, numbers collect frogs in nets.

6. What data did he collect?

More frogs lived in the new old trees area.

7. What was his conclusion?

Sand-pine trees hurt golpher frogs.

H	T	H
H	H	T
T	H	H
T	T	T

H	T	H
T	H	H
H	H	T
T	T	T

(T, T, T)

(T, T, T)

Michael Deasmeder

CHAPTER 1 METRIC NOTES

I. The Metric System is used for measurements in most countries of the world and in all science classes and labs.

A. The three basic units of measure are:

- 1. meter - length
- 2. liter - Volume (liquid)
- 3. gram - mass (weight)

B. To make larger or smaller units of measure we add a **prefix** to the basic unit:

1. The most common prefixes are:

- km Kilo - 1000
- Hm Hecto - 100
- Dm Deka - 10
- m basic unit - 1
- dm deci - 0.1
- cm centi - 0.01
- mm milli - 0.001

memory 1, 2e

2. Examples of units using prefixes:

- 1. centimeter = 0.01 meters cm
- 2. milligram = thousandths mg
- 3. Kilometer = 1000 meter km

C. When reading a metric ruler, the numbers usually are **centimeters** and the tiniest lines are **millimeters**.



1. A → B = 2 cm

2. A → C = 4.5 cm - 45 mm

3. A → D = 87 mm

4. A → E = 113 mm

5. A → F = 14.5 cm

Measurement

Michael Glasmeier NAME

Metric System

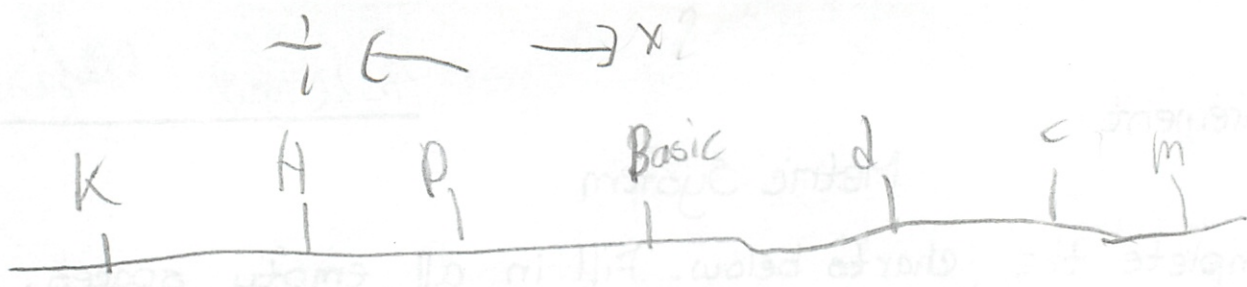
Complete the charts below. Fill in all empty spaces.

Unit	Symbol	Used to find
1. Gram	g	Weight or mass
2. Liter	l	Volume (liquid)
3. Meter	m	Distance or length

Prefix	#	Symbol
Kilo	1000	k
Hecto	100	h
Deka	10	D
	1 UNIT	
deci	$\frac{1}{10}$ or .1	d
centi	.01	c
milli	.001	m

Complete each statement below. Use the two charts.

- 100 grams = hectogram
- .01 of a liter = centi liter ~~deci liter~~
- 10 meters = deka meter
- .1 of a gram = deci gram
- 100 liters = hectoliter
- .001 of a meter = millimeter
- 10 grams = deka gram
- .01 of a meter = centimeter
- 1000 meters = kilometer
- .001 of a gram = milligram
- .01 of a gram = centigram
- 1000 grams = kilogram
- 10 liters = deka liter
- .1 of a meter = decimeter



$$1. \quad 25,000 \text{ m} = \underline{2500} \text{ CM}$$

$$2. \quad 4,700 \text{ g} = \underline{4700} \text{ mg}$$

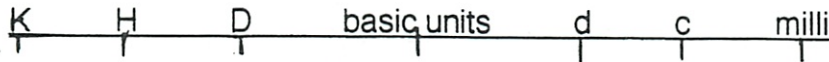
$$3. \quad 4,25 \text{ mm} = \underline{,425} \text{ m}$$

$$4. \quad 48,500 \text{ m} = \underline{48500} \text{ CM}$$

Name Michael Plasmencia

Date 10/8

METRIC QUESTIONS



1) 5 Km = 5,000 m

2) 8 cm = 0.08 m

3) 05 Km = 50 m

4) 30 mg = 0.03 g

5) 9.5 cm = 95 mm

6) 200 Kg = 200,000 g

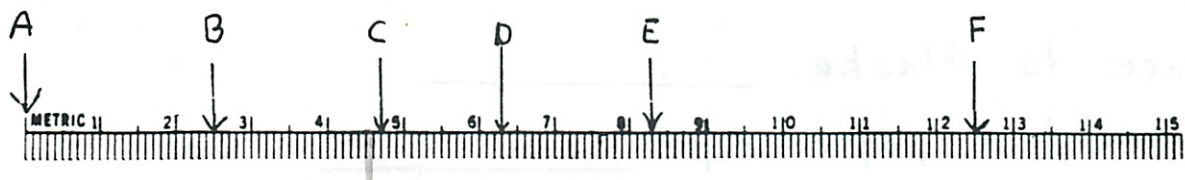
7) How many millimeters are in 45 centimeters? 450 mm

8) How many grams are in 10 Kilograms 10,000 g

9) How many meters is 50 Kilometers? 50,000 m

10) How many milliliters are in 20 liters? ~~0.02~~ 20,000 mL

Indicate the length between the letters on the metric ruler below.



11) A -----> B = 2.5 cm

12) A -----> C = 4.7 cm

13) A -----> D = 6.3 cm

14) A -----> E = ~~8.3~~ 8.3 mm

15) A -----> F = 12.5 cm

Metric Problems



1) $80 \text{ cm} = \underline{0.8} \text{ m}$

6) $9 \text{ Km} = \underline{90} \text{ Hm}$

2) $0.4 \text{ km} = \underline{40} \text{ m}$

7) $0.007 \text{ g} = \underline{7} \text{ mg}$

3) $200 \text{ mm} = \underline{20} \text{ cm}$

8) $4000 \text{ cm} = \underline{40} \text{ m}$

4) $8.5 \text{ g} = \underline{8500} \text{ mg}$

9) $25 \text{ l} = \underline{25000} \text{ ml}$

5) $25 \text{ kg} = \underline{25000000} \text{ mg}$

10) $0.8 \text{ Kg} = \underline{80000} \text{ mg}$

Name the Metric unit of measurement you would use for:

11. Distance from home to school. km

12. Your weight. kg

13. Milk in a carton. L

14. Length of a spaghetti noodle. cm

15. Distance to Alaska. km

16. Weight of a paper clip. mg

Measure the lines below in Metric.

17. _____ = 10.2 cm

18. _____ = 8.3 cm

19. _____ = 14.5 cm

20. _____ = 5.5 cm

Name Michael Plasencia

Date 10/8

METRIC MEASUREMENT LAB

Make sure all measurements have UNITS with them

A. Length Measures - measure the following areas:

1. Width of the ledge in back of room - ~~4.87m~~ 4.85m
2. Height of filing cabinet - 1.57m
3. Measure your desk dimensions:
 - a. height from the floor - 76cm
 - b. length (side to side) - 152.5cm
 - c. width (front to back) - 60.9cm 60.5cm
4. Have your partner measure your height and arm span:
 - a. Your height - 164cm + 3cm for shoes
 - b. Your arm span - 158cm

B. VOLUME MEASURES - indicate the amount of liquid in the following containers:

1. beaker A - 130mL - 125 mL
2. beaker B - 300mL
3. Graduated cylinder C - 33mL
4. Graduated cylinder D - 40mL

C. MASS MEASURES - Measure the mass in grams of the following items:

1. Empty 600 ml beaker - 187.8 mL
2. 600 ml beaker with 200ml water - 353.0 mL

D. TEMPERATURE MEASURES - Measure the temperature of room temperature water, then add ice and watch the temperature drop. Record lowest temperature.

1. Room Temperature water - 19°C
2. Water with ice added (lowest temp.) - 3.5°C

METRIC QUIZ

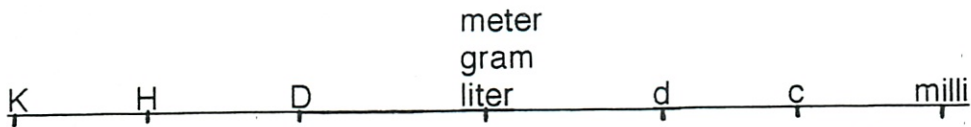
NAME Michael Plasmeier
 DATE _____

1. What do the following prefixes mean?

- a) Kilo - 1000 b) centi - 0.01
 c) deci - 0.1 d) milli - 0.001
 e) Hecto - 100 f) Dekka - 10

50
 A+
 great

2. Solve the following metric problems. You may use the chart below.

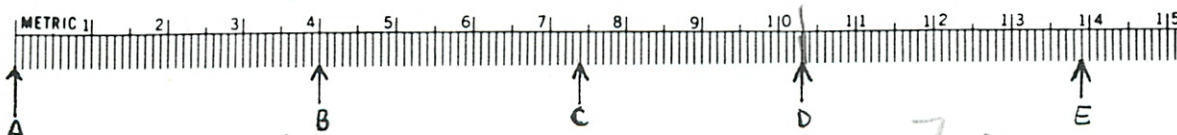


- a) 35 m = 3500 cm d) 3000g = 3 Kg
 b) 5.8 Km = 5800 m e) 10.45 L = 10450 mL
 c) .007g = 7 mg f) .045 Dm = 0.00045 Km

3. What metric units would be best for indicating the following measures?

- a) your height - m
 b) the length of your back yard m
 c) a glass of milk mL
 d) your weight - kg
 e) the volume of air in the room - kL

4. Indicate the lengths from the metric ruler below.



- a) A to B = 4cm b) A to C = 7.4 cm
 c) A to D = 103mm d) A to E = 13.4cm

Chapter 2 The Importance of Energy

Read page 27 in your text. Answer the Science Log questions on the lines below.

1. **The sun is the source of my food supply.**

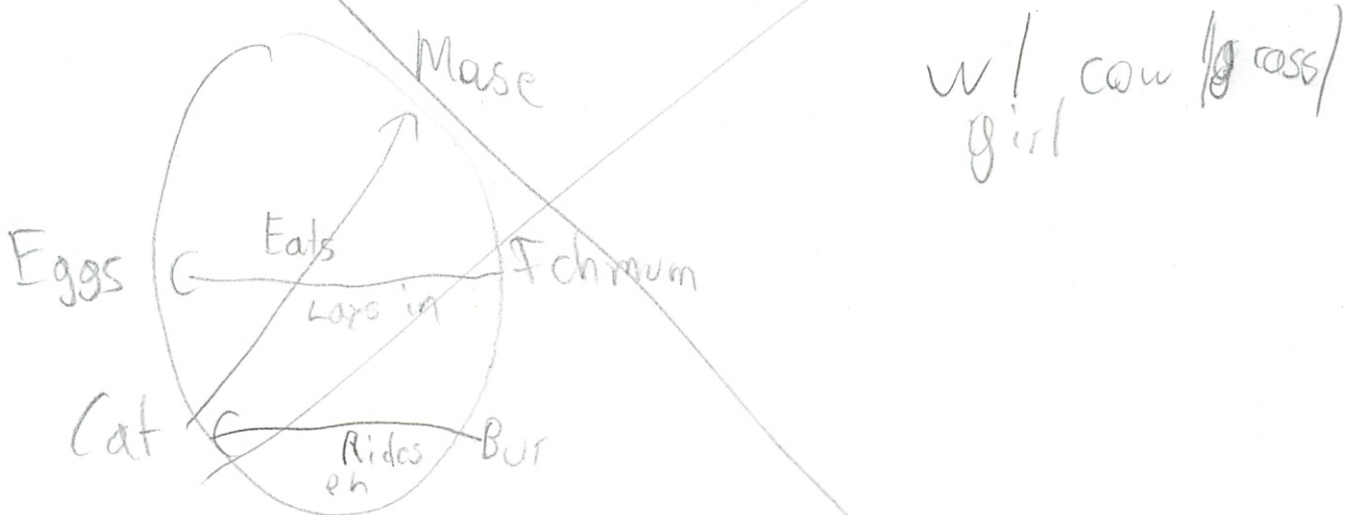
Does this statement apply to you? Yes

Why or why not? The food chain which I am the top of starts w/ plants which get food from the sun

2. How do living things obtain food? From the sun or eating other organisms - eat it or make it

3. How do these organisms interact? - eat each other / get eaten
- getting rides - clean others
- nest in each other

Show this interaction with a diagram below.



Chapter 2: The Importance of Energy: Vocabulary List

Note: The vocabulary words are found in the Science Plus textbook on pages 28-34.

1. photosynthesis: the process by which green plants and plant-like organisms use energy from sunlight to
2. producer: an organism that produces food for itself and others (mostly plants)
3. consumer: an organism that depends on other organisms as a food source
4. herbivore: a consumer of plants; a plant eater
5. carnivore: a consumer of animals; a meat eater
6. omnivore: an eater of both plants and animals
7. predator: a consumer that hunts or captures live animals as food sources.
8. prey: an animal that is hunted or captured and is eaten by a predator.
9. scavenger: a consumer of dead food sources
10. decomposer: a consumer that breaks down dead food sources into substances to enrich the soil

all Consumers

Convert water and carbon dioxide in sugars that can be used for food

11. bacteria: (Bacterium) a large class of single-celled organisms, considered neither plants nor animals
12. food chain: ^{besides producers} a chainlike diagram that shows the relationship between various organisms and to the kingdom
13. food web: ^{all food chains of ecosystem} a weblike diagram that shows the relationships between various organisms and their sources of food energy ^{their sources of food energy} and their sources of food energy

MATCH GAME - (p. 31) - Write sentence and answer

1. butterfly drinks nectar - other
 2. mosquito sucking blood - parasite - host
 3. Mold on orange - decomp. - food
 4. aphid on tree - parasite
 5. toad eats fly - pred. - prey
 6. millipede eats dead plants - scavenger
 7. dog has fleas - other **parasite**
 8. human kills + eats deer - pred. - prey
 9. Bacteria on dead sparrow - decomposer
 10. ~~soil bug eating ^{rotting} woods + leaves - decomposer~~ **scavenger**
- ARC*

Who eats what.

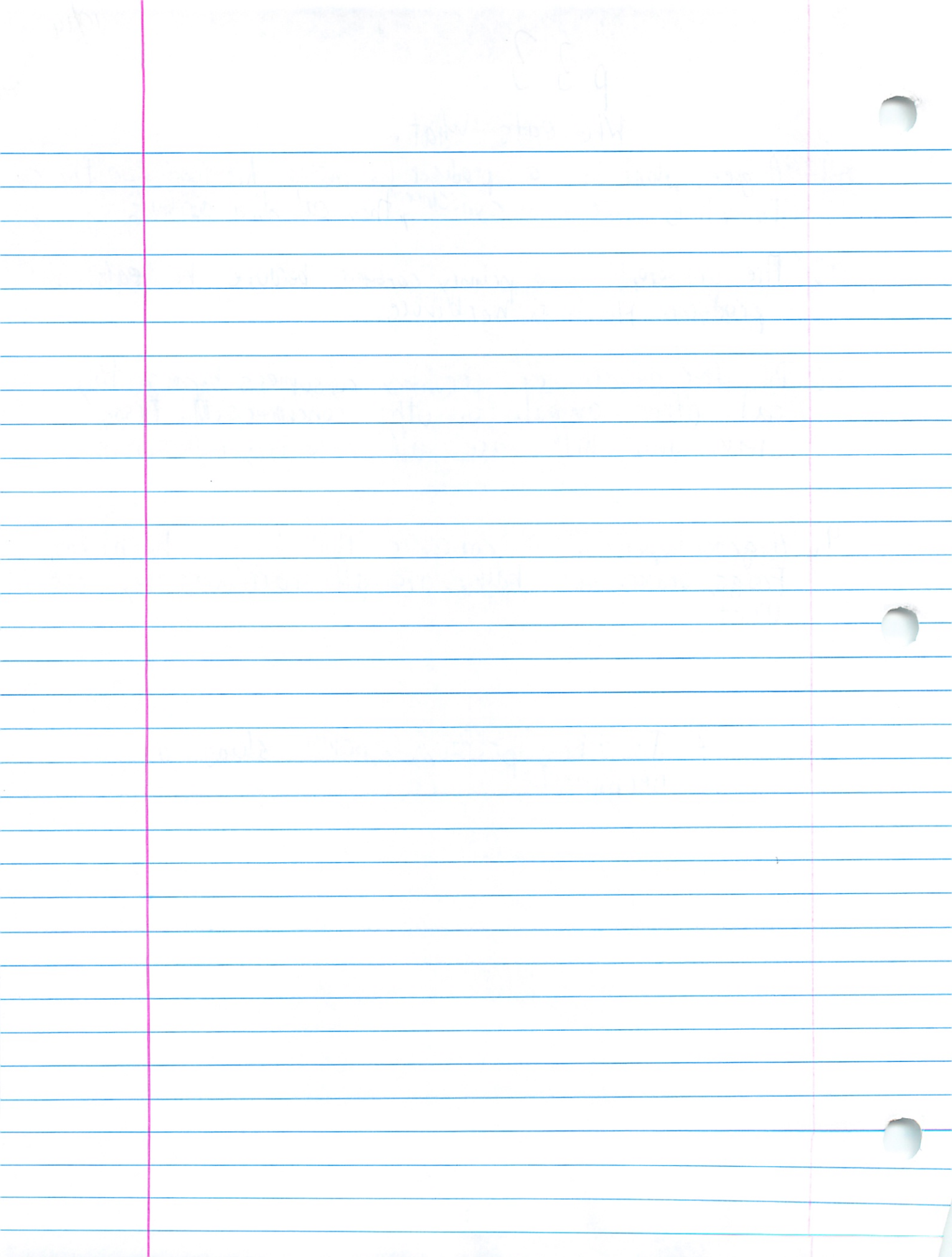
#1 A green plant is a producer, he makes his food from the sun. Everything else is a consumer, they eat other animals.

#2 The grasshopper is a primary consumer because he eats a producer. He is an herbivore.

#3 The other animals are secondary consumers because they eat other animals or other consumers. Frogs, snakes and hawks are, all secondary consumers.

4. A grasshopper is a consumer that is an herbivore, Frogs, snakes and hawks are all carnivores, they eat meat.

? Is the primary consumer always a herbivore?



Food Chains and Food Webs

Study the diagram, then complete the following statements.

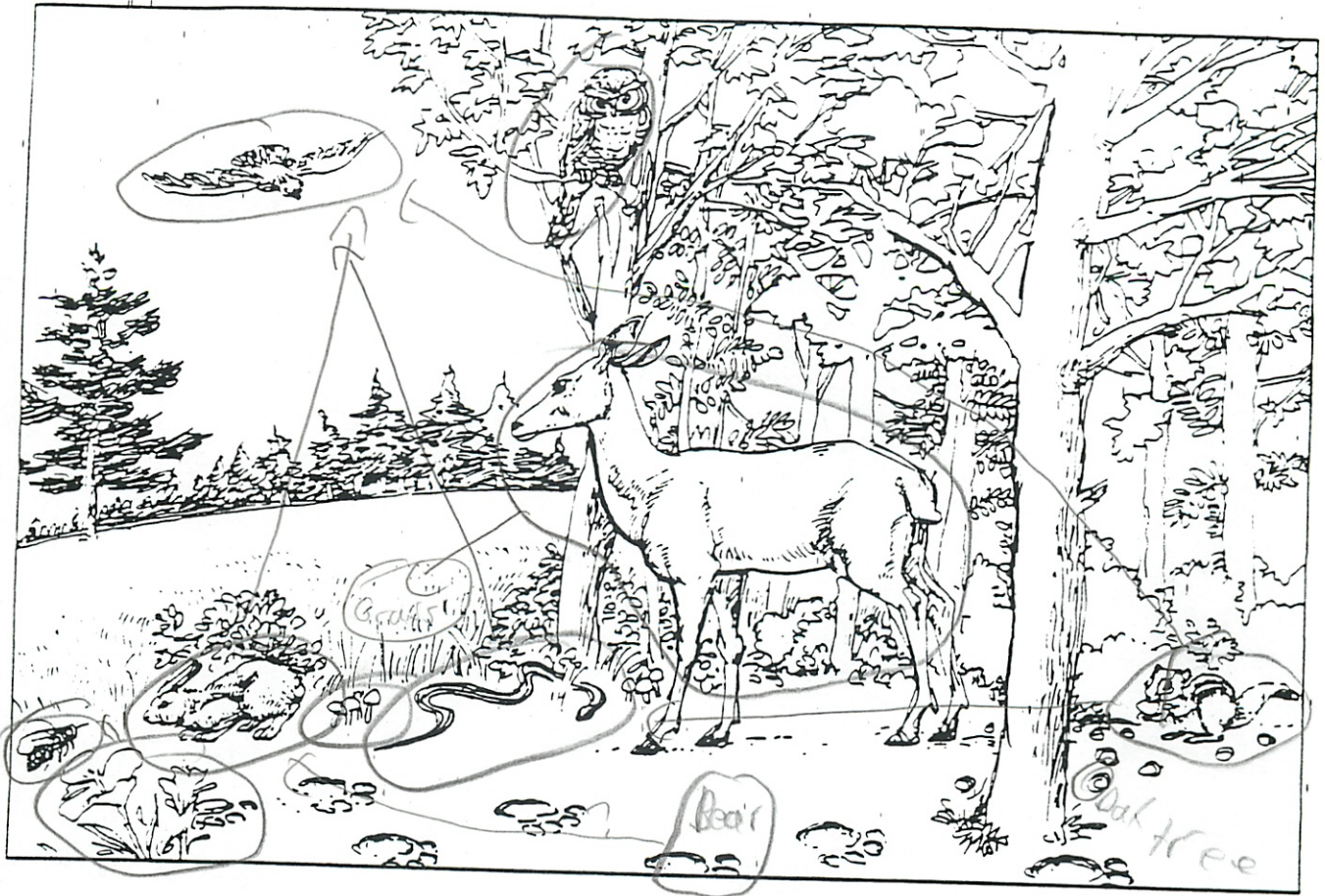


FIGURE 21-2

1. The producers are grass, flower, oak tree, and bushes.
2. A decomposer is the mushroom.
3. All of the other organisms are consumers.
4. Give two examples of food chains that are likely to exist in the environment shown.
 - a. grass → rabbit → bear?
 - b. tree (acorns) → squirrel → snake → hawk
5. Using a pencil, draw arrows between organisms in the diagram to show the food web.
6. Compare a food chain with a food web. A food chain is 1 thing eats another that eats another. It is 1 line. A web goes all over the place. Many animals eat another or are eaten by many things.

EXPLORATION 1

Analysis of a Food Web, page 35

Your goal to create and interpret a food web for a given community of living creatures

Organism	Food
hawk	squirrels, grasshoppers, mice
coyote	squirrels, grasshoppers, mice, deer
bobcat	squirrels, mice, deer
squirrel	seeds, tree buds
grasshopper	grass
mouse	seeds, grass
deer	tree buds, twigs, grass
fungi and bacteria	hawks, coyotes, bobcats, squirrels, grasshoppers, mice, deer, seeds, tree buds, twigs, grass

1. In Your ScienceLog, draw a food web for the organisms (or parts of organisms) listed in both columns of the above chart.
2. Now look at the food web you drew and identify the producers, primary consumers (herbivores), and secondary consumers (carnivores).

- producers → tree buds, grass, twigs, seeds
 - primary consumer → squirrel, grasshopper, mouse, deer
 - secondary consumers → hawk, coyote, bobcat

3. Do you notice that there are a lot of arrows going to the fungi and bacteria? What role do fungi and bacteria play in this community?

They are decomposers

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Exploration 1 Worksheet, continued

4. Suppose the mice were eliminated from the community by disease. What effect would this have? The following chart will help you answer this question.

When mice are removed . . .	
<p>These organisms have lost a source of food:</p> <p>bobcat coyote hawk</p>	<p>These are the remaining food sources for each of the organisms in the first square:</p> <p>saurills grasshopper deer</p>
<p>These organisms (or parts of organisms) are less likely to be eaten:</p> <p>grass seeds</p>	<p>These primary consumers are left:</p> <p>saurills grasshopper deer</p>

What If . . . ?

Answer the following questions in terms of the effects on other members of the food web:

1. What if the mice were secondary consumers instead of primary consumers?

Then the objects that they would eat, would be more plentiful

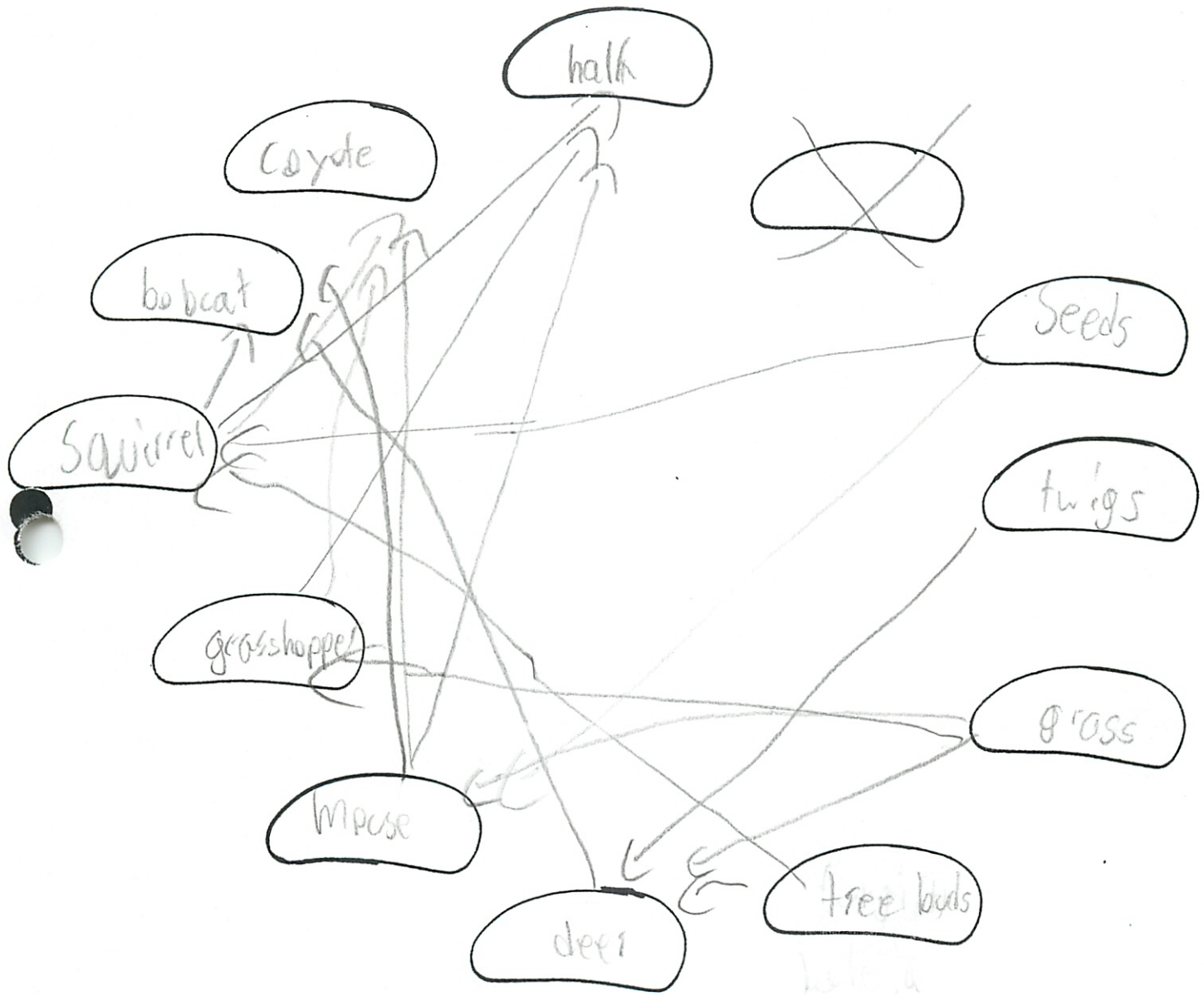
2. What if the mice were both primary and secondary consumers (omnivores)?

Then some animals would die and producers would be more plentiful

3. What if the hawk, coyote, and bobcat didn't eat mice?

Same as #1

Food Web



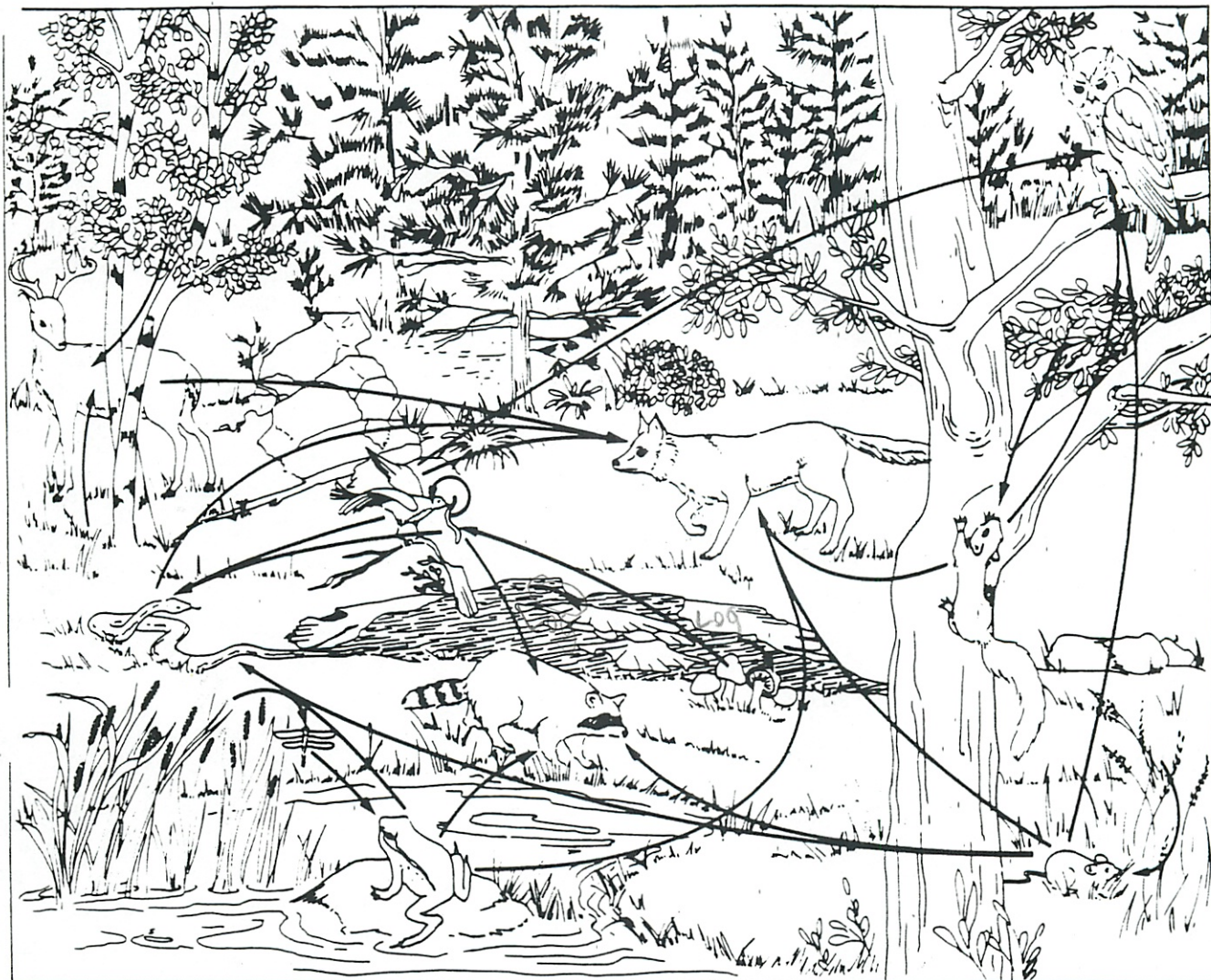
What a Tangled Web.

Name: Michael Plasmacy

Date 10/16

The relationships among living things can seem very complicated. Untangle your ideas by doing the exercises

Part A. Look at all the living things pictured, then answer the questions that follow. Each arrow has been drawn from a living thing that is eaten to any living thing that eats it.



1. What is the diagram above with all its crisscrossing arrows called?

The diagram is called a food web.

2. Which living things shown above are producers?

The ^{rotting} trees, plants, bushes, trees, grass and weeds are all producers.

3. Which living things shown above are decomposers?

The fungus on the tree and the mushrooms are decomposers.

4. Identify at least three consumers.

Three consumers are the snake, deer, and the mouse.

5. Identify two things eaten by the deer.

A deer eats leaves from a tree and grass.

6. What animals in the diagram are shown to eat frogs?

A snake, a raccoon, and a fox are shown to eat frogs.

7. Is an owl a carnivore, herbivore, or omnivore? Use the picture to explain your answer.

An owl is a carnivore, because he eats a bird,

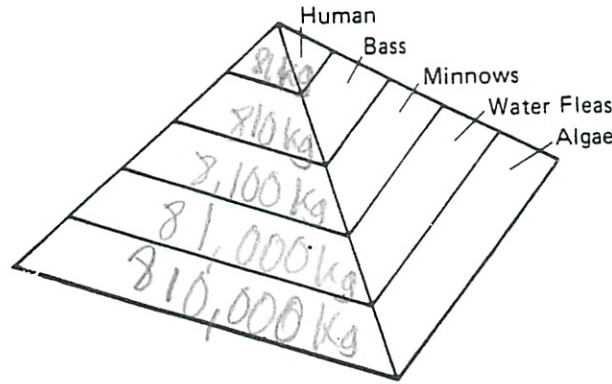
8. Diagram one food chain shown in the picture. The chain should consist of at least three living things. (use words not pictures) (use space at right)

→ a squirrel, and a mouse.

feeds ->
fly ->
frog ->
Snake ->
fox

Exploring the Pyramids

Below is a food pyramid. Each level in the pyramid represents organisms that eat the organisms in the level below. Algae are at the bottom of the pyramid because they are producers. Read the directions for filling in the pyramid and answer the questions below.



Energy Pyramid
 - Lowest level is always a producer.
 - Only 10% of the energy is passed up to the next level

Procedure

1. The pyramid shows the mass of living things supported by 1 km² of a lake. This part of the lake has 810,000 kg of algae. Fill in the front of the pyramid to show the mass of algae found beneath a 1-km² portion of a lake.
2. As you go up the pyramid, only 1/10 of the available material is converted into new mass. This means the mass of the water fleas supported by a 1-km² area of the lake will be 1/10 the mass of the algae, the mass of the minnows will be 1/10 that of the water fleas, and so on. Fill in the mass at each level of the pyramid up to humans.

Questions

1. Suppose the average person had a mass of 80 kg and ate only bass. About how many people could a 1-km² area of lake support? 1 person
2. If people could meet their food needs by eating algae, how many people could a 1-km² area of lake support? 1,000 people
3. Which levels of the food pyramid, upper or lower, can support a greater mass of consumer organisms? Lower level
4. Food shortage is a serious world problem. One solution that has been suggested is that people should eat more plants and less meat than they presently do. Why would this help the food problem? Because the 90% would not be lost as the chain goes up

Name Michael Plasmeier

Date 10/21

A Visit to a National Park

page 36-37

The animals pictured in the book live in the Great Smoky Mountains National Park in Tennessee and North Carolina. Complete the chart and questions below.

1. Identify the organisms pictured according to their food. (Fill in the chart below)

Producers	Herbivores	Carnivores	Omnivores	Scavengers
Apples	Deer	Snake	Bears	Earthworm
Paper wings	Porcupine	Hawk	Insects	Scorpio
Bark of Spruce	Rabbit	Salamander		
Needle of Pine	Mouse	Weasel		
Grass	Red Squirrel	Centipede		
Blueberries		Frog		
Grain				
Leaves				

2. Draw a food web on the paper provided.

3. Some animals compete for the same food. Use your food web to help you answer the following questions.

a. Which animals eat frogs? A weasel + a snake

b. Which animals eat mice? a hawk weasel
snake bear

c. Which animals eat earthworms? a salamander + a centipede

4. Construct a Food Chain which consists of 4 organisms.

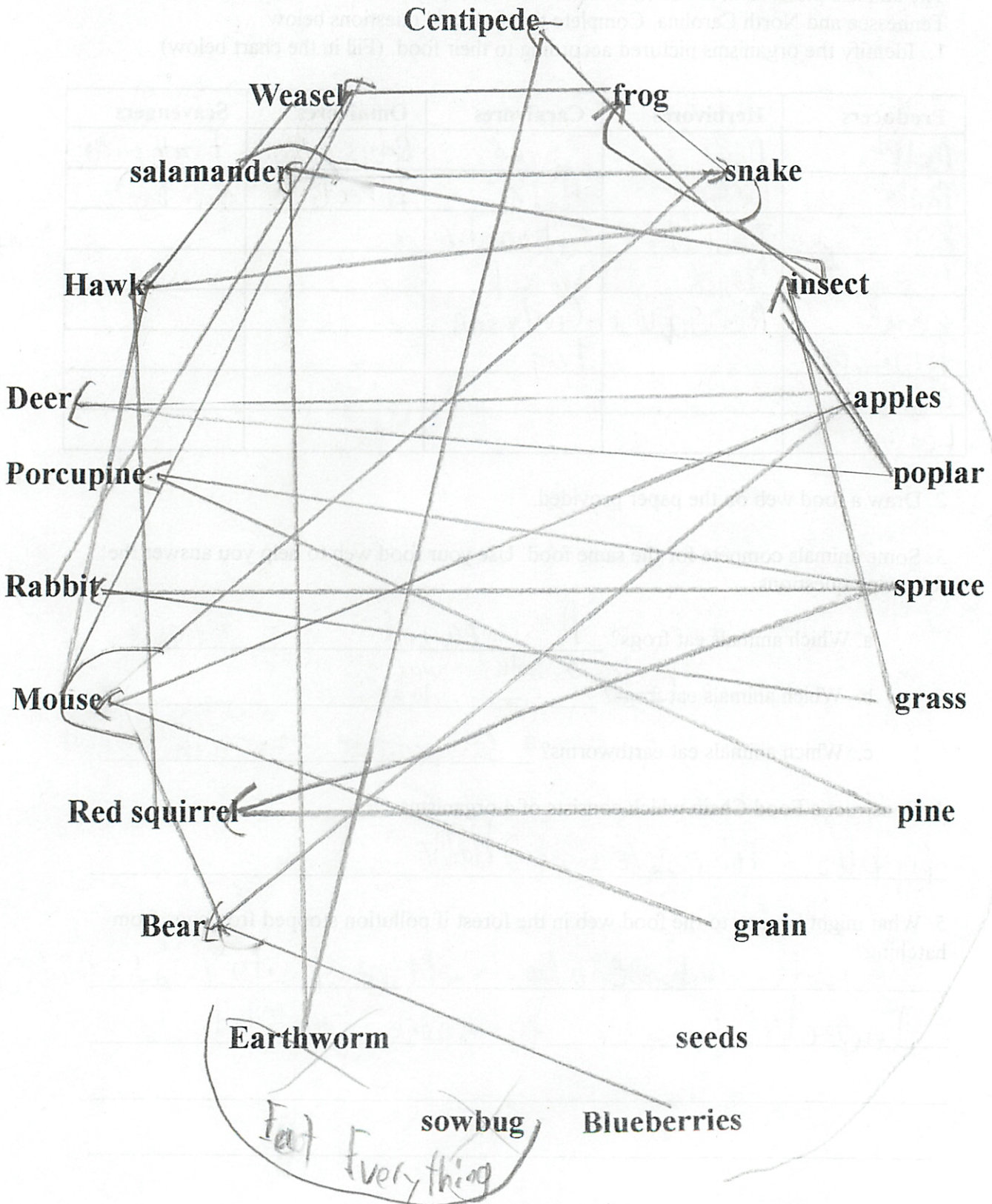
Apples → Mice → Weasel → Hawk

5. What might happen to the food web in the forest if pollution stopped frog eggs from hatching?

- Weasels and snakes would need to find different food

- Insects would be more plentiful

Food Web for Great Smoky Mountains Park



Challenge Your Thinking, page 44

1. Name That Interaction

Identify the following interactions that might occur between the organisms shown below:

- a. a predator-prey interaction

lion > zebra

- b. an interaction involving a carnivore

lion > zebra

- c. an interaction involving a herbivore

zebra & grass

- d. an interaction involving a scavenger

vulture & dead zebra

Can you identify interactions other than those listed above? If so, list them here.

mushroom & dead tree
plants & sun

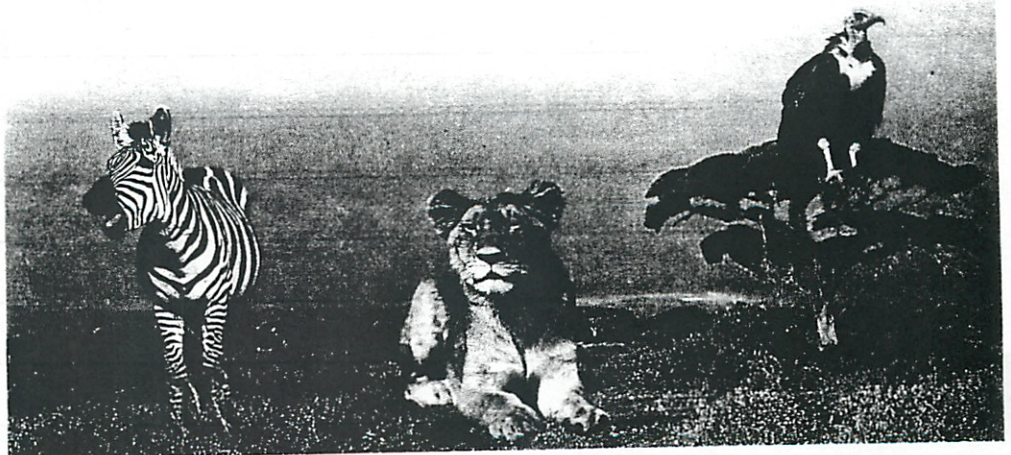


Photo also on page 44 of your textbook

Chapter 2 Review Worksheet, continued

2. Putting It to the Test

a. Fill in the blanks below with these words:

- producers
- energy
- water
- carbon dioxide
- sun

Plants use energy from the sun to make their own food from carbon dioxide and water. Because they produce their own food, plants are called producers.

b. Now create your own fill-in-the-blank paragraph. In your paragraph, describe a food chain that links at least four organisms. Leave blanks for the words *producer*, *primary consumer*, and *secondary consumer*. (You may also choose to include blanks for *carnivore*, *herbivore*, and *scavenger*.) When you are done, exchange exercises with a classmate. How did your test work? Could you complete your partner's exercise?

A plant which is a _____, is eaten by a deer which is a _____ and a _____. Next comes a secondary consumer which is also a _____. When the animal dies it is then eaten by a _____.

3. Clear Up the Confusion

"I don't understand," said Yasmin, a student who is a few years younger than you. "What is the difference between a food chain and a food web? Aren't they the same thing?" How would you answer her question? What examples would you use?

A chain is 1 row producer → primary consumer → 2nd consumer, to → top consumer. A web has links all over.

The 2nd consumer is a lion. He is eaten by _____ then that animal is eaten by a lion.

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Magazine Article - Assignment

Directions: Choose an article about an animal from a wildlife magazine. Fill in the information below on the lines provided. Then write a short summary of the article.

1. Magazine Name National Wildlife

2. Date Apr/May, 99

3. Title of Article - Living on the Fringe: There's a predator loose

4. What animal is the article about? Bobcat

5. Scientific name (if given) _____

6. Habitat - Near cities or anywhere

7. Food supply - Many things deer (voles + squirrels)

8. Predators (if any) - Humans, wolves, cougars, grizzly bears

9. Write a short summary describing your animal's niche in its ecosystem. Use the information you listed above as well as any other traits or behaviors you find important.

- Bobcats live near cities
- I above free-way system
- won't go across grass road
- ~~stay~~ stay close but not in or at outside human
- if you walk past it, it will stay 15 yd.
- live anywhere (live in almost every US state)
- eat almost anything even kill things 4-5x weight of it
- # are going up
- 20 lbs, 22 in tall
- 700,000 in US

in America's
Suburbs,
but don't
worry
the bobcat
is only
looking for
Rodents

not too
far
back yard

Name

Date

Mag Title

Magazine Article - Assignment

Article Title - Date

Michael Plasmeier
National Wildlife

10/23/2003

Living On the Fringe - Apr/May '99

(50) A +
good

Is there a bobcat in your neighborhood? Well, if you live near San Francisco, Yes. If not, you might. Bobcats live in almost every U. S. state and Canada province. They happen to live right next to a human backyard.

In San Francisco, a study is being done. The bobcats will go right up to the developments of houses. They only live on the edge; they don't go in past the first row of houses. The bobcats don't like to cross streets or cross grass. Bobcats will go the long way around in order to go through brush. A bobcat in Los Angeles lives on a ledge above a highway interchange. In the woods, a bobcat was walking a long a path till humans came up the path. The bobcat simply walked 10 yards off the trail, and waited for the humans to pass. Another animal might have just ran away.

Bobcats will eat almost any small to medium size animal. The eat rabbits and voles, which are small mice. The can even kill a deer that is 4 to 5 times its own weight. A bobcat only weights about 20 pounds. The things that eat it are mostly wolves and bears. The numbers of these predators are going down, letting the numbers of bobcats increase. A survey shows that there are about 700,000 to 1.5 million in the USA. This number is believe to be more then in the colonial days.

Bobcats live very close to humans. They are also amazing creatures with their ability to live anywhere.



Living On the Fringe - April/May 99

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Bobcats will eat almost any small to medium size animal. The eat rabbits and voles, which are small mice. The can even kill a deer that is 4 to 5 times its own weight. A bobcat only weighs about 30 pounds. The thing that eat it are mostly wolves and bears. The numbers of these predators are going down, letting the numbers of bobcats increase. A survey shows that there are about 700,000 to 1.2 million in the USA. This number is believe to be more than in the colonial days.

Bobcats are very close to humans. They are also amazing creatures with their ability to live anywhere.



Michael Plasmeier

Chap 3 Sci Log Q's

10/28

p 46

(10)

#1 How do you think this scene will change in the next 10 years? 100 years?

The scene will change ^{in 10 years} by the trees will grow thicker, the branches will re-grow with leaves, the little trees will get bigger. In a 100 years, the trees will be back to a normal forest, with leaves and all tall trees.

#2 Do you think those Gypsy moth caterpillars could kill a tree? Why or why not?

I think they could, depending if Gypsy moths eat leaves. If they did they would stop the plant from making chlorophyll, which is a chemical it needs to get food. With no food, it will die. If gypsy moths don't eat leaves, it would kill it.

#3 Do you think human will influence the earth's future? Explain.

Yes and they already have. The pollution, global warming, constructing, tree-cutting, chemical in rivers, people walking on it all have had an influence on the earth's future.

10/10

2

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Michael Glasmeier

Chapter 3 Changes, Changes and More Changes

Imagine that all the Haverford Middle and High School grounds were closed off to people for the next 100 years. That is, no humans set foot on the fields or in the buildings for 100 years. In your groups, discuss and make some notes on what you think the environment and organisms might be like:

1. After 5 years: The building will start to fall apart
Bugs will come in. The fields would
be uneven. Some windows will be broken,
Roof will leak. Grass will be long
2. After 25 years: Part of the roof will fall apart
Dusty. All light would burn out. Nest of
some animals in lockers. Field will
hills and ^{some} holes. Paint peeling
3. After 100 ^{Major} years: Parts of building will fall
apart. The field will be covered with
trees. Some trees will be at the
building. The fence will fall down
Parts of the building will be rubble.

Chapter 3 Changes, Changes, and More Changes

10

Read in Text Source Book pages S11 - S13. Answer the questions below.

1. Read the first paragraph on page S11. What are some of the "limiting factors" that might cause changes in the ecosystem?

The limiting factors are climate, soil composition, disease, and natural disasters.

2. Read the last two paragraphs on page S 11. How has the exposed land of Glacier Bay National Park changed over time?

The land has changed by, the trees are growing, and animals are moving in.

3. What is the definition of **Succession**? A series of changes that occurs in the communities of an ecosystem.

4. What is the definition of **Primary Succession**? A form of succession where life grows on a place for the first time.

5. Name some places (ecosystems) where primary succession might take place.

Places are: lava flows, glaciers melting, and sand dunes.

6. What is the definition of **Pioneer Species**? A pioneer species is an organism that is the first organism to inhabit an area.

a. Name some pioneer species. Some species are: lichens and mosses.

7. What is the definition of a **climax community**? The final stage in the succession of a community.

a. Where in Pennsylvania might you find a climax community? You might find it in a state park.

8. What happens in **Secondary Succession**? In secondary succession the native organisms re-claim their land.

a. Give an example of where secondary succession might take place.

It might take place after:
- fires - chopping down trees
- floods - building
- diseases -
- insects
- farms

TREE OBSERVATION ACTIVITY

Name Michael Plasmeier



Tree # 6
Tree letter S
Tree name Maple

Date 10/31

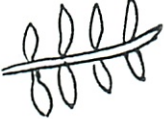

A. Find your tree and spend a few minutes studying the tree. Try to learn as much as possible about it by careful observation of the trunk, leaves, branches, width, etc... You will record some observations and measurements below.

B. Describe the leaves as follows:

a. Type - (simple  or compound  A or B?
or needles - 

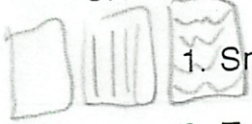
b. Vein Pattern - (pinnate  or palmate  Palmate
or how many needles per cluster?

c. Leaves on branches-

1) Pattern - (opposite  or alternate ) ?

2) Leaf color - yellow green

C. Trunk -



1. Smooth, furrowed, or scaly - Scaly/furrow

2. Trunk color - Brown - Gray

3. Measure the circumference at one meter from the ground and record below:

~~Circumference = _____ cm~~

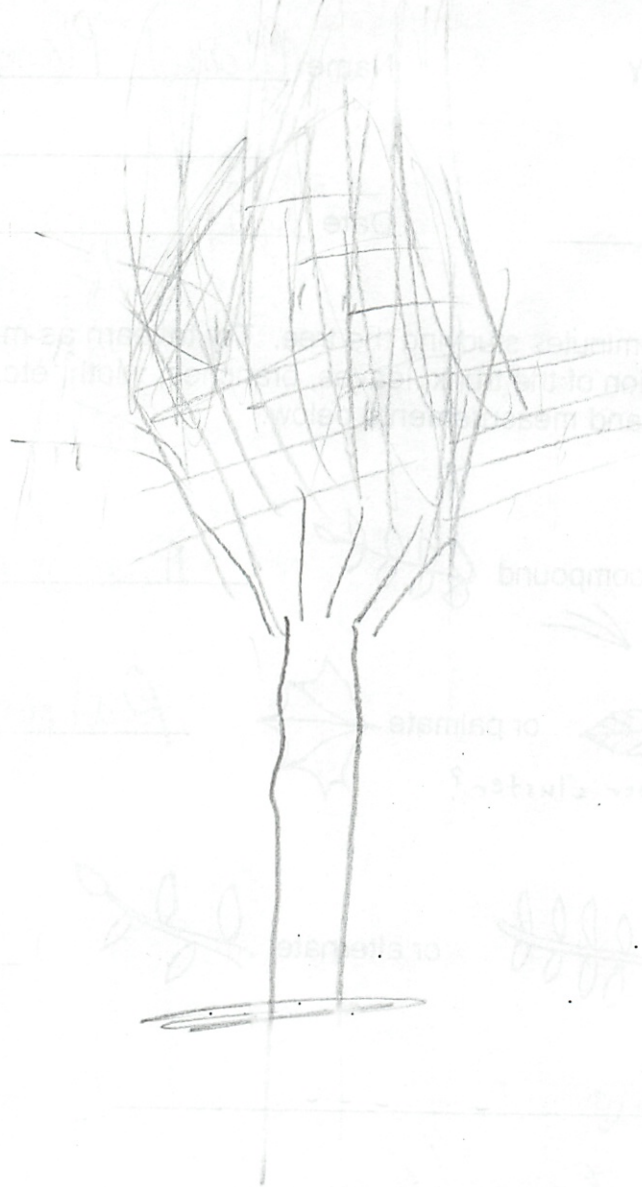
4. Make an estimate of the height of your tree using the "Artist's method."

Height - 25 ft

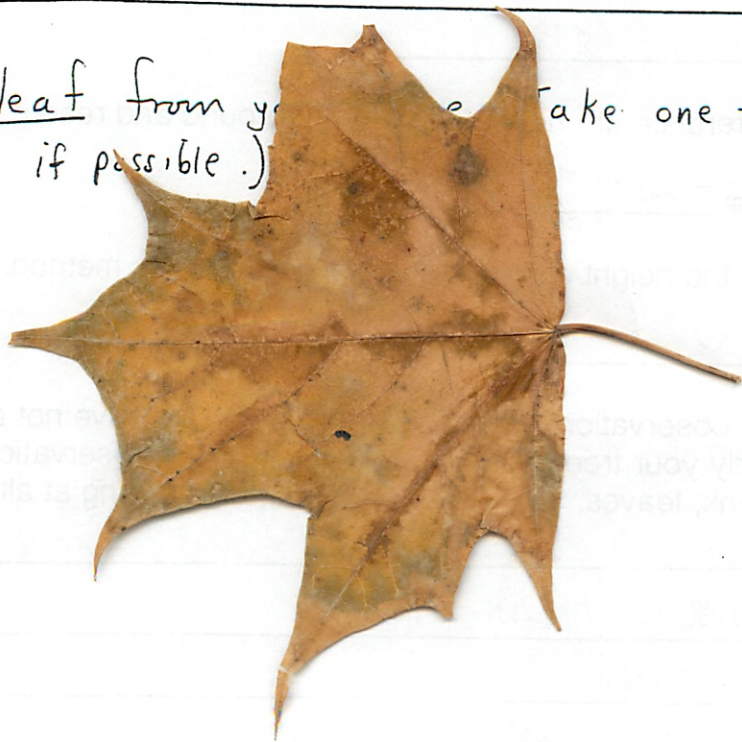
D. Observations - make 4 or 5 observations about your tree that you have not already mentioned. Study your tree for several minutes. Your observations may relate to trunk, leaves, shape, color, seeds, or anything at all.

Round things on sticks where leaves were
Not very many leaves like
many small branches
oval shape

E. Draw the general shape of the tree below. Be as accurate as possible.



F. Collect a leaf from your yard (or take one from the ground nearby if possible.)



5/9 Passenger Pigeons

michael Plasmeier

10

11/3

Passenger Pigeons became extinct, meaning no more of them were left. This happened in 1914. However, about 100 years ago from that date, more than 5 billion of them lived.

What made billion of passenger pigeons die? The cause, was many invasive species coming into the environment or ecosystems where Passenger pigeons lived. These invasive species destroyed the oak and beech forests that the pigeons lived in. The invasive species also ate the pigeons. As their numbers decreased passenger pigeons ^{also} were unable to reproduce, as quickly as they once had. This meant that less pigeons were being born.

Now you are wondering who was this invasive species. It was partially humans who moved in, cut down the trees, and ate the birds. Humans were also responsible for other extinctions.

Predator - Prey

Michael P. Hasmeier

CANADA

Years	Hare	Lynx
1900	8,000	8,000
1902	31,000	13,000
1905	78,000	58,000
1908	3,000	3,000
1910	22,000	15,000 ✓
1912	80,000	30,000
1915	40,000	40,000 ✓
1918	3,000	3,000
1920	33,000	13,000
1925	80,000	38,000 ✓
1927	20,000	42,000
1929	3,000	25,000 ✓
1930	10,000	20,000
1932	20,000	15,000
1935	78,000	35,000
1940	3,000	40,000 ✓

NAME Michael Plasmeier

Predator - Prey Activity

1. During which years did the hare population reach its greatest levels?

a. '05 b. '12 c. '25 d. '35

2. Which years were lowest for hares?

a. '08 b. '18 c. '29 d. '40

3. Approximately how many years pass between minimum hare population levels?

8, 10, 11, 11

4. Which years were lynx populations highest?

a. '05 b. '15 c. '25 d. '40

5. When were lynx numbers lowest?

a. '08 b. '08 c. '18 d. '32 e. ~~_____~~

6. Give two reasons why hare populations might go up a lot.

a. There is more grass c. reproduce quickly

b. Less predators (Lynx) d. _____

7. What causes changes in the lynx populations?

more or less prey (Hare)

8. Approximately what do you think the lynx population would be several years after 1940? Why?

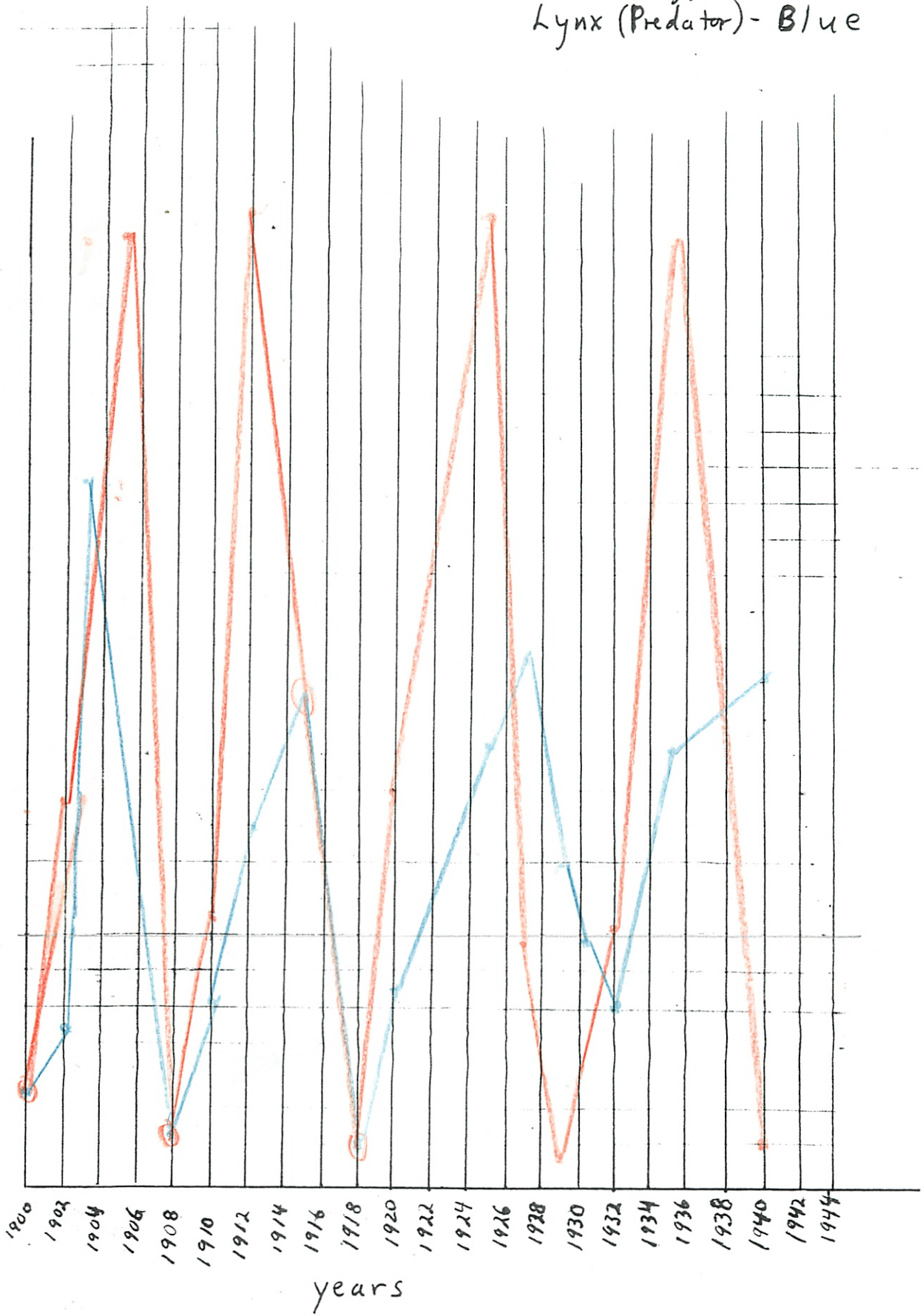
1800. because the # of hare go down, killing some lynx

Graph of Predator/Prey Data

Hare (Prey) - RED
Lynx (Predator) - Blue

population numbers

81,000
78,000
75,000
72,000
69,000
66,000
63,000
60,000
57,000
54,000
51,000
48,000
45,000
42,000
39,000
36,000
33,000
30,000
27,000
24,000
21,000
18,000
15,000
12,000
9,000
6,000
3,000
0



CHAPTER 3 Science Study Guide Questions

1. If a population of mice in a community suddenly gets more food to eat, how will the population size be affected? Explain.

The mouse population will go up.

2. If predators eat both **mice** and **rabbits**, how will the **rabbit** population be affected if the mice population goes up? Why?

The rabbits will go up because the predators are eating more mice.

3. A forest fire destroys an ecosystem on an island. As organisms begin growing again and returning to normal, is this an example of **primary succession** or **secondary succession**? Explain.

Secondary succession because live was there once.

4. Name two pioneer species. lichens and ~~moss~~

5. As organisms grow in areas near a shrinking glacier, explain why this is an example of primary succession.

There was never live life under the glacier no soil or seeds

6. Define a climax community. The final stage of succession

when a " is fully grown

7. What is the climax community in Pennsylvania? a ^{temperate} forest

8. When a population of prey goes up, what usually happens to the predator population? WHY?

It goes up because there is more food for the predator to eat; it can support more of them.

CHAPTER 3 Science Study Guide Questions

1. If a population of mice in a community suddenly gets more food to eat, how will the population size be affected? Explain.

2. If predators eat both mice and rabbits, how will the rabbit population be affected if the mice population goes up? Explain.

3. A forest fire destroys an ecosystem on an island. As organisms begin growing again and returning to normal, is this an example of primary succession or secondary succession? Explain.

4. Name two pioneer species that are likely to be found in an area where an ecosystem is recovering from a disturbance. Explain why they are considered pioneer species.

5. Define a climax community.

6. What is the climax community in the rainforest?

7. Which population of prey does the predator usually feed on? Why?

Chapter 3 Science QUIZ

(50) A7 great

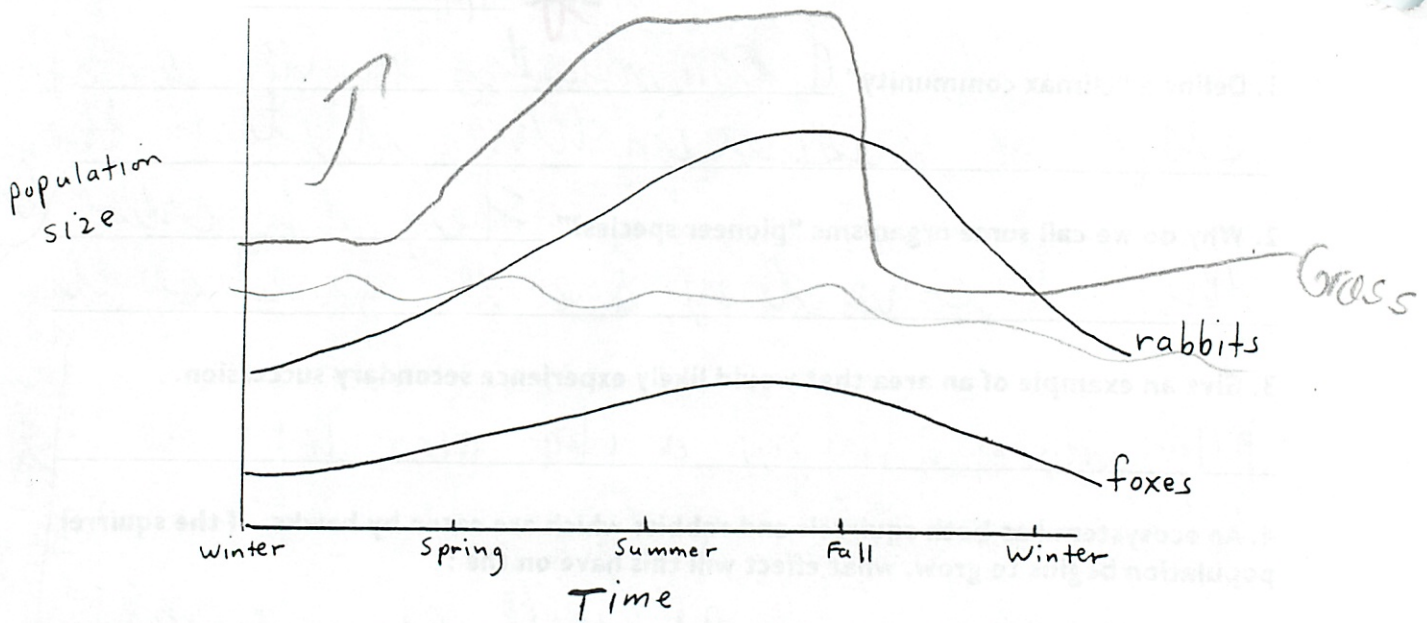
Name Michael Plasmeier
Date 11/17

1. Define a "climax community" A community in the final stage of succession. When it starts the same
2. Why do we call some organisms "pioneer species?" They are called pioneer species because they are the first species to
3. Give an example of an area that would likely experience secondary succession. After natural disaster, or a clear area left to
4. An ecosystem has both squirrels and rabbits which are eaten by hawks. If the squirrel population begins to grow, what effect will this have on the :
 - a. Rabbit population? (explain) It will go up because less will be food for hawks, because
 - b. Hawk population? (explain) The hawk population will go up because there is more food to
5. Why would the climax community in Kansas be a "prairie (grassland) instead of a forest?" It would be different because the climate and rainfall is different.
6. What is primary succession? Primary succession is when life comes to an area for the
7. Why does primary succession take much longer than secondary succession? Primary succession takes longer because soil has to form first and it is a fresh start, there are no seeds or surviving organisms.

involved in areas during primary succession. The organisms that are usually mold and lichens. hawks will eat more rabbits. First, the support more had first time.

(over)

Use the graph below to answer questions 8 and 9.



8. Do the populations seem to have an effect on each other? Explain how?

Yes, because when the rabbit population goes up, the foxes get more food and

9. How do you explain the rise in rabbit population? The rise in rabbit population may be because in the summer there is more grass growing, so the rabbits have

more food. they can support more foxes.

Peanuts



Name Michael Plummer Date 11/7 Class _____

Use with Section 21:14.

Locating Biomes

North and Central America are divided into several different areas or regions. These regions are called biomes. Biomes have distinct climates and organisms living within them.

A. Locating Biomes

Figure 1 shows the outline of seven different biomes. Locate each biome according to the directions below. Use the boxes located at the bottom left of the map to make a key for your map.

- (a) The northernmost part of Canada is the tundra. Using a colored pencil, color the tundra and its corresponding box red.
- (b) Most of Canada, the eastern half of the United States, and the west coast of the United States is temperate forest. The western edge of Mexico and Central America also are temperate forest. Color the temperate forest and its corresponding box in the key green.
- (c) Western United States and the northern half of Mexico are desert. Color the desert biome and its corresponding box yellow.
- (d) The central portion of the United States and a small amount of southern Canada are grassland. Color the grassland and its box orange.
- (e) The eastern edge of Mexico and Central America, Hawaii, and the Caribbean Islands are tropical rainforests. Color these areas black.
- (f) The Great Lakes and the three lakes shown in Canada as well as the St. Lawrence River are fresh water. Color these areas blue.
- (g) All other bodies of water on the map are salt water. Do not color these areas.

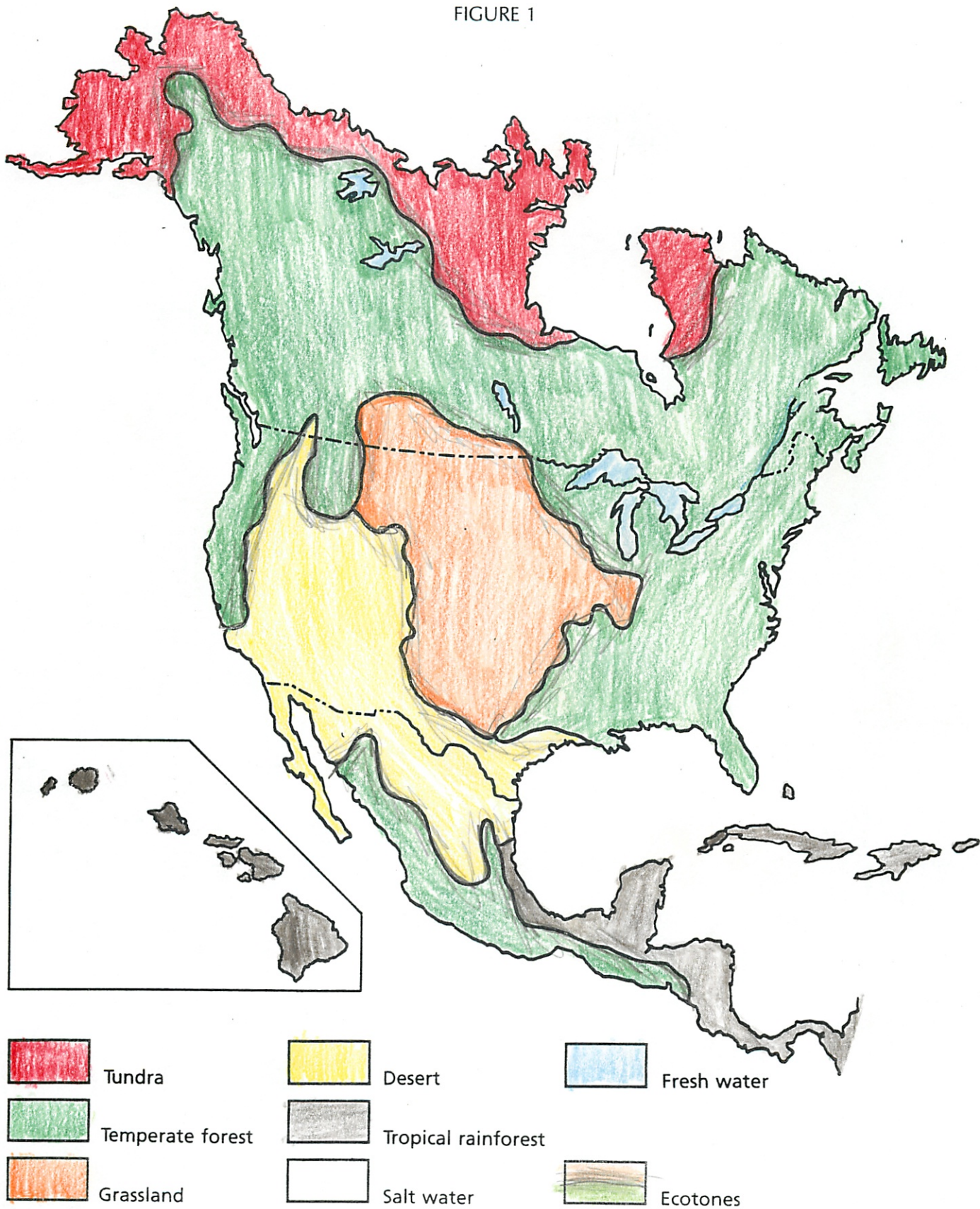
B. Locating Ecotones

Ecotones are areas where one biome changes to another. Use a pencil to shade the ecotone areas on the map. Do not extend the ecotone shading too far into each biome. Complete your map by shading the box labeled ecotone in the key.

C. Summary

1. Which biome is the
 - a. largest? Salt water
 - b. second largest? Temperate Forest
 - c. smallest? Fresh water
2. In which biome do you live? Temperate forest Are all the plants and animals characteristic for your biome present where you live? _____ Explain. _____
3. What is the most extensive ecotone shown on the map? _____

FIGURE 1



Biomes of the World

4/10

1. Tundra

a. climate

- freezing, harsh
- high winds, little rain
- temps as low as -20°C
- 3 cm rain, max

b. organism

- need to adapt or move
- delicate web
- mostly grasses and ground-hugging plants
- small trees
- small growing season
- grizzlies, bears, oxes, foxes

2. Coniferous Forest (taiga)

a. climate

just below tundra
6 cm rain max
temp -10 to 15°C

b. organisms

evergreen cone-bearing trees
- snowshoe hare, moose, bears

3. Temperate Deciduous forest

a. climate

humid

season changes

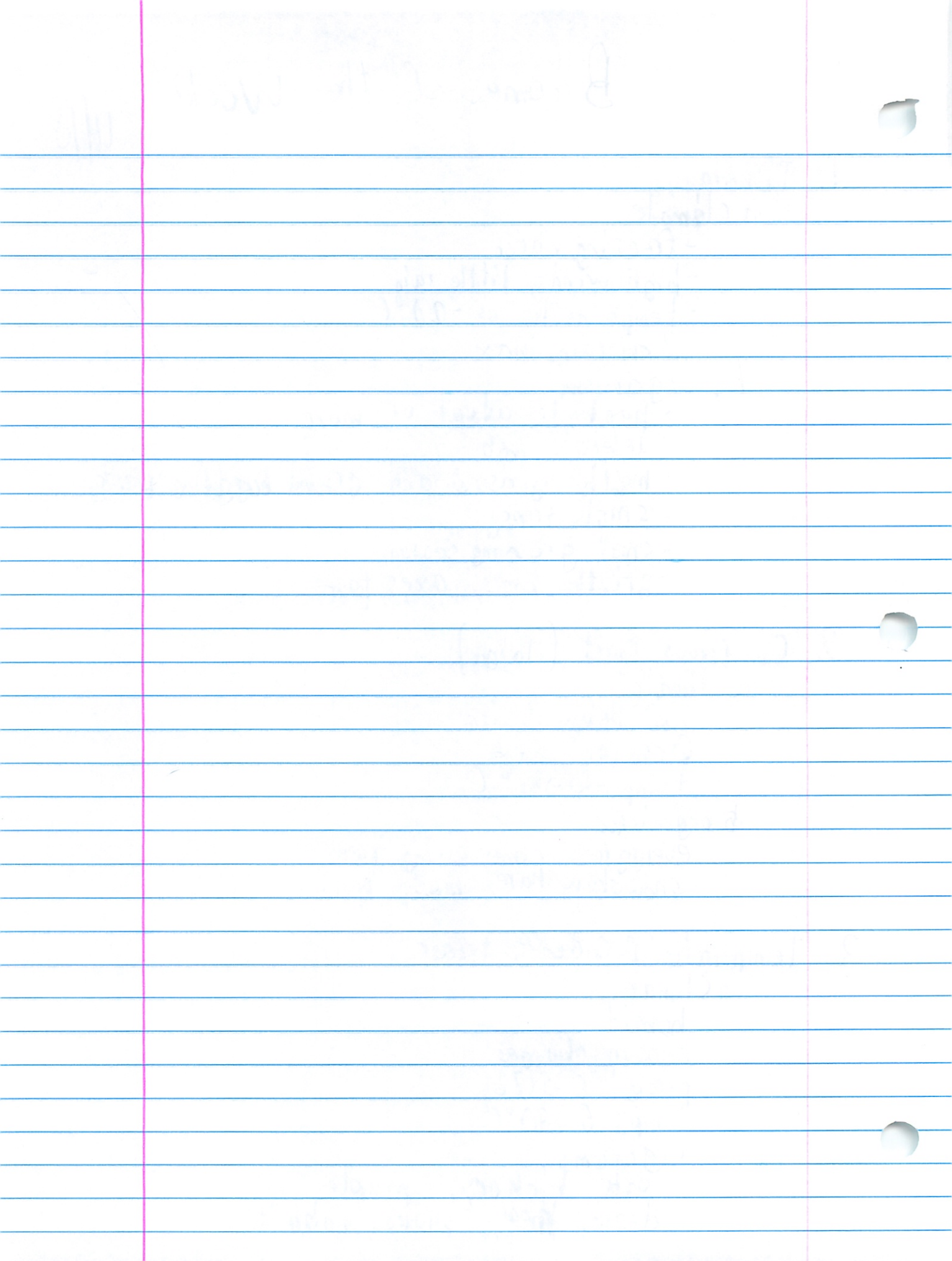
precip: 6 to 12 cm

temp: 5 to 30°C

b. Organisms

oak, hickory, maple

deers, ~~hairs~~, snakes, rabbits



Aquatic Bioms

Cont

11/11

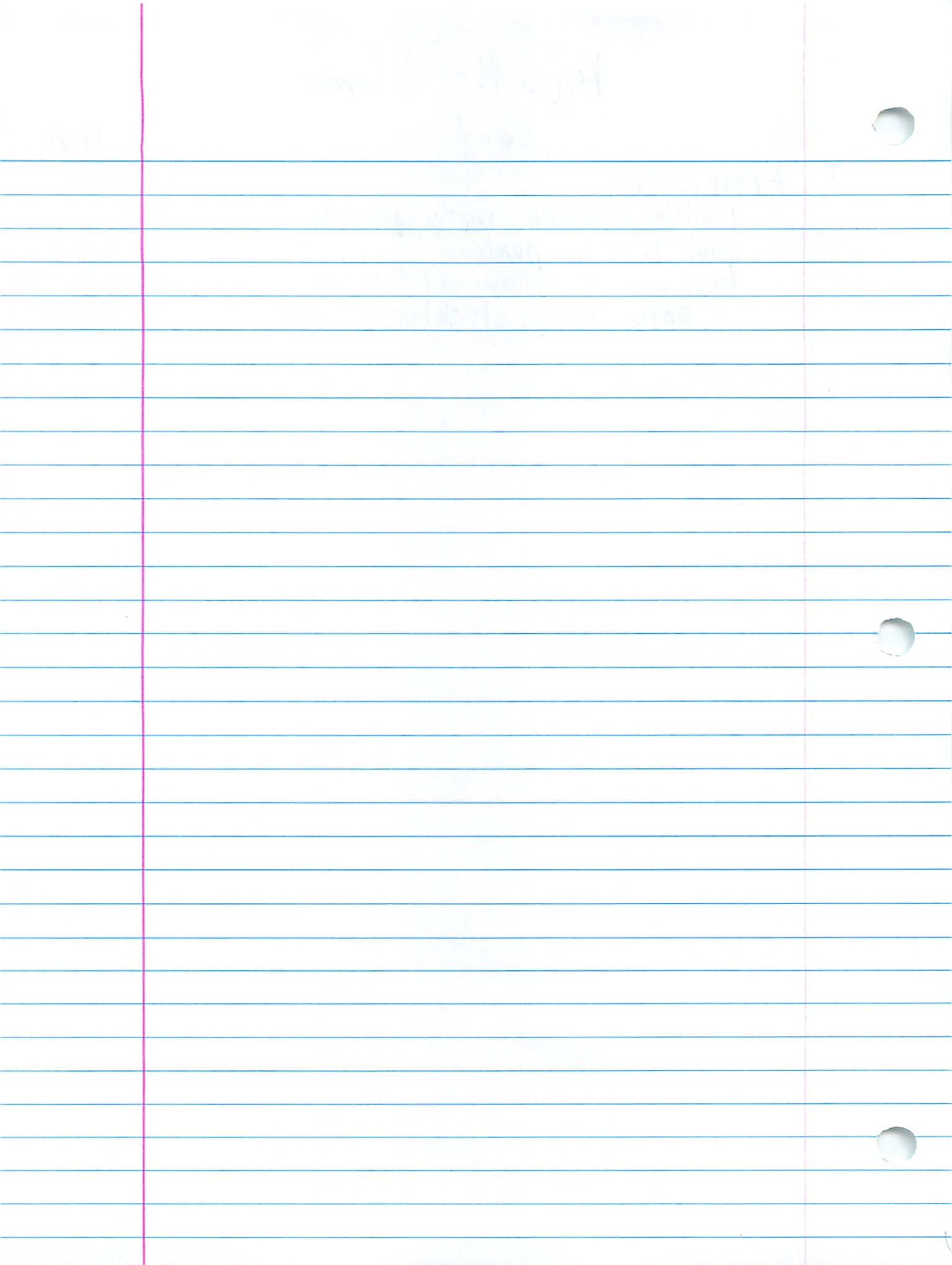
8 Freshwater

limiting factors vary greatly

good life in ponds

fast moving streams -> little life

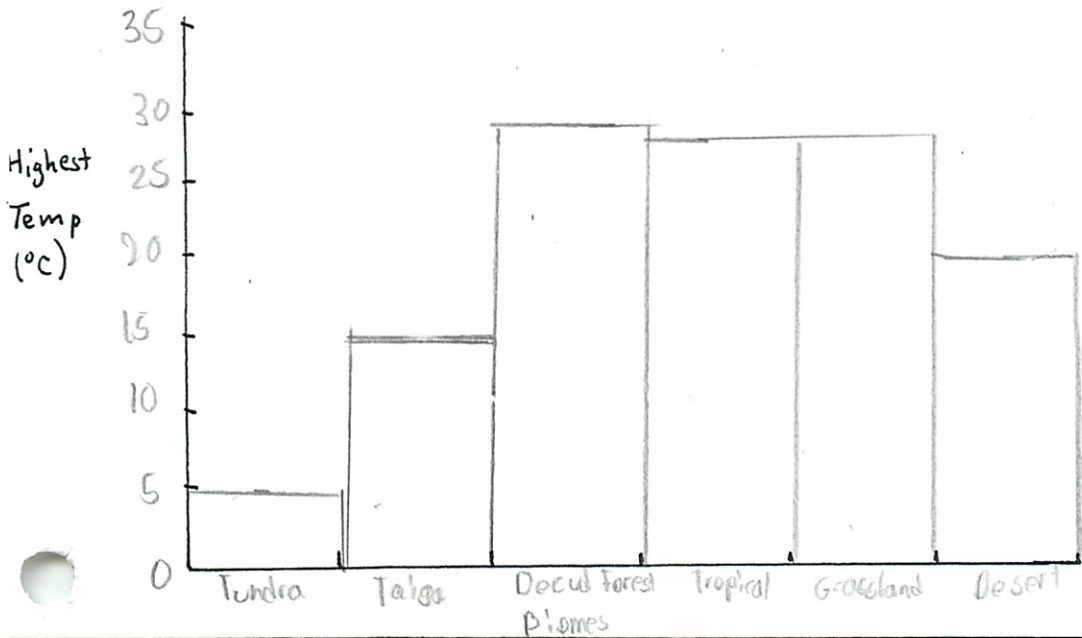
only things sticking to rocks



BIOMES COMPARISONS GRAPHS

Using the data on pages S14 - S17 in your text, fill in the data tables below and then graph the data.

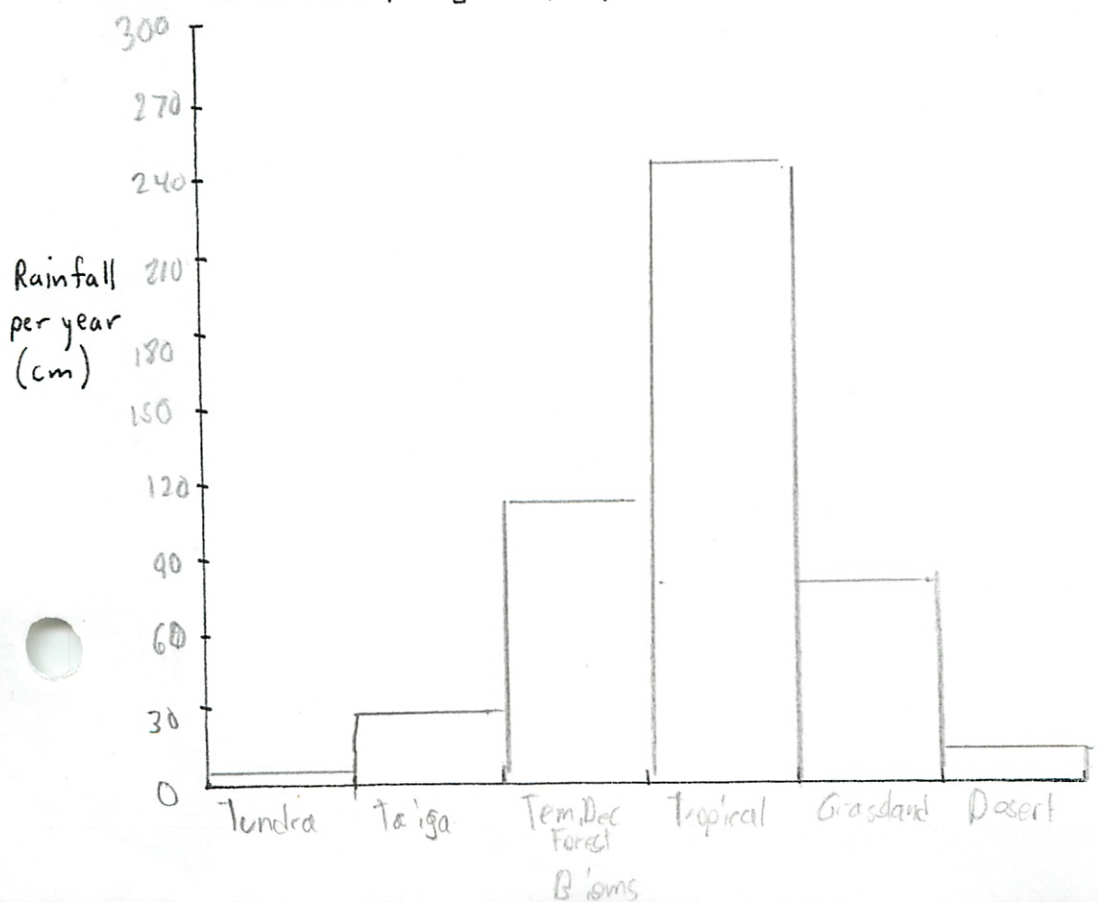
I. Biomes Temperature (Highest °C in a month)



Data Table

Biome	Highest Ave Temp.
Tundra	5°C
Taiga	15°C
Tem. Dec. forest	28°C
Tropical	27°C
Grassland	27°C
Desert	20°C

II. Biomes - Rain fall per year (cm)



Data Table

Biome	Total Rain per year (cm)
Tundra	7cm
Taiga	30cm
Tem. Dec. forest	110cm
Tropical	250cm
Grassland	80cm
Desert	15cm

Michael Plasmeyer

Humans interactions,

56-57

10

11/12

Humans have made many changes to the environment. They have unleashed pesticides, cut down trees, they have released smog, and dumped hazardous wastes. They pollute, cover the ground in concrete. They shrink the atmosphere, use up fossil fuels. They have invented things, use simple and complex machines. They have saved animals from disappearing, but have also caused some. For these bad things we need to work out a permanent solution. Not one that will work for a few years, then have us run out of gas. This is called a sustainable development. We need a solution that will work in the long run. This will be hard to achieve, but I think we could do!

10

Thomson's experiment

13-23

Thomson's experiment was designed to measure the charge-to-mass ratio of the electron. He used a cathode ray tube with a pair of parallel metal plates above and below it. A cathode ray, which is a stream of electrons, was emitted from the cathode at the back of the tube. By adjusting the voltage between the plates, Thomson could deflect the cathode ray up or down. He also applied a magnetic field perpendicular to the plane of the plates to counteract the deflection caused by the electric field. By balancing the forces, he could determine the ratio of the charge to the mass of the particles in the cathode ray. Thomson concluded that the cathode ray was made of particles that were much smaller than atoms, which he called electrons.

SCIENCE Chapter 3 Notes Source Book pages S20 -S 24

I. Natural Resources are Natural substances that humans can remove from the environment for their own uses

A. Renewable Resources are resources that can be replaced at the same speed they are used

B. Nonrenewable resources are resources that can only be used once, and then they are used up

II. Pollution is contamination of the environment

A. Some pollution waste products are gasses, chemicals, radioactive, heat, garbage, noise

1. Air pollution is caused mainly by auto, factories, power plant and other things, burning trash

a. Burning fuels produce sulfur which forms poison sulfur dioxide gas in the air.

b. Acid rain is partly caused by sulfur dioxide gas

2. Water pollution

a. Sources of water pollution are industrial wastes, untreated sewage and pesticides

b. Problems of water pollution are kills animals, adds bacteria to water, lets algae grow

3. Soil Pollution is when harmful soil builds up in the soil

a. Some causes of soil pollution are pollutens from air, and pesticides leaking containers

B. Consequences of Pollution

1. Today about 1100 species worldwide are endangered.
2. Why should we care if organisms become extinct? The diversity of life decreases and a food chain could collapse, killing more. We may be endangering ourselves

C. What can we do?

1. Laws have been passed to clean up pollution and improve air
2. Conservation is the protection and wise use of natural resources
3. Solid waste is a problem because it takes up space
4. About one-half of fresh water is used to water plants
5. Average humans use 300 liters of water per day for such things as toilets, food making, bath, watering cars, lawn, doing laundry

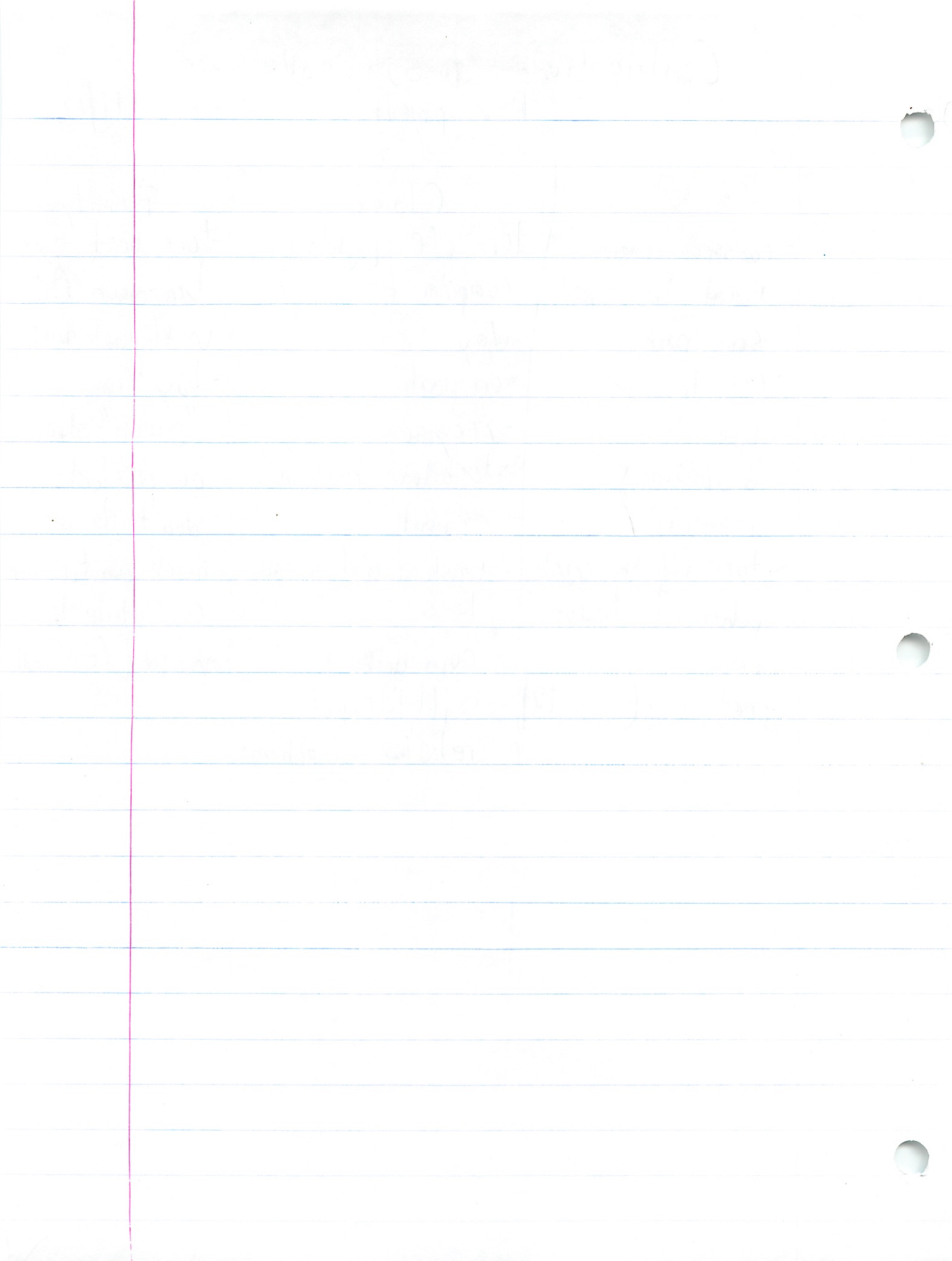
D. Energy Conservation

1. About 90% of the energy powering machines comes from : burning fossil fuels (coal, oil, gas)
2. These fuels are unclean and also will run out (non-renewable)
3. Other energy sources could be: wind, geo-thermal, solar, water

Contributions to Sustainable Development

11/17

Me	Class	Family
<ul style="list-style-type: none">- conserve energy- want to carpool- save paper- eat less or use less "disposable products"- turn off the lights when I leave rooms- read more (less TV)	<ul style="list-style-type: none">- turn off lights + computer at end of day- carpool- recycle- turn down heat in school- wash family's car less- coin drive for wild life, not religious teachings	<ul style="list-style-type: none">- turn heat down- turn down AC- walk not drive- buy from "green" stores or products- don't do as much construction- contribute to wild life fund



Michael Deasmeier

p59-60

Acid Rain

Harmful rain that hurts the environment

4/17

Human problem

Acid rain is rain that has acid in it. The acid in the rain forms when compounds from burning some fossil fuels. The acid rains down and kill trees and life in some ponds. The rain is most acidic, near

- Miami;
- LA
- Du luth
- Chicago
- Washington DC and
- Boston

Wear away
rocks
Du Etalo

and some miles away from

- Birmingham and

- Atlanta, Dallas

It is bad conditions there because of the factories and the wind patterns. This is a big problem and due to the wind, it can affect everyone. We should all take steps to prevent it from happening.

09.03.29

11/11/11

framing up the roof

the roof is to be built with a 12/12 pitch

the rafters are to be spaced at 16" o.c.

the roof is to be finished with 1/2" sheetrock

the roof is to be finished with 1/2" sheetrock

the roof is to be finished with 1/2" sheetrock

the roof is to be finished with 1/2" sheetrock

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Name Michael Plasmeier

Date 11/19

Acid/Base Lab

Purpose: To test a variety of materials for acidity or alkalinity and determine their pH.

Background: The pH of a substance is an indication of its acid or alkaline quality. Pure water is neutral and has a pH of 7. Anything lower than 7 is acidic, higher than 7 is basic (alkaline.)

We can determine if a substance is acidic or basic with litmus papers and with pH test paper.

RED LITMUS PAPER turns blue in the presence of alkaline

BLUE LITMUS PAPER turns red in the presence of acid

pH Test paper will turn a variety of colors and will indicate both acids and bases.

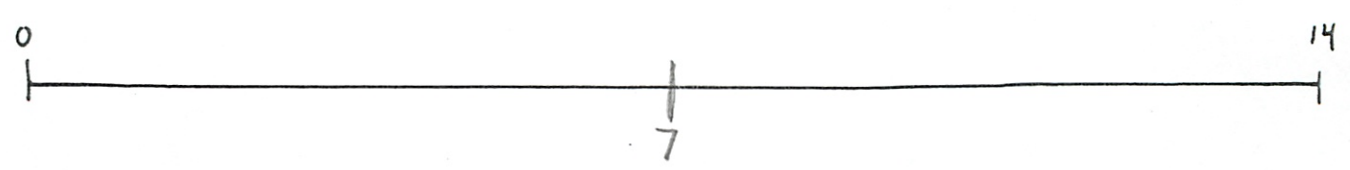
Procedure:

1. Tape pieces of blue litmus, red litmus, and pH paper below the samples named on the data sheet.
2. Place one drop of the various liquids on the papers where indicated.
3. Record the results on the spaces provided. **DO THIS IMMEDIATELY, AS THE LIQUID MAY RUN OVER TO OTHER PLACES CONTAMINATING OTHER RESULTS.** On the spaces below, record if the substance is an acid, base or neutral. Also use the **pH** scale on the vial to determine the **number**.

lemon juice <u>acid</u> <u>2</u>	vinegar <u>acid</u> <u>1.5</u>	^{409 cleaner} milk <u>alkaline</u> <u>9</u>
water ^{neutral} <u>even</u> <u>6</u>	baking soda <u>alkaline</u> <u>9.5</u>	ammonia <u>alkaline</u> <u>8</u>
milk of magnesia <u>alkaline</u> <u>9¹⁰</u>	sulfuric acid <u>acid</u> <u>2.5</u>	

4. After determining which substances are basic and which are acidic, make a guess as to which substances you think will neutralize each other. That is, which substances do you think you could mix together so that the acid and basic properties canceled each other out.

5. Draw a pH scale below and indicate where each sample falls.



Review

Science ~~Quiz~~ Chapter 3 Resources/Pollution

A. Matching - Choose the letter from the list on the right to answer the question. Choices may be used more than once or not at all.

Thought:
wondering

- 1. Air, water and wood are examples. ~~E~~ C
 - 2. Main cause of air pollution. E
 - 3. Chemical causing acid rain. F
 - 4. Pesticides and fertilizers contribute greatly to it. A
 - 5. Landfills are used for: 6
 - 6. Nuclear power plants may release. D
- A. water pollution
 - B. carbon dioxide
 - C. renewable resources
 - D. radioactive wastes
 - E. burning fuels
 - F. sulfur dioxide
 - G. solid wastes

Answer the following questions on the lines provided:

1. Define and give an example of nonrenewable resources.

A resource that is not made at or close to the
speed it is used up. Example is coal

2. What are two problems of acid rain? kills trees and makes some
ponds uninhabitable to some species

3. Why are some species called "endangered." They only have a certain
of them left and they might go extinct

4. What is conservation? Using less of the ^{non}resources protection +
and making them last longer for future generations wise use

5. Name three things we use water for? drinking, flushing, showering
(down toilet)

6. Name 2 other sources of energy we can use for machines besides burning fossil fuels.

wind water (dams)

Michael Plasmeier

Study
This
Sheet

SUCCESSION

can be

Primary

Secondary

or

which is

which is

When life
1st comes
to an
area

When life
returns to
an area

original life

or ecosystem

or ecosystem

example

example

forest growing
on land
where glaciers
have receded

a forest
growing
on an abandoned
field

island

after fire

populations

can be affected by

disease

climate

soil

nat. disasters

Birth rate

predator

food supply

The Biosphere

Contains

Fresh water

Water biome

Biomes

water biome

Salt water

Such as

TUNDRA

DESERT

Cone Forest

Temperate Forest

Rain Forest

Grasslands

cold, dry mostly. some grass + little trees some animals
Oxeg, wolves, Polar bears

cold, moist, *adv.*
cone trees
Snow shrew
hares, elk
bears

Around here
Season change
'wabbitra'in,
oak, maple,
deer, bears,
squirrels

wet, hot, 1 temp all year near equator
rain dry season
lots of biodiversity
squirrels, bats
deer monkey

same temp as Temperate Forest
just less rain
grasses, few trees
squirrels
prairie
logs, mice

dry, doesn't need to be hot
animals mostly at night
catisces
and bats, snakes
insects
cool nights

Science Chapter 3 Vocabulary Study Guide

Choose the letter of the correct word from the bank.

A. conservation

B. endangered

C. recycle

D. natural resources

E. extinct

F. pH

G. pollution

H. acid rain

I. Radioactive waste

J. sulfur dioxide

K. solid waste

L. fossil fuels

1. C To reuse items or resources.
2. E The irreversible disappearance of an organism.
3. A C Protection and wise use of natural resources.
4. D Things humans remove from the environment for their own use.
5. L Most energy used in machines comes from:
6. I Nuclear power plants may pollute by releasing:
7. J Chemical wastes which may cause acid rain.
8. F Scale used to measure acidity.
9. G Contamination of the environment.
10. B A species whose numbers have fallen so low that they may be all gone in the near future.
11. K Land fills are mostly used for dumping:
12. H Precipitation with a pH of between 0 and 7.

Answer the following questions:

1. Name two alternate sources of energy that are NOT fossil fuels:

wind + water

2. What are two advantages of using alternate sources of energy?

less pollution, will always be around (renewable)

Is It Getting Hot In Here?

1. Scientists suspect that the "greenhouse effect" is causing global warming

2. The greenhouse effect is caused by heat from the sun which is trapped and absorbed by the atmosphere

3. Water vapor contributes most to the greenhouse effect but other gases such as CO₂, CFC's, methane and Nitrous oxide also play a part in it.

4. Why is the greenhouse effect a good thing for Earth? Because w/out it the earth will be 50° colder

Why is it a potential problem? If there is too much, the planet will get too warm

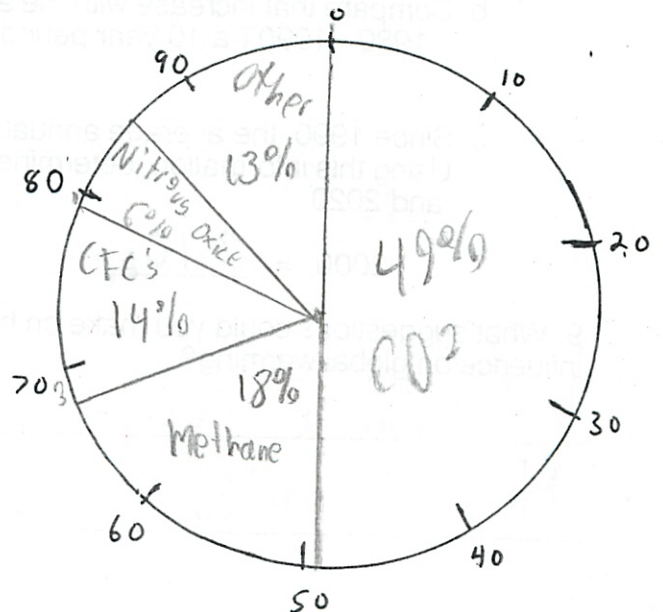
5. Some scientists believe that the increase in CO₂ caused by ~~fuel~~ Industrial Revolution ~~combustion~~ or fuel burning has lead to a gradual rise in Earth's temperature.

6. Rising global temperatures could cause problems such as melting glaciers, bursting dams, underwater cities to drought

7. Make a pie chart illustrating the following data.

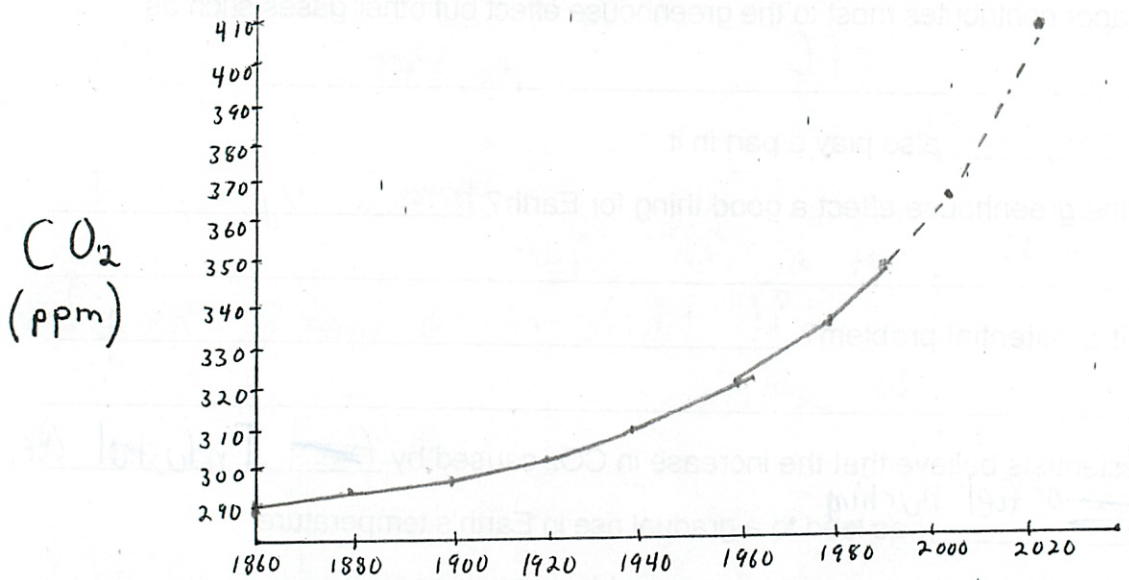
Percentages of global warming attributable to greenhouse gases

CO ₂	-	49%
Methane	-	18%
CFC's	-	14%
Nitrous oxide	-	6%
other	-	13%



8. Use the data below to make a line graph showing the increase in CO₂ in the atmosphere over the last 130 years (amounts are approximate.)

year	1860	1880	1900	1920	1940	1960	1980	1990
CO ₂ content of the air in parts per million (ppm)	290	292	296	302	309	320	335	350



a. Calculate the average annual increase in CO₂ from 1860 - 1880 (a 20 year span)

2 ppm

b. Compare that increase with the average annual increase in CO₂ from 1980 - 1990 (a 10 year period.)

25 ppm $\frac{50}{2}$

c. Since 1990, the average annual increase in CO₂ has jumped to 2ppm per year. Using this information, determine and graph the CO₂ content in the years 2000 and 2020.

2000 = 370 ppm 2020 = 410 ppm

9. What suggestions could you make on how we in the US could help control human influence on global warming?

Don't burn as much fossil fuels, have less chemicals
that contribute to global warming

Michael Plasmeier

SCIENCE SLEUTHS A-10 **Dead Fish on Union Lake**

A. Problem - Fish are dying in what was thought to be a healthy lake.

B. Interviews -

1. Spokesperson 4C3

thinks that someone sabotages

2. Parks Department Employee

brought fertilizer
insectised hates duck waste

3. School Students

it smells

4. Fisherman

trout dying
thinks sewage leak

5. Sewage engineer

no sewage
run-off happens - oil - gas - fertilizer - sprays
- factory discharge

6. Limnologist

- wants to do tests
- see back

7. Fisheries Biologist

- Oxygen deprivation - poison - algae bloom - water temp: up
- high bacteria
- Urban waste

C. Hypotheses-

- fertilizer	high temp	✓ algae bloom	- bacteria
- sewage	✓ run-off	low food	✓ low oxygen
duck droppings	toxic waste	pH (acid rain)	- disease

D. Documents

8. Lake cleanup report

5 factories
that cleaned up

9. Map

all factories together
- inflow + outflow diagonal

10. Fish Habitat brochure

high bacteria + sewage kill trout

11. 4 C's brochure

- passed laws
- cleaned it up

12. Parks Department brochure

- stocked w/ trout, eat insects
and other

13. Literature

increase in nutrients at season changes / drought - runoff

E. Other important Information - (Use back if necessary.)

blue-green algae smell

p ✓ temp - 3d 19.2° - 5v 15.3°c

p ✓ pH - 6.88

(F) x D.O. - Oxygen - Normal 6-7 ppm - 2.8^T - 0.6^B

(F) x B.O.D. - norm 2-3 ppm - dead 1ppm - 1ppm
- chem analysis

(F) x settlement - big layer

p ✓ trawl - normal - no toxic

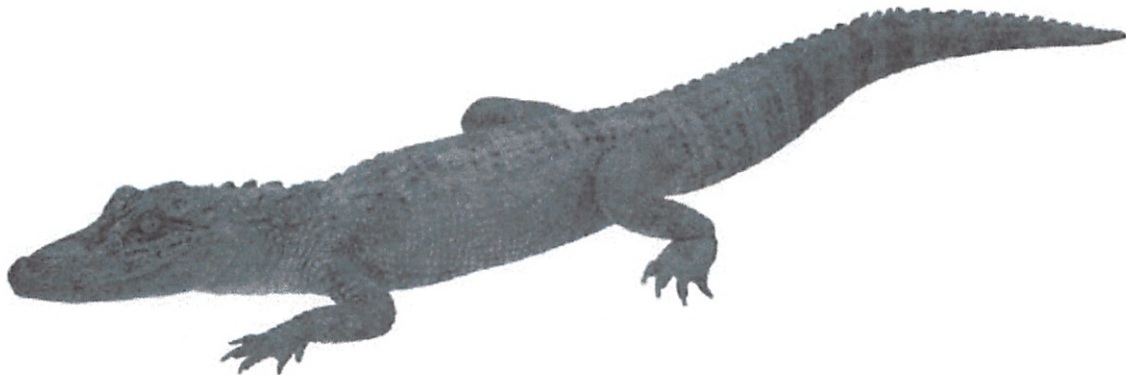
p ✓ autops: - low oxygen
- no toxic
- average weight
- normal food

Solution	
1	Run Off
2	Fertilizer
3	Algae Bloom
4	High Bacteria
5	Low oxygen

Science

Unit 2

Diversity
of living things



Science

Unit 2

Diversity
of living things



michael & lasmeier P05

Chap 4 Sci Log q's (10)

p74

1. How many ^{types of} plants and animals live on earth?

I think 20000 plants and animals, but 50,000 organisms live on earth.

2. How does the term diversity apply to living things?

The term diversity applies to living things, such as the differences in animals and their adaptations.

3. What are some ways that living things can differ?

Living things can be different in many ways. They could have different eyes, ears, mouth, or teeth. They could be poisonous or not. They could have wings or legs. A noise or no noise. Their color can be different from another, or same to match their environment. The food that they eat is different, so is their method for finding it. These are just some of the many differences between organisms.

(10)

Chapter 10

Log

10

Unit 2

bat
frog
cat
dog
Human
Blue robin
Yorkish terrier
bacteria
termites
fox
wolf

Need
Plants

①

blew fish
wombat
gerbil
tomato
ant
penguin
cloth
tiger
dog
turtlo
scatfe
deer
whale
kangaroo
dolphin
elephant

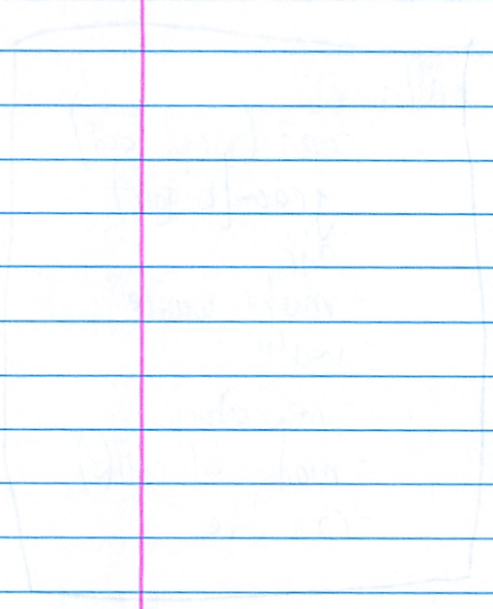
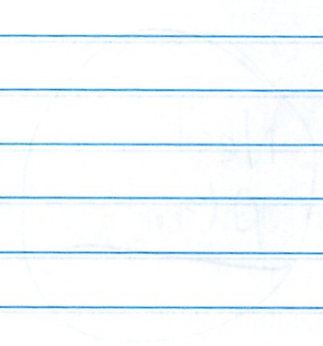
lima bean

all need:

- eat (need food)
- grow (bigger)
- air
- make waste
- water
- reproduce
- made of cell(s)
- can die

honor
~~site~~ fly trap
pig
lama
pony

U.S. 100



Chapter 4 DIVERSITY Study Guide

I. Krakatau

A. Volcanic island in Indian Ocean

Study

- 1. Volcano exploded in 1883.
- 2. Explosion killed 35,000 people and destroyed all life on the island.
- 3. Mountain called Sakarta ^{Rakata} was left above the water after the explosion.
- 4. The mountain was covered with 40 m of ash, lava, mud

B. Succession on Rakata

- 1. The process of secondary succession took about 100 years to return the mountain to a tropical rain forest ecosystem.
- 2. Organisms were transported to Rakata by a variety of means. Some of those means were most likely:
 - a. stoways on explorer's ship
 - b. flew/carried
 - c. drifted
 - d. swam over

II. Diversity

A. There are more than 1.4 mil known living things in the world and possibly as many as 10-100 mil total.

- 1. Diversity of living things means the differences among living things and different adaptations
- 2. Organisms such as birds are similar in many ways to each other, but still differ in ways such as: more food supply predators
 - a. color
 - b. size
 - c. shape
 - d. eyesight

all have
 - give eggs
 - wings
 - warm blooded
 - have beak + tongue
 - have eggs

B. Organisms can differ in physical characteristics or in their behavior

C. Look at the organisms on page 87 of the text. (worm, snake, eel) Give three ways that they are similar and three ways that they differ: bring need water have a mother have head, tail end

- 1. Similarities long, skinny ^{tubular} Use sunlight need food no feet ^{have skin}
- 2. Differences color way body works shape size come in male + female or not
bone structure
have bones or not
habitat
skin texture
Poison

Chapter 4 Science QUIZ

Name Michael Plasmeier

Date 12/6

A. Multiple Choice - place the letter of the correct choice on the line provided.

1. C About how many different types of organisms are known to exist on earth?

- A. 10,000 - 35,000
- B. 5-10 million
- C. 1-2 million
- D. over 1 billion

50

2. C Krakatau was buried by a volcanic eruption in:

- A. 1683
- B. 1783
- C. 1883
- D. 1983

A + good

3. A Life eventually returned to the mountain on Krakatau by the process of:

- A. secondary succession
- B. ecosystem
- C. primary succession
- D. diversity

4. C Which of the following is NOT a likely way that organisms were transported to Rakata?

- A. wind
- B. boats
- C. airplane
- D. birds

B. Answer the following questions on the lines provided.

1. What do we mean by the "diversity of life." Diversity of life is the differences of life among living things

2. What is the definition of "organism?" a living thing

3. Use the following terms in a sentence to help describe the diversity of life:
physical characteristics behavior organisms

Organisms' diversity can be unique physical characteristics or behavior.

4. Give an example of diversity in your back yard. An example is that a bird is different from an insect.

5. Give three ways that birds and bats are similar and different.

A. Similar fly living things breath air drink water

B. Different - predators food sources shape size

Invisible Differences

#4 Look at these 3 animals. Whats the same and whats different?
Do you think there are some that are not seen. Explain

Same

- long, skinny
- can slither
- all need food
 - water
 - sunlight
 - air
- live on earth

- way body works

Different

- size
- color
- way of getting food
- habitat
- shape
- way body work

- poison

Yes I think that there are some characteristics that are not visible.

You can't see:

- Poison
- way body works
- way of getting food
- needs

These things some things you can't see, but they do make the animal same or different.

10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

CORAL CRISIS - Science World December 8, 2003 pages 16-19

Answer the following questions in complete sentences.

1. What are corals made of? ^{made of} Corals are tiny sea animals, called polyps.
2. What are the young of coral called? Young coral is called larva
3. What is a coral atoll? A coral atoll is when coral grow along the donut-shaped island of a volcano.
4. What is an invertebrate? An invertebrate is an animal without a back bone.
Give an example of one. An example is coral or jellyfish
5. How does coral grow on the seafloor? Coral grows when sperm and eggs meet. They form larva and the coral grows bigger. It may also divide its self and form a twin.
6. What do corals eat? How? Corals eat plankton by shooting "harpoons" out to catch them, they are then brought back in to be digested.
7. What is a symbiotic relationship? (Hint - it is the same as Mutualism). A symbiotic relation is when both organisms benefit
How does it relate to corals? It relates because Zooxanthellae gives carbon for a home.
8. What causes coral bleaching? Coral bleaching is when the Zooxanthellae leaves due to polluted waters.

9. Why are corals disappearing? Corals disappear because
of coral bleaching or they are pulled
up with nets.

10. What may happen if coral reefs disappear? (name two consequences.) If coral
disappears some fish disappear and
some medicines may never be discovered

11. What are two things that could be done to help save corals? To save corals
you can eat less coral reef fish and
stopping pollution

Chapter 5 "Why So Many" Notes

I. How can the diversity of organisms be explained?

A. Larmark ideas: (early 1800's)

1. Organisms can change during their lifetime to be better suited, adapted, belong to their environment.

2. The changes in an organism can be ~~sometimes~~ passed to their offspring

Examples: a. Giraffe's stretching their necks over years caused there necks to be long

b. The giraffe's offspring would be born with long necks

B. Charles Darwin - (1860's)

this statement is fake

1. Organisms can have a variety of traits.

2. Those with traits better suited to their environment will survive

3. The favorable trait can be passed on to its offspring

4. Over time, many organisms will have favorable traits suited for your environment

C. Today we believe Darwin's theory is supported by much evidence.

1. We now know that characteristics that are acquired during an organism's lifetime will not be passed on

2. Example: if a cat's tail gets chopped off, its children will have tails

The Case of the Peppered Moth p. 93

1. What varieties of peppered moths have existed in England for thousands of years?

light + dark moths

2. Moths like to rest on tree trunks.

a. Before the Industrial Revolution, what color were most tree trunks? light

b. How about after the Industrial Revolution? dark

3. What color moth do you think was most common before the pollution blackened the trees?

light

4. Make a hypothesis about the effect of the Industrial Revolution on peppered moth diversity.

The darkening of the trees wiped out the light color moths, however dark color moths became more common

Answers ONLY

5. Do the results of Kettlewell's experiment support your hypothesis? Yes

6. Explain the results. I was correct, dark moths do good in dark trees, and light moths do good in light trees

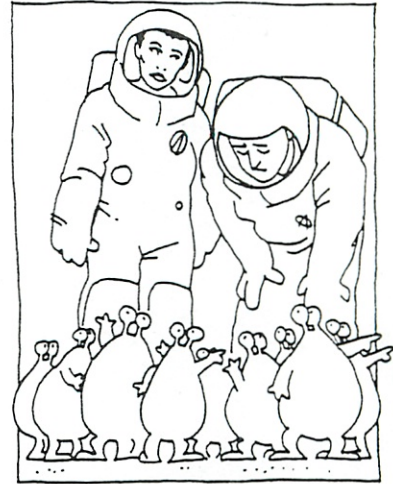
7. Why didn't Kettlewell release moths only into the polluted area? He didn't

just put moths there, because he wanted to do a controlled experiment

The Carefully Concealed Colors Caper

Read the paragraphs below. Then answer the questions.

When astronauts first landed on planet Zirconia, all they found were a few frightened red Zirconians. The little red creatures told the astronauts that a monster had been eating their fellow creatures, and they didn't know what to do. The cause of their problem was obvious. The red planet was flat and bare. There wasn't a tree or rock to hide behind. The astronauts offered the Zirconians some seeds. "Plant these," the astronauts said. "They will grow and provide some cover."



Some years later, when the astronauts returned to Zirconia, the planet was covered with huge green forests. The Zirconians were doing much better—but most of them were green, not red.

1. How would Lamarck explain the fact that most of the Zirconians the astronauts found on their return trip were green? He would say that little by little the

slightly green trait would be passed on to the Zirconians off-spring, and soon they were solid green

They would "absorb" the green from the trees.

2. How would Lamarck explain where the green trait came from in the first place? the

animals would turn a slight green because of being near trees

3. Why don't scientists accept Lamarck's explanation? Scientists don't except

the theory because if you make your neck longer, your

4. How would Darwin explain the fact that most of the Zirconians the astronauts found on their return trip were green? Darwin would say that slowly all of

the red Zirconians would die out. The green ones would survive to give birth to little Zirconians

5. How would Darwin explain where the green trait came from? an imperfection in

Darwin's Answer: Darwin didn't know where it came from. genes

6. On earth there are many animals that use their green color as camouflage. However, there are no green mammals (animals with hair or fur.) Why do you think there are no green mammals?

There are no green mammals because mammals the genes in the hair of the mammal never turned green.

Finch Diversity

Michael Plummer p 95

12
10

well done 12/10

- #1 The beaks of each finch is different, to help them eat what they can find on each island. The small beak lets them eat small bugs, and the large beak lets them eat big food. Because an animal was on a different island, their food available to them was different, so the bird with the beak most suited to that ecosystem lived on. The other died out.
- #2 Yes, the finches differences were affected by natural selection, those that had the proper beak to eat the food found on that island did survive. The other ones died out.
- #3A It is hard to imagine what the original finches looked like. I think that there size and beak size would be determined by what type of food was located on the main land of South America. The birds were probably small and had small beaks. This way they would grow bigger to eat the food on that island. Also it would be easier for small birds to fly in that big a number. On the other hand, it would be easier for a big bird to fly thoes many miles.
- #3B I don't think it is possible for different species to come to the island. I think this because the article said the everything except the size and the beak were the same. It is very hard for multiple species to go into 1 species, unless every other species dies out.

H3C

Yes it is very significant. The food can't travel over seas, so the finches would have to stay where their food is. If the Galapagos were one island. The food could spread, making that food available everywhere, so only 1 type of finch needed to survive.

#310

If that happened were everything was good, there population would explode creating millions of finches. There food would eventually run out, and finches would die by the thousands, a few might survive and in a few more years predators would eat finches and a disease would come around for them. Everything would go back to normal as if this scenario hadn't happened.

#4

Diversity has helped the finches survive by having different beaks which let them eat different foods. This let different finches live, which created diversity!

"To Survive"

12/11

Organism	Food Obtaining	Protection	Locomotion Movement
Gibbon	Climbing tree long arm Swinging grab w/ hand	Swinging - moving - throwing hide climbing	Climb + swing legs running arms
Venus' flytrap	leaves can shut <i>spiky leaves</i> "absorb" food Carniphil - main food Carniphil (large leaf)	spiny spikes thorns on leaves Not much	Can't move Can close leaf
Elephant ear		X <i>poison</i>	Can't move
Blowfish	Swim has mouth - swallows poison	Spiky can inflate (look bigger) poison	Swims has a fin
Cactus	Carniphil in stem	Spiky needles	Can't move
Mosquito	fly, has wings sucks blood "robs" to suck blood sharp teeth mouth runs fast	flying small	flies has wings
Lion	sharp teeth mouth runs fast	runs fast Camouflage	runs fast 4 legs
Argiope spider	? poison spits out net makes web	? poison	walks 8 legs
Hummingbird	Small short beak can fly	small can fly	can fly wings

~~Eye~~ Eye tone is different only

Natural Selection Facts

10

Michael Alasmeyer

541

12/11

1. Darwin believed in Natural Selection
2. Darwin published a book called "On the origin of species by Means of Natural Selection"
3. Darwin read about the human population being affected.
4. Darwin then believed that the same was true for animals.
5. Darwin thought that the animals with good traits would survive.
6. Darwin also thought that the animals with bad traits would die out.
7. Darwin worked on this theory for many years
8. Darwin, when he was 20, went on a five year trip
9. Darwin took the trip aboard the H.M.S. Beagle.
10. Darwin was only a passenger on the ship. The ship's main purpose was to chart South America

10

Algebra / Reflection

11/11

Unit 10

11/11

Unit 10

Unit 10

Unit 10

Unit 10

Unit 10

Unit 10

Unit 10

Unit 10

Unit 10

Unit 10

Unit 10

Unit 10

Unit 10

Unit 10

Unit 10

Unit 10

Top mostly

I. Origin of Life

A. Scientists believe life may have originated on earth from nonliving matter over 3 billion years ago.

1. These first organisms were single celled, simple, and microscopic.

2. All life existing today has evolved from single cell organisms

B. We have evidence of ancient life from fossils

C. About 99 percent of organisms that ever lived are now extinct.

D. Fossils suggest that life has evolved over time from the single-cells
simple → complex

II. Evolution by Natural Selection

A. Charles Darwin's Journey

1. Darwin's ship was called the H.M.S. Beagle

2. His job onboard was study + collect plants + animals
or naturalist

3. His voyage lasted 5 years

4. His studies ^{of} organisms and fossils from around the world convinced him that
life has changed over time

B. Darwin's Theory -

1. Based on the idea that all organisms "struggle for existence" when they
need the correct traits - compete for resources

2. Natural Selection was Darwin's idea that organisms with the best adaptations
will live on or survive - live longer - more babies

3. Darwin worked on his theory for 20 years before publishing his thoughts

in 1859 a book called On the Origin of Species by means of Natural selection

C. Four Parts of Natural Selection

1. **Variation** - all members of a species are different from each other

Examples - orange + white flowers

a. Variations are caused by new combinations of genes or DNA

b. Variation can also be caused by mutation which are changes in genes.

Darwin didn't know

2. **Overpopulation of Offspring**

a. Species tend to produce more offspring than could survive

b. Many offspring do not survive because of overpopulation (not enough food) and other things

3. **Struggle for Existence**

a. Because of overproduction of offspring, organisms must struggle for survival

b. Some organisms survive the struggle better than others and then they will reproduce

4. **Natural Selection**

a. Individuals with the best adaptations are more likely to live longer, reproduce survive

b. Successful organisms tend to have more children which also have the beneficial trait.

c. Over time, a population will get a higher percentage of organisms with the beneficial trait

Chapter 6

MINILAB

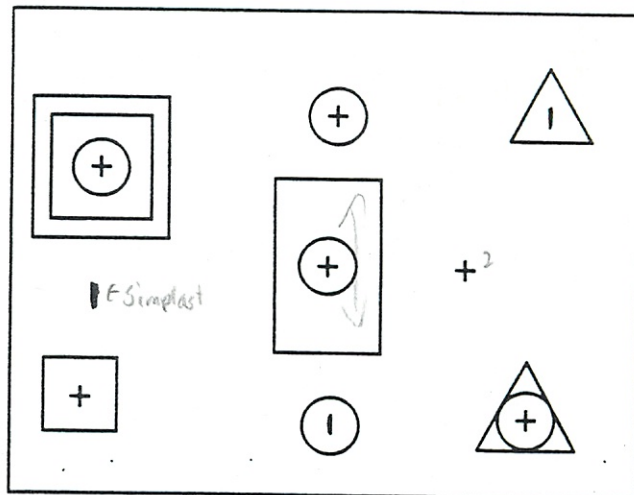
Not Really

How does evolution occur?

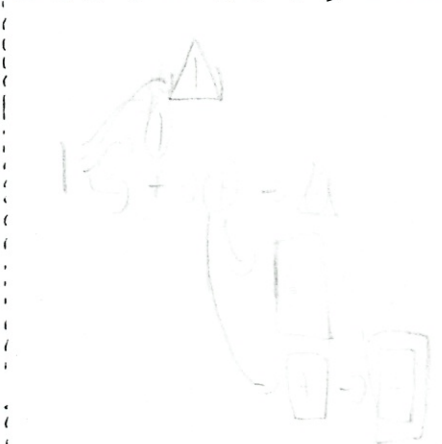
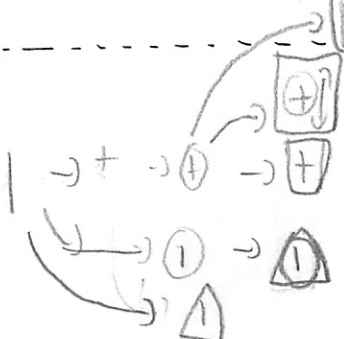
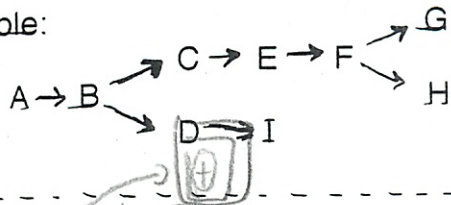
The earliest organisms on Earth were single-celled organisms. After many years, these organisms evolved into more complex forms of life. Assume that the diagrams below represent different species that evolved from the same ancestor.

Procedure

1. Determine which diagram below might represent the simplest ancestral form.
2. Order the other organisms from simplest to most complex, using one structural change at a time.
3. Your diagram may have branches.
4. Make two different diagrams showing possible evolutionary branches.



Example:



Analysis

1. How are variations such as structural changes in a species similar to the model?

Slight changes over time add

2. How does this model help illustrate how evolution occurs?

Name Michael Plasencia

Date 12/17

CHAPTER 5 Quiz Natural Selection and Evolution

Choose a word from the word bank below for #1-6. You do not have to use all words.

Darwin Lamarck Natural Selection mutation
fossil variation fitness

1. A change in a gene that often has a negative effect on an organism's survival. mutation
2. Any evidence of life from long ago. fossil
3. It can be described as "survival of the fittest." Natural Selection
4. Scientist who believed that the environment could cause changes in organisms that then could be passed on to offspring. Lamarck
5. Scientist who believed that nature allowed those organisms with the best adaptations to survive. Darwin
6. Differences in organisms of the same species. variation

50 A+
great

Multiple Choice - Write the letter of the correct answer on the line provided.

1. B Darwin's ship was named:
A) HMS Haverford B) HMS Britain C) HMS Labrador D) HMS Beagle
2. A Darwin's voyage lasted:
A) 5 years B) 7 years C) 2 years D) 20 years
3. B Traits that help an organism survive are called:
A) mutations B) adaptations C) selections D) offspring
4. D A new trait can appear in an organism as a result of:
A) the environment B) Natural selection C) adaptation D) mutation
5. D Sexual reproduction among organisms can lead to new traits in a population because it causes the mixing of:
A) fitness B) offspring C) adaptations D) genes

loop

Fill in the answers on the spaces provided.

1. Why is it not likely for a human to observe the evolution of one population evolving into different one?

It is not likely because the process takes 1000's of years to happen.

2. Why are favorable adaptations likely to become more common in a population?

Favorable adaptations are likely because the non-favorable adaptation are eliminated leaving the favorable ones.

3. Describe Natural Selection using at least 4 of the words below. You may use more than one sentence to do this.

adaptation

variation

fitness

survive

offspring

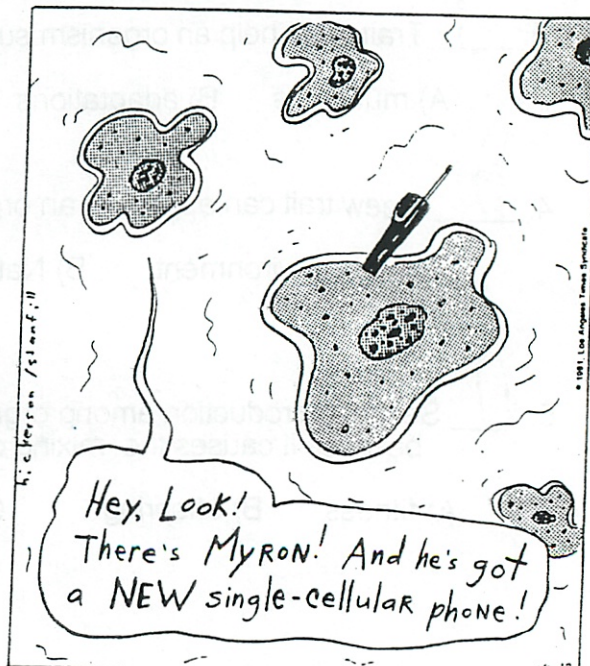
good
Natural selection happens when variations in organisms appear. The favorable variation or adaptations that have appeared in organism are eliminated. The favorable trait organism survives to produce more offspring or birds.

The Far Side by Gary Larson



Single-cell sitcoms

The Quigmans



Fast Tracker Protozoan

Chapter 5 pages 98 - 101

(10)

~~10~~

Directions - Read the pages indicated above. Then describe three animals that exhibit each of the indicated traits. You should also tell how each animal benefits from having that adaptation.

Camouflage -

1. Animal polar bear How does it benefit? Its fur or skin is white blending in with snow
2. Animal stick insect How does it benefit? It looks like a twig with brown color and joint arms
3. Animal Chameleons How does it benefit? It is able to change its color to its surrounding. It also looks like a leaf. It also changes color to attract a mate.

Attractive Coloration

1. Animal Skunk How does it benefit? The markings are unique, letting animals know it will smell bad
2. Animal Wasp How does it benefit? Animals know that a hurtful sting will result
3. Animal Lionfish How does it benefit? Bright colors warn of poison

Peacock - Attracts a mate, Frog - Bright color warns animals of poison

Mimicry

1. Animal King Snake How does it benefit? Looks like a poisonous Coral Snake
2. Animal io moth How does it benefit? The eyes fool the predator into thinking the head is in the back + the animal is bigger + frights birds
3. Animal hornet-looking moth How does it benefit? Its wings look like hornet, has a fake stinger and swarms like a hornet when threatened

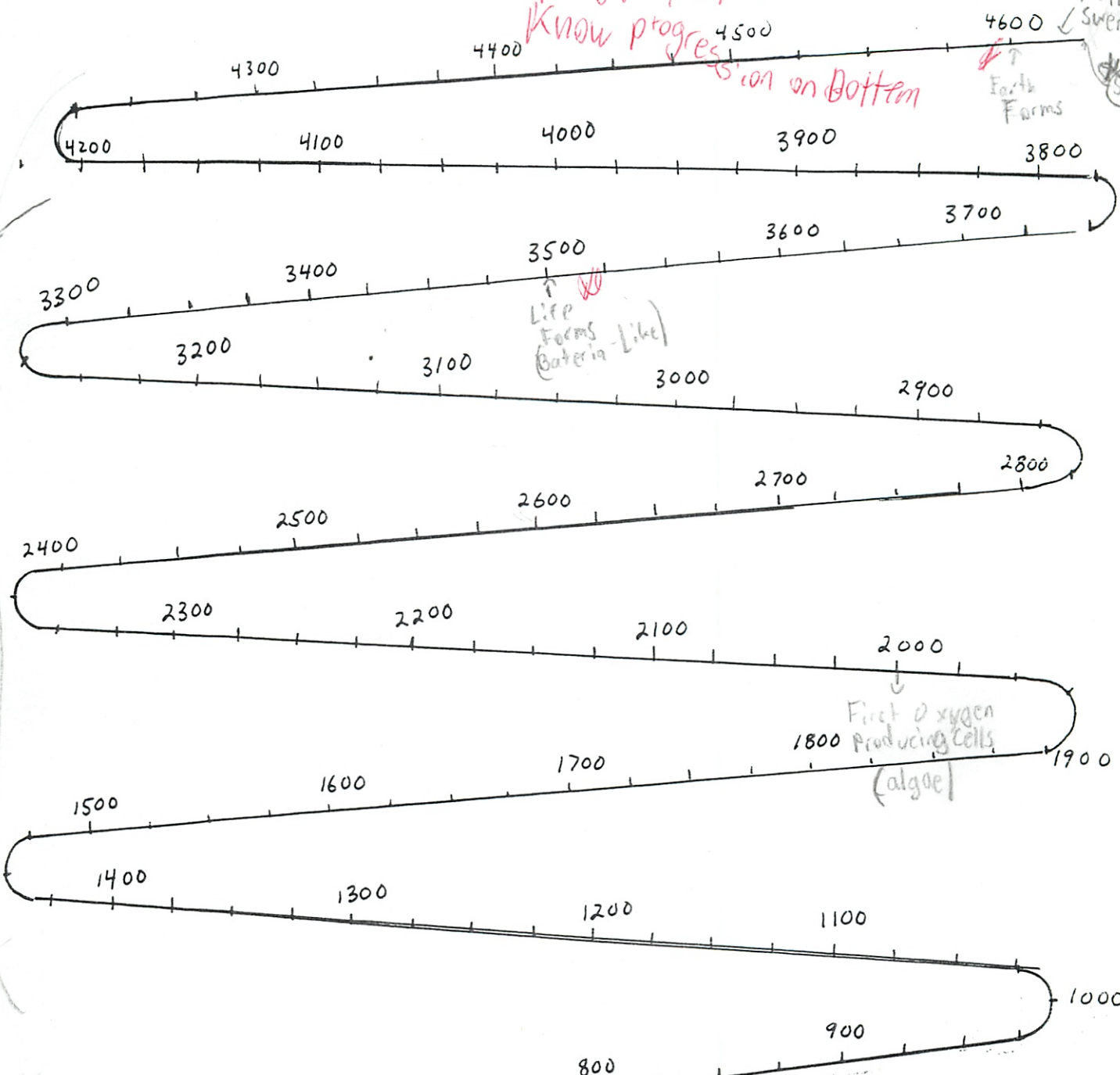
Time line of Life on Earth

1 cm = 25 million years

No Dates, only Know progress on bottom

Matter Swirling
Start

4600 Earth Forms



Mostly Single Celled Life

Many Invertebrate Water animals Fish

700 First Multi-Celled Life (Worms, coral)

Amphibians 3rd

Reptiles 4th

Dinosaurs 5th

6th Mammals

475 1st Amphibians
450 1st plants, insects

300 1st Reptiles

100 1st mammals, 1st birds

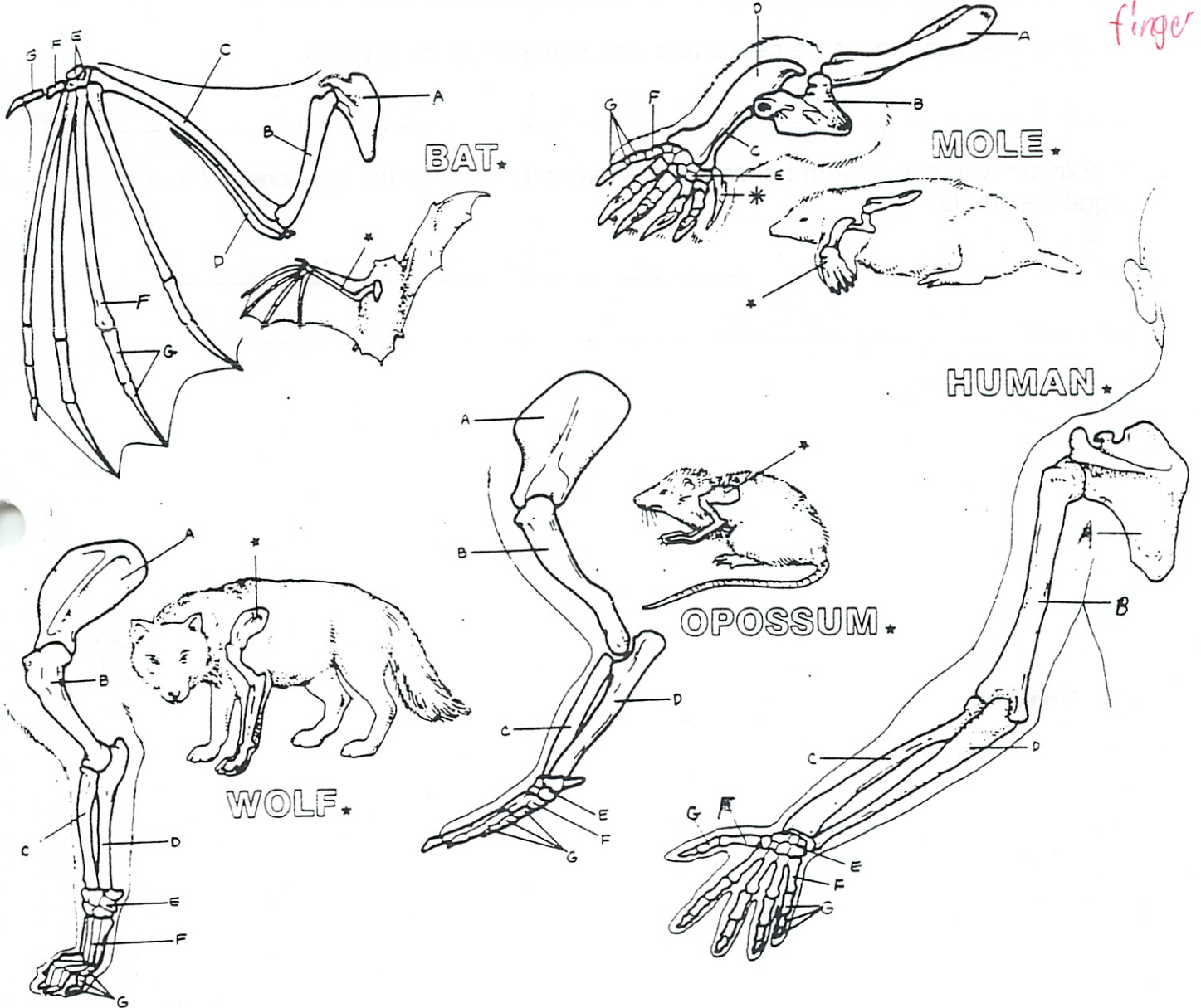
50 1st primates
20 Modern Humans

500 1st fish (fish)

The drawings below show the front limbs (arms, legs, or flippers) of several different animals. Look at similarities in bone structure, then color the bones the indicated colors.

- A - Scapula (black)
- B - Humerus (red)
- C - Radius (yellow)
- D-Ulna (blue)
- E - Carpals or wrist (green)
- F - Metacarpals (hand) (leave white)
- G - Phalanges (fingers) (orange)

All are similar (bat still has finger bones)



1. The bone structures of the animals shown above appear similar to each other. What do some scientists think may be the reason for this?

They evolved from a common ancestor

2. A present day bat has no fingers. Why then does it have finger bones?

It evolved from an animal that had fingers.

3. Are the positions of the bones in the limbs similar in all the animals? YES

4. Identify at least one similarity between the front limbs of a human and a possum.

They have all the same types of bones

5. Identify at least one difference between the front limbs of wolf and human.

It's scapula is a different shape

6. What is similar about the radius and ulna bones of all the animals.

They are next to each other.

7. Explain why human arm bones are basically the same as the leg bones of four legged animals.

They are the same because humans use to walk on there hands as primates.



1st benefit in tree -> then benefit walking

I. Primate Characteristics

A. Highly evolved group of mammals including lemurs, monkeys, apes and humans.

B. All primates share the following characteristics:

last 25 mill. years

oppositional

1. Thumb (power grip [hanging from tree]) (let you hold + tree) oppos & oppositional thumb
2. binocular vision (eyes face forward [judge distance])
3. flexible shoulders + rotating forelimbs (do a circle w/ arm [reaching up] [throwing])

C. Most scientists believe that all primates share a common ancestor.



II. Primate Classification



Lemur

A. Prosimians - which means before apes

1. Examples are leamers + tarsiers
2. These animals are Nocturnal + large eyes + excellent hearing + good smell



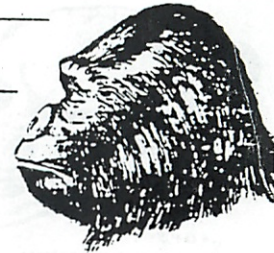
MONKEY

B. Higher Primates - including apes & no tails, humans

and monkeys
tails

CHIMPANZEE SKULL

- chimps
- gorillas
- gibbons
- orangutan



GORILLA

III. Hominids - human like primates which branched off from other ape-like primates about 4-6 million years ago.

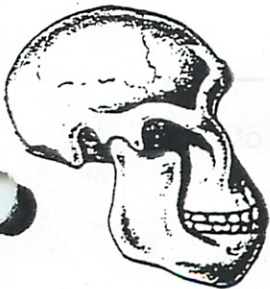
A. They ate meat + veg. and walked on 2 legs + feet

B. They were similar to apes in some ways but generally had large brains (5mi.)

3.5 million years ago

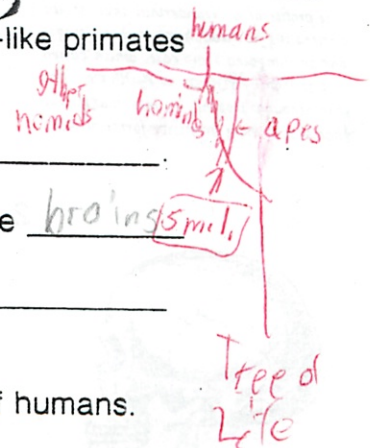
C. Australopithecus - means southern ape

1. Lived about 3 million years ago.
2. Oldest examples of Hominids believed to be ancestors of humans.
3. Brain not much bigger than a chimpanzee's.
4. Probably walked upright



AUSTRALOPITHECUS

Though basically similar in appearance, the skull of Australopithecus, an extinct African ape man that walked upright and may have used tools, lacks the large, sharp canine teeth of the gorilla. The brain capacity ranged from about 150 to 650 c.c.

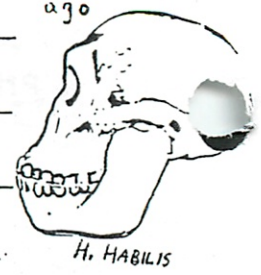


Tree of Life

2 million years ago

D. Homo habilis - means handy man

- 1. Definitely walked upright
- 2. Believed to have used tools
- 3. Had larger brain than Australopithecus



1.6 million years ago

E. Homo erectus - means ? man upright?

- 1. Had a larger brain than Homo habilis
- 2. Believed to be a direct ancestor of ? Homo sapiens

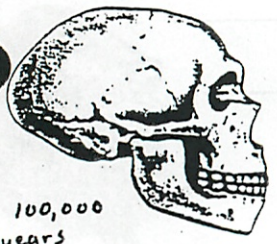


H. ERECTUS SKULL

F. Homo sapiens - means wise humans

1. Neanderthals (100,000 years ago)

- a. Physical characteristics were short, heavy bodies, thick massive bones, small chins, and heavy browridges
- b. Probably hunted mammoth, deer, other large animals (weapons)
- c. Many lived in Caves
- d. Disappeared about 35000 years ago.
- e. Probably NOT an ancestor of modern humans.



100,000 years ago NEANDERTHAL

The profile of a Neanderthal skull shows a retreating forehead, heavy eyebrow ridges and an elongated brain case, which varied in size from 1400 cc. to 1600 cc. The chin, though sloping, is less muzzlelike than that of more primitive forms of man.

2. Cro-Magnon Man (40,000 years ago)

- a. Very similar in appearance to Modern humans
- b. Seems to have done painting, carvings and cared for elderly and buried dead
- c. Modern humans are thought to be direct descendants of them.



CRO-MAGNON

Cro-Magnon's skull approaches modern man's in appearance, but has an even larger brain capacity—approximately 1,590 c.c. as compared to 1,500 c.c. for the average European. Its high forehead contrasts with the depressed one of Neanderthal man.

SIX MINUTE EPIDEMIC

I. Purpose - to demonstrate how diseases can move through a population.
To use collected data to trace the origin of the infection.

II. Materials - beaker, dropper, solution, data sheet.

III. Procedure -

A. Sharing Fluids

1. Each student must visit with another student for one minute.
2. Record the name of the person you visit and trade **TWO** droppers of fluid from each others beakers.
3. After the teacher announces "one minute" has passed, move to another person and repeat the procedure of recording and trading fluid.
4. You must visit with 6 people total. Be sure to move around the room and not share with a small isolated group of students.

Student Names	
1. Mike S	4. Anna P
2. Tom	5. Jake O
3. Brandon	6. Alex S

B. Data

1. Teacher will test each person's beaker of fluid to determine who was infected.
2. Record the results below.

INFECTED STUDENTS

NON-INFECTED STUDENTS

Amanda	Sarahanne
Emily	Jake
Maria	
(Megan) E-Correct	
Staci	
Alex P.	
Anna	
Carston	
Hinsley	

Arew	Greg
Brandon	Plaz
Elise	
Kevin	
Tom	
Mark E	
Alex S.	
Mike S.	
Will	

Chapter 3

REINFORCEMENT

● Primate Evolution

(10)

Review
of other
Sheet

In the table below list three physical characteristics that all primates share. Then describe how each of these characteristics functions or how it is adaptive.

Characteristic	Function/Adaption
Power Grip	Grip + Clime trees - Carry and throw stuff
Binocular Vision	Judge distance (trees + throwing)
Flexible Shoulder + Rotating For limbs	Reach Up + Throwing

Answer the following questions.

- How do lemurs and tarsiers differ from the higher primates? They are nocturnal, have large eyes, smaller elexcellent hearing, less intelligent, tails
- How do hominids differ from monkeys and apes? Smarter, (walk upright), (2 less key?) (2 legs)
- Would you expect the DNA of a human to be more similar to that of a gorilla or a lemur? Explain your answer. Gorillas because Gorillas are bigger, smarter, have no tails, face more closely resembles us, closer on the branch/tree
- In what ways do *Australopithecus* and *Homo habilis* differ? - question of walking upright - Habilis has a bigger brain, - Habilis used tools
- What traits did the early humans, Neanderthals and Cro-Magnons, share? - big brains - walked upright - lived in caves - used tools - had fire? - somewhat flat face - somewhat hairy, raised kids
- What social behaviors do we share with Cro-Magnon humans? - they buried their dead - cared for the elderly - did cave paintings - carved, in groups + sick

Michael Plasmeier

Chapter 5 Study Guide (pages 96-107) and (pages S44-S48)

A. Define and give examples for these vocabulary words:

or traits

(p. 97)

1. Adaptation - are inherited features that help increase an organism's chance of survival

(p. 98)

2. Camouflage - it allows animals to blend in with their survival

(p. 101)

3. Mimicry - looking like another usually poisonous animal for survival *looking like another animal + surviving*

(p. 104)

4. Seed dispersal - many plants have for moving seeds around like floating or being carried by animals *Spreading seeds away from parent plant*

B. Questions:

(p. 106)

1. Why is an ecosystem "healthier" with a lot of diversity instead of little diversity?

not be depended on 1 species

It is healthier because having different plants supports different animals which is good to have several food sources

(p. S44)

2. What do we mean by "common ancestor?"

Common ancestor means evolving from the same

(p. S47)

3. What is selective breeding? Selective Breeding is when you further breed the animals with the proper traits by humans. *when animal*

C. ORIGIN of LIFE

(p. S48)

1. In 1923 a Russian scientist proposed ^{the} theory that life on earth formed from

non living chemicals

a. Experiments by American scientists have shown that molecules can be formed in lab.

Amino Acids

b. These molecules are the same ones that form in living things.

proteins

c. Scientists have observed that biological molecules made in labs gather together

to form spheres that resemble cells

DESIGN A PRIMATE

I. Purpose - to design and describe a newly discovered primate.

II. Materials - primate part picture, pencil, paper.

III. Procedure -

20

A. Constructing the Primate

1. Choose the body parts for your primate and trace them on to the blank paper.

2. You may choose to change any of the parts, that is, make them bigger, smaller, or different angles.

3. Name your primate.

Hydro pithecus
water ape

B. Describe your Primate

1. Imagine you have recently discovered this primate in the wild or as a fossil.

2. What other primates is it similar to?

It is a mix between a chimp + gorilla

3. Where did it live:

Arctic - Polar Region

4. When?

6-7 mill 100,000 years ago

5. On the lines below, describe how your primate moves, gets food, protects itself from predators, and anything else you learned about it.

It swims and walks on 2 feet

Eats fish + baby seals, uses claws to grab + water lung

Lives in groups of 4-5

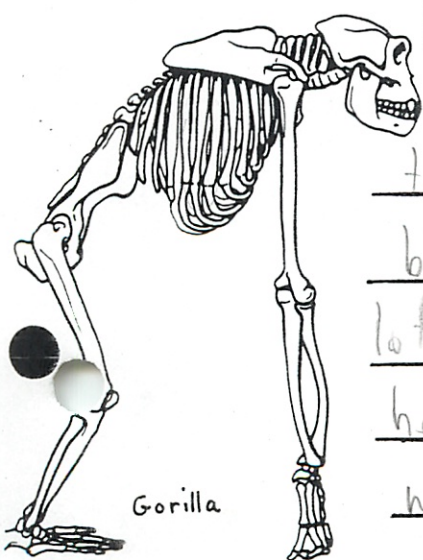
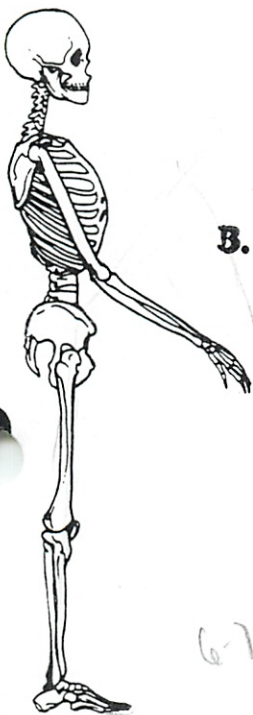
to protect it hides, goes under water

big lungs - stay underwater 5 min

lots of skin - blubber to keep warm

he can flatten out to be streamlined for swimming

web claws - better swimming

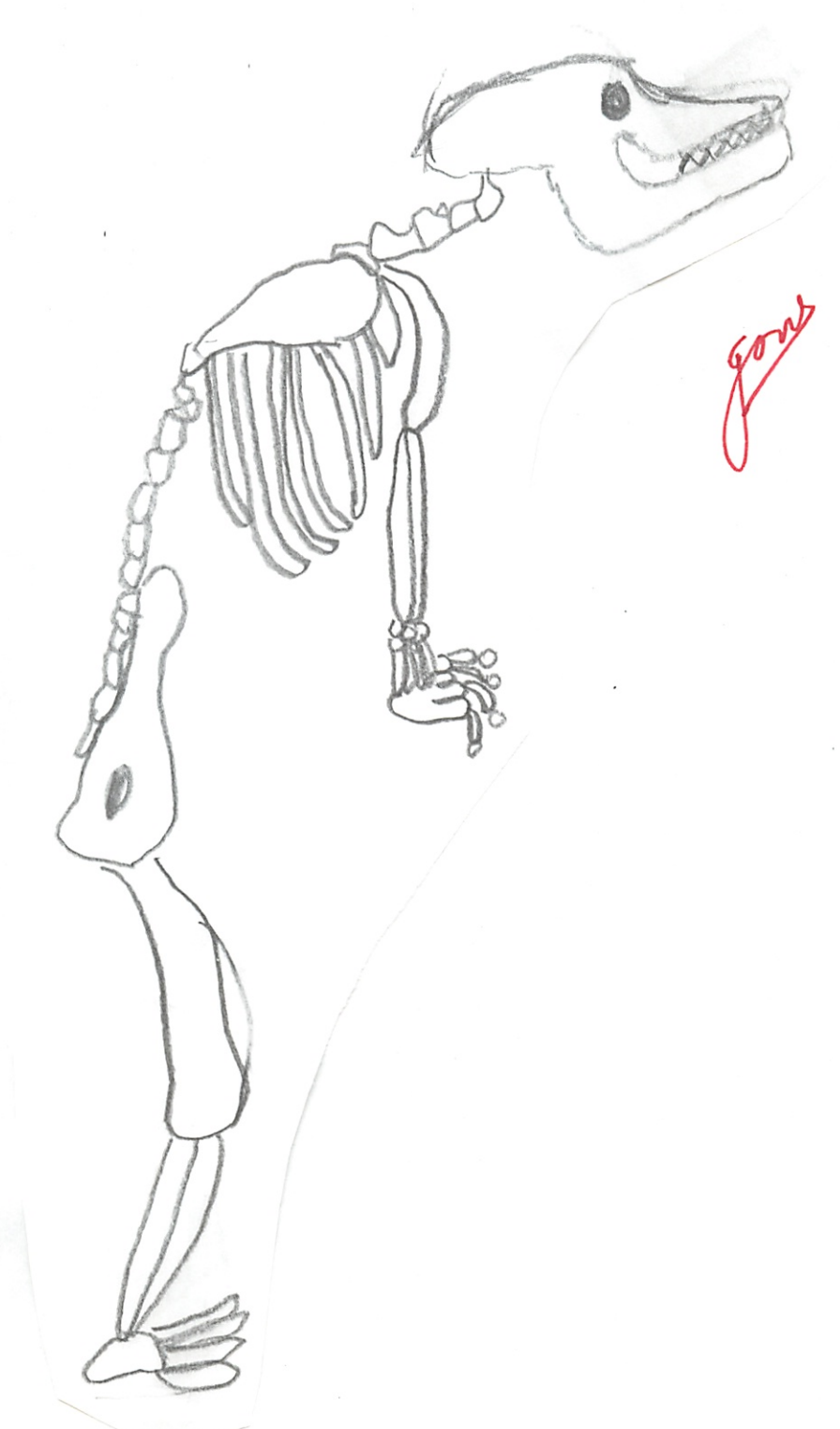


Gorilla

DESIGN A PRIMATE DRAWING

NAME Jake, Will, Michael P. Partner's Name _____

Date 1/19/04 Period 5



Your Creature's Scientific Name Hydro Pithecus

What does your creature's name mean in English Water Ape

DESIGN A PRIMATE

DRAWING

NAME Will W. Jakes, Michael P. Partner's Name _____

Date 1/13/04 Period 5



Your Creature's Scientific Name hydro pithecus

What does your creature's name mean in English water ape

bxi Will

Michael Plasmann

Chap 6 Sci Log Q's

10

p113

1/12

1. How would the living things on p113 into groups?

Plants
Animals

To sort the animals into groups, I would do slithering things, flowers, trees, small land animals and non-flying birds.

2. What's the difference between vertebrates + invertebrates? How does know this help you classify living things?

Vertebrates are animals with backbones. Invertebrates are animals with no backbones. This helps you classify because having a backbone is a major change and evolutionary milestone.

3. Scientist call this animal *Gallus gallus*. Why do they call it this, and what would you call it?

Scientists call the animal that because it is latin, the official language to classify living things. I would call it a chicken or a duck, whatever its english name is.

(10)

p 114 Red Bullits

Michael Plasmeier

(10)

1/14

1. How are the books in the library sorted?

Books are first sorted by fiction, non fiction. Then the fiction books are sorted by authors last name. The non fiction books are sorted by the Dewey decimal system.

2. How does the telephone company sort phones?

Well first they assign everyone a ^{10 digit} phone number. The first three digits are the area code, and the next 3 are the exchange number. The exchange number is a sub-division of the area code. The last 4 digits identify your phone, in your exchange, in your area code.

3. How does the postal service use grouping?

The post company uses zip codes to identify townships. Then they use the last 4 digits to locate a street. Then they use the house number to deliver it to your door.

4. Name some other things you sort.

I sort clothes, tv channels, knee pieces, fruit, food, and papers.

5. Name ways you ^{would} classify living things.

(Over)

(Over)

(01)
I would first do plants and animals. In plants I would do trees and plants. In animals I would first do size and then the main branch and then the variations.

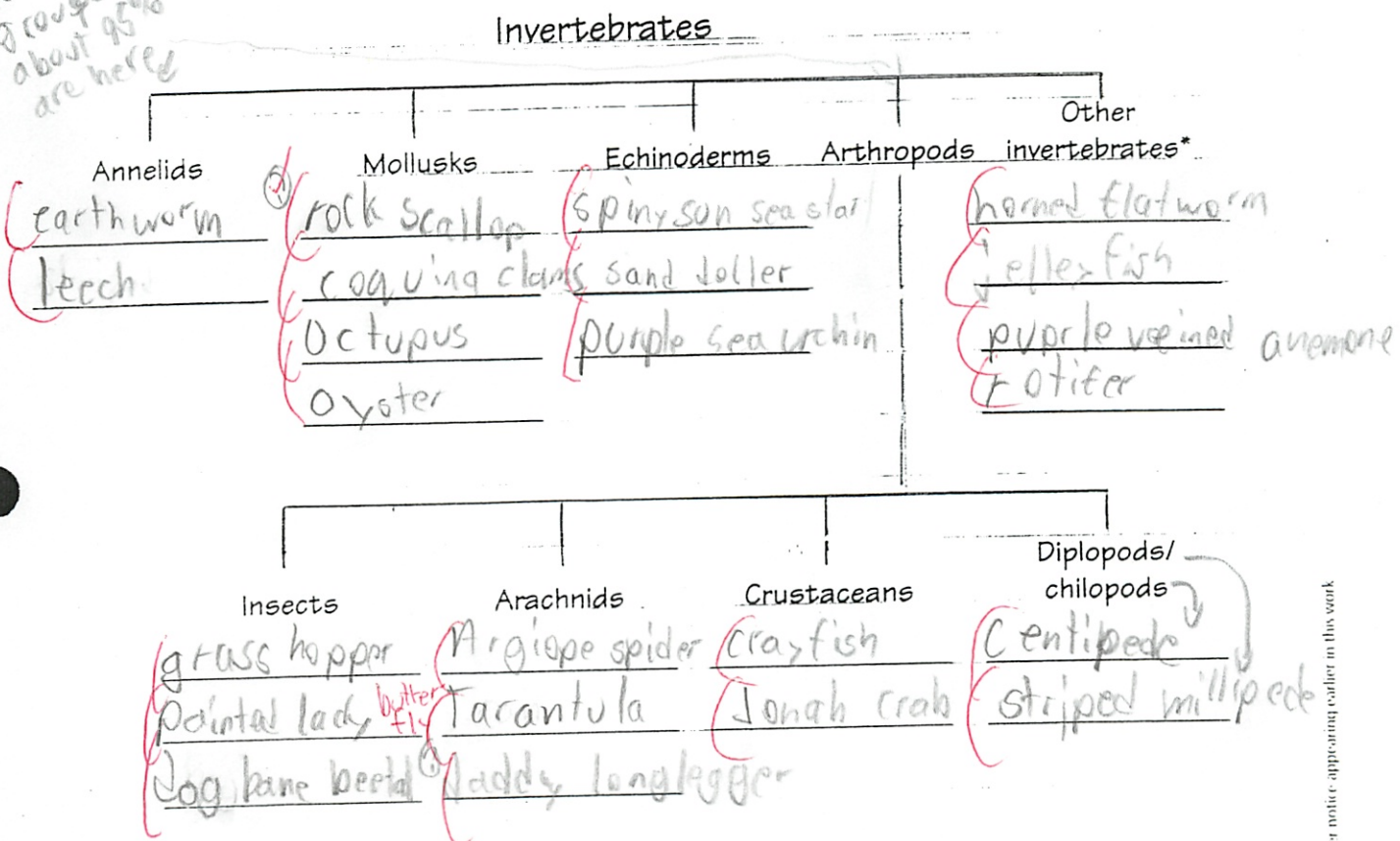
Chapter 6
Resource Worksheet

Chap 6
Start Review
Know characteri

A Simplified Classification System for Invertebrates, page 123

Look at the animals pictured on pages 120 and 121 of your textbook. Fill in each blank in the diagram below with an animal's name.

not all groups about 95% are here



*"Other invertebrates" includes other worms, such as flatworms and unsegmented roundworms, along with many water animals, such as jellyfish, sea anemones, corals, and sponges.

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A Simplified Classification System, continued

Questions

Now think some more about the subgroups.

1. Did you have any problems deciding which subgroup each invertebrate belonged to? If so, which one(s)?

Yes, some are hard to see from the picture.

2. It's interesting to think about where invertebrates live. How many are found in water?

About 1/2 out of 22. (About half for us live in the water. I think that is because the water helps support them.

A few live here. They probably came here by being near water and ended up and better surviving on dry land? on land.

A few more live on land. This final step to evolving. Some animals then needed to support themselves.

3. Does it appear that the structure of invertebrates enables them to live successfully in various places? Why do you think this is the case?

No, their structure lets them live best in water were they can be supported. On land they need to support themselves so it is hard to live.

Insects

* cold

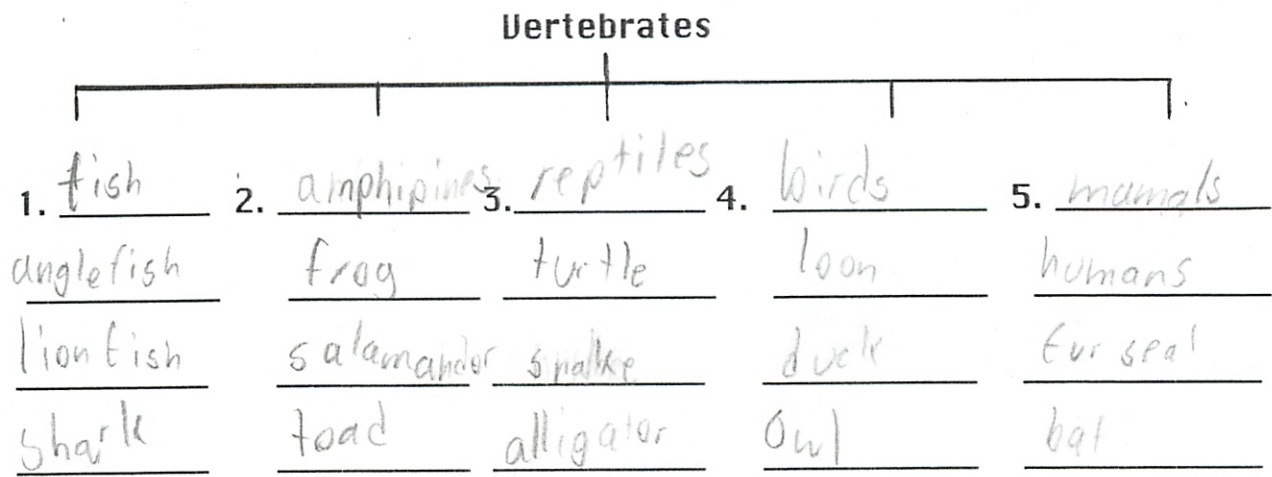
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Same as last one

ANIMAL KINGDOM CLASSIFICATION

VERTEBRATES (See p. 124-125)

Using pages 124-125 classify the animals pictured there into 5 subgroups (give each group a name). Then list three examples (from the pictures in the book) of each subgroup on the lines underneath.



Subgroup name	Habitat	Movement	Other
1. <u>Fish</u>	<u>water</u>	<u>swims/fins</u>	<u>scaly skin/gills</u>
2. <u>amphipines</u>	<u>land/water</u>	<u>legs</u>	<u>slimy/moist skin/softy-like eggs</u>
3. <u>Reptiles</u>	<u>mostly land</u>	<u>legs</u>	<u>lungs/dry skin</u>
4. <u>Birds</u>	<u>land/air</u>	<u>legs/wings</u>	<u>warm blooded/eggs</u>
5. <u>Mammals</u>	<u>mostly land</u>	<u>mostly legs</u>	<u>warm blooded/feed/milk to young</u>

524 Protista

Michael Plasmeier

10

1/20

1. Protists are the more complex than the Monerans, (Although they are mostly single-celled, Protists can also be simple multi-cell life. Protists contain nuclei and other things. They do not contain tissue or organs. The Protists form 2 main categories algae and protozoans.
2. The main difference between protozoans and algae is that protozoans are more animal like. These protozoans ingest food and some are diseases. Algae on the other hand is more plant-like. Algae makes their food by photosynthesis and some can form long complex chains. They live every where and are grouped into 5 categories. Also protozoans don't have a cell wall, while algae does.

10

SCIENCE Chapter 6 **Kingdom MONERA**

~~Not important~~
(p. 528) Front + Back

I. Kingdom name - **MONERA**

A. Smallest and simplest life forms on earth.

B. All are made of single cell.

Main Grouping
Fesen

C. The cell has no nucleus floating freely

D. The kingdom is divided into 2 major groups.

1. **Bacteria**

a. Bacteria get their food from surroundings

b. Some can cause disease

c. Some are benefit to animals because they help in digestion

d. Many cause decay of dead organisms.

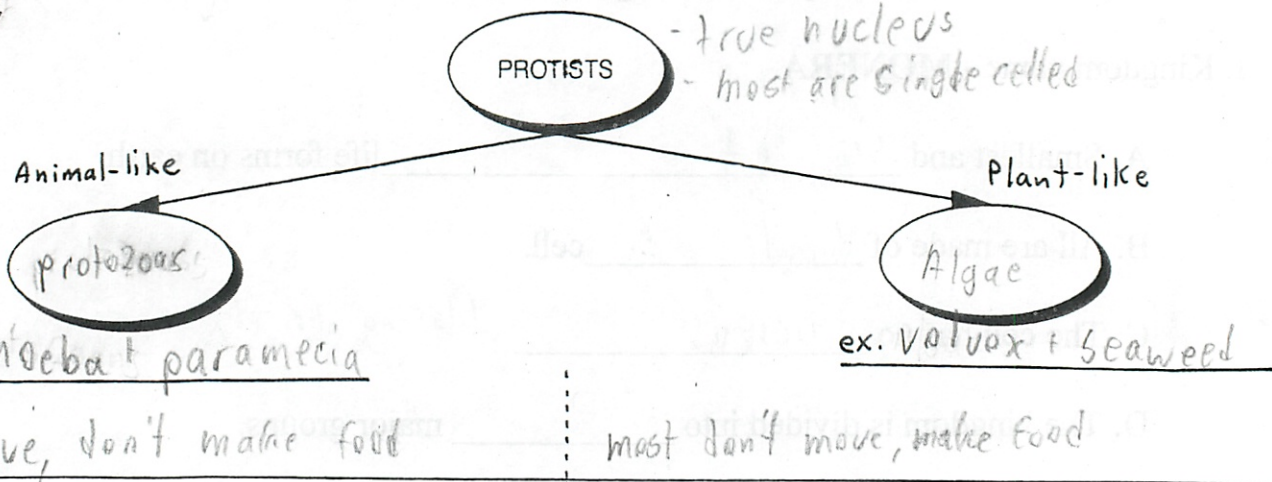
2. **Cyanobacteria** (blue-green algae)

a. Usually live in fresh water

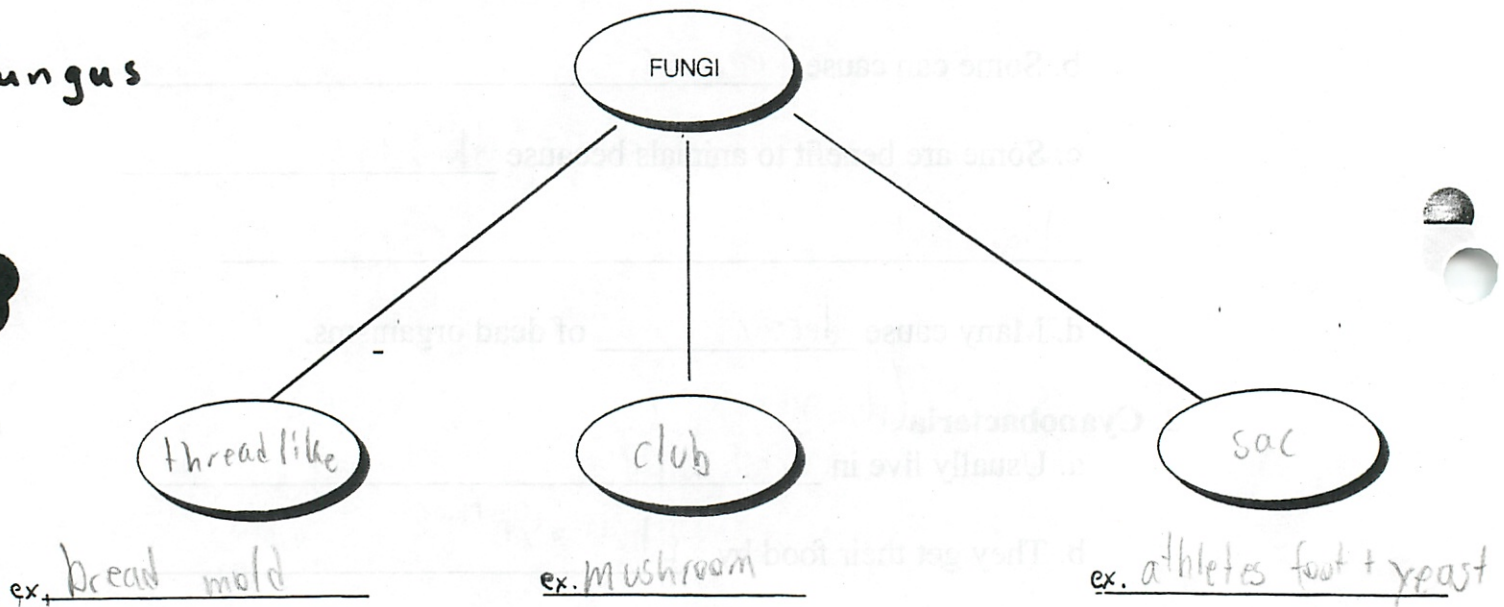
b. They get their food by photosynthesis

Kingdoms (p. S29-S30)

Protist



Fungus



Fungi - most are multi-celled

do not make food

use digestive chemicals to break down and absorb food

grow on living + dead stuff

cause decay + disease (athletes foot)

ANIMAL KINGDOM CLASSIFICATION

~~Important~~

Examine the pictures on pages 126-129 of your text. Classify these animals by writing their names on the lines of the appropriate group below. There are 22 animals. Look back on page 122 for descriptions of the invertebrate groups.

7

Invertebrate subgroups - 6 Examples

Annelids - ~~brittle worm, scorpion~~ leech

Mollusks - clam, snail, ~~turtle~~

Echinoderms - starfish, brittle star

Arthropods -
Insects - ~~scorpion~~, beetle

Crustaceans - crab,

Arachnids - scorpion

Diplopods/Chilopods - millipede

Other Invertebrates - ~~leech~~ none

Vertebrate subgroups - 7 Examples

Fishes - goldfish

Amphibians - toad, salamander

Reptiles - snake (tree boa), turtle

Birds - duck, penguin, ostridge

Mammals - dolphins, horses, manatee, cow, pig

Michael Plasmerec

~~Verif Imp~~

Chapter 6 Classification Outline

I. Classification is the process of sort them or putting things in groups

A. The largest classification grouping for living things is the Kingdom

1. Scientists currently group all living things into 5 Kingdoms.

2. The Kingdom names and descriptions are:

little bit of head to know

a. Moneran - simplest, many single cells, no nucleus, some make food

b. Protist - a few of ^{ear, most} single cells, have nucleus, some move, some make food

c. Fungus - feeds off host, doesn't produce own food, most multi-celled

d. Plant - all multicelled, make food

e. Animal - multicelled, none make food

B. The Animal kingdom is usually divided into:

1. Vertebrate - backbone, or spine

2. Invertebrate - no backbone or spine

C. There are more invertebrate subgroups than vertebrate subgroups.

D. The levels of classification for all living things are:

Don't need to know unless

- 1. Kingdom
- Phylum
- Class
- Order
- Family
- Genus
- Species

2. The smallest levels of classification Genus and Species are used for an organism's Scientific Name.

Examples:

a. Humans are named **Homo sapiens**

b. Dogs are **Canis familiaris**

c. Cats are **Felis catus**

SCIENTIFIC NAMING

~~Don't Need~~

Know

A. All living things have a scientific name which comes from the genus and the species.

B. Examples of scientific names are:

1. cat - felis catus 2. lion - felis leo

C. Compare the classification of the organisms below.

~~Don't Need~~

	<u>Human</u>	<u>Dog</u>	<u>Wolf</u>	<u>Turtle</u>	<u>Oak</u>
KINGDOM ----	Animal	Animal	Animal	Animal	Plant
PHYLUM ----	Chordata	Chordata	Chordata	Chordata	Tracheophyta
CLASS ----	Mammalia	Mammalia	Mammalia	Reptilia	Angiospermae
ORDER ----	Primate	Carnivora	Carnivora	Chelonia	Fagales
FAMILY ----	Hominidae	Canidae	Canidae	Emydidae	Fagaceae
GENUS ----	Homo	Canis	Canis	Terrapene	Quercus
SPECIES ----	sapiens	familiarus	lupus	carolina	albus

Sort - at

- How many levels are the same for the human and oak? 0
- How many levels are the same for the human and dog? 3
- How many levels are the same for the dog and wolf? 6
- Why are so many levels similar for dog and wolf? they similar

~~Don't Need~~

D. Match the common name in column I with the scientific name in column II. Write the letter your choice in the space provided. Look for clues in the scientific name.

Column I	Column II
1. <u>D</u> collared lizard	A. Magnolia grandiflora
2. <u>C</u> praying mantis	B. Pinus sylvestris
3. <u>F</u> Indian elephant	C. Mantis religiosa
4. <u>H</u> map turtle	D. Crotaphytus collaris
5. <u>J</u> purple finch	E. Sphagnum affine
6. <u>I</u> paper birch	F. Elephas maximus
7. <u>G</u> red maple	G. Acer rubrum
8. <u>B</u> Scotch pine	H. Graptemys geographica
9. <u>E?</u> house mouse	I. Betula papyrifera
10. <u>L?</u> sphagnum moss	J. Carpodacus purpureus
11. <u>A</u> Southern magnolia	K. Trifolium alba
12. <u>K</u> white clover	L. Mus musculus

Important

1. What does it mean to classify things? to put things into groups based on their characteristics

2. What language is used for all scientific names? Latin *(50) AT*

3. What is one reason that scientists need to use "scientific names" for living things?
Scientists need the names to know what animal they are talking about even if they speak a different language.

4. An organism's scientific name is "Orcinus orca." What is its genus?
Orcinus

great!

5. What is the largest level of classification for living things? Kingdom

6. What is the smallest (most specific) level of classification? Species

7. Describe why some animals are classified as vertebrates. Vertebrates means to have a backbone or internal skeleton.

8. Monerans are divided into major groups called Bacteria Cyanobacteria

Fill in the blanks with the information about Kingdoms of living things.

KINGDOM NAME	DESCRIPTION OF KINGDOM
9. Moneran -	<u>All single celled, have no nuclei</u>
10. protist	- Most are single-celled, some make food
11. Fungus -	<u>most multy celled, none make food</u>
12. Animals	- do not make food, all are multicelled, most move

Multiple Choice - place the letter of the correct on the line provided.

13. D Of the following organisms, the closest relative of Felis concolor is:
 A. Ficus carica B. Canis lupus C. Canis familiaris D. Felis tigris

14. B The kingdom which includes organisms which are multicelled and all make food is:
 A. fungus B. plant C. Protist D. Moneran

(over)

15. All vertebrates can be classified into 5 subgroups. Humans are in the subgroup called **Mammal**. What are the other four subgroups?

A. Fish B. Reptiles C. Amphibians D. Birds

16. Name two differences among invertebrates that might be used to classify them.

How many legs flying

17. What is one difference between Protozoa and Algae?

Algae makes their own food

Classification for Survival

No

Imagine what a struggle life must have been in prehistoric times, when people had no tools and little understanding of their environment. Agriculture—the planting of seeds and harvesting of the resulting food—was yet to be invented. At that time, family groups lived off the land as hunter-gatherers. The men hunted and fished; the women gathered and prepared berries, grains, and roots.

Year round, these ancient people were forced to move where the food was, risking starvation if food supplies ran out or were eaten by wild animals. As centuries passed, people learned how to reduce their risk of starving or being poisoned by the food they ate. As a result of much life-and-death experimentation, they began to classify plants into categories such as “edible,” “poisonous,” “useful,” and so on.

Dobe !Kung

Some ancient societies, such as the Dobe !Kung of South Africa could identify more than one hundred edible varieties of plants. In addition, they were able to categorize the varieties from least to most nutritious.

The Dobe !Kung still choose to live as hunters and gatherers in the Kalahari desert. They have developed special skills and knowledge that allow them to enjoy their lifestyle and have considerable leisure time to spend together. Like their ancestors, Dobe !Kung gather and eat the most nutritious foods first, such as the mongomongo nut. Thirty minutes is long enough to find the nuts and prepare a whole day's nutrition. The !Kung gather less nutritious foods only when other food supplies are scarce.

Focusing on Edible Plants

As ancient peoples began to realize which plants could safely be eaten, some groups decided to encourage the growth of these plants. Perhaps they first noticed that some wild wheat they had stored over winter had sprouted when the weather grew warmer. Seeing this new growth, they realized they could now control a source of food and remain in one place, growing what they needed.

Aboriginal groups in Australia, for example, discovered that burning off vegetation in certain areas promoted the growth of grasses



A Dobe !Kung bushman with bow and quiver of arrows prepares for a hunting trip.

they could eat. It also discouraged the growth of inedible plants. Today, some Aborigine groups continue to burn off unwanted vegetation to promote the growth of edible plants. Like the Dobe !Kung, they choose to live as hunters and gatherers, without depending on agriculture.

In the middle 1700s, Spanish explorers discovered the Kumeyaay people near the border of what is now California and Mexico. These people had a keen knowledge of wild plants and their uses and management. For example, the Kumeyaay also burned off vegetation to improve the harvest of certain wild seeds and plants. The Kumeyaay not only were aware of the different categories and uses of plants, but they also experimented with growing different food and medicinal plants. They sometimes moved the plants to new environments that were more convenient for the people. For example, they transplanted cacti cuttings from distant areas to ones nearer their villages.

Choosing Changes Plants

One fascinating finding, made possible by modern genetic research, is that different groups of people domesticated the same species of wild plants in widely different regions, at different times. *Domestication* means that the people purposely grew certain species, choosing plants with useful characteristics.

Multicultural Connections (continued)

Genetic research allows scientists to determine whether the seeds they find are wild or domesticated. For example, scientists have determined that separate groups of people in Central America and in South America domesticated the same two wild species of beans. By selecting and growing bean plants that had certain characteristics, these groups also slowly changed the genetic make-up of both species.

Classification Continues

About 300 B.C., long after ancient peoples first struggled to determine the best use of plants, the Greek philosopher Theophrastus classified plants basically by size as trees,

shrubs, or herbs. It was not until the first century A.D. that another Greek botanist, Dioscorides, followed the example of ancient peoples and grouped plants by their use, classifying them as aromatic (having an aroma), culinary (foods), and medicinal (medicines).

Since then, plant classification has become much more sophisticated, relying on scanning electron microscopes, genetic sequencing, and other advanced technology. Yet prehistoric peoples, whose survival depended on their knowledge of plants, laid the foundation for the science of botany and the classification of plants.

Classification for Survival

Not really
9
10

Name Michael Plasencia

1. Before humans developed agriculture (planting and harvesting seeds), how did they get food?

The people hunted wild animals and gather wild plants

2. As centuries passed, people became better at recognizing what foods were nutritious and which were poisonous. While some of this information was surely learned by trial and error and then passed on to others, what role might "genes" and natural selection have had on this process?

Genes might have helped the !Kung and others collect food because the genes let them get certain foods and those that ate good food survived

3. The ancient Dobe!Kung society of South Africa classified edible plants according to:

nutritious value

4. How might ancient people have first come up with the idea of planting crops?

They might have gotten the idea by seeing that the plants they collected were growing

5. What is meant by "domestication of plants"?

Domestication of plants means that humans planted only the types of crops they wanted

6. After many years, why would we expect to find differences in the genetic makeup of domesticated crops compared to their wild varieties?

Now we see differences because the domesticated crops' traits were passed on by what humans liked, wild

? plants just survived the environment to pass on their traits

7. How did Greek philosopher Theophrastus classify plants? size

8. How did Greek botanist Dioscorides classify plants? aromas, foods, medicine

9. Why do we know more about the ability of the Dobe!Kung people to identify plants than we know about most other groups of people who lived before and during the Stone Age?

We know because they had extra time to write this down + also because they succeeded, still around

Society?
I didn't read the book

USING AND MAKING A BIOLOGICAL KEY 32

Classification is a way of separating a large group of closely related organisms into smaller subgroups. With a classification system, identification of an organism is easy. The scientific names of organisms are based on the classification systems of living organisms. To classify an organism, scientists often use a key. A key is a listing of specific characteristics, such as structure and behavior, in such a way that an organism can be identified.

In this investigation, you will

- (a) use a key to identify fourteen shark families.
- (b) study the method used in making statements of a key.
- (c) construct your own key which will identify organisms appearing on page 128.

Materials

metric ruler

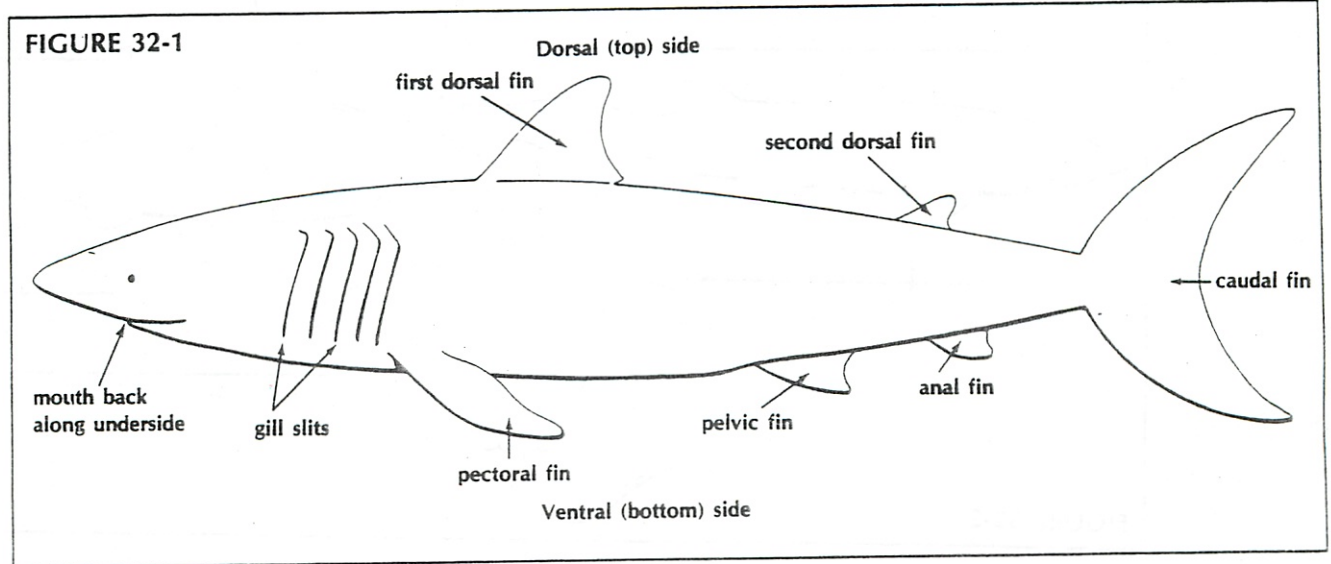
Procedure

● Use Figure 32-1 as a guide to the shark parts used in the key on page 127.

● Read sentences 1A and 1B of the key. Then study Shark 1 in Figure 32-2 for the characteristics referred to in 1A and 1B. Follow the directions in these sentences and continue until a family name for Shark 1 is determined.

For example, to key a shark that has an anal fin and a body that is not kite shaped, follow the directions of 1A and go directly to statement 2. To key a shark that lacks an anal fin and has a kite shaped body, follow the directions of 1B and go to statement 10.

● Continue this process with each shark until all animals have been identified. Write the family name on the line below each animal.



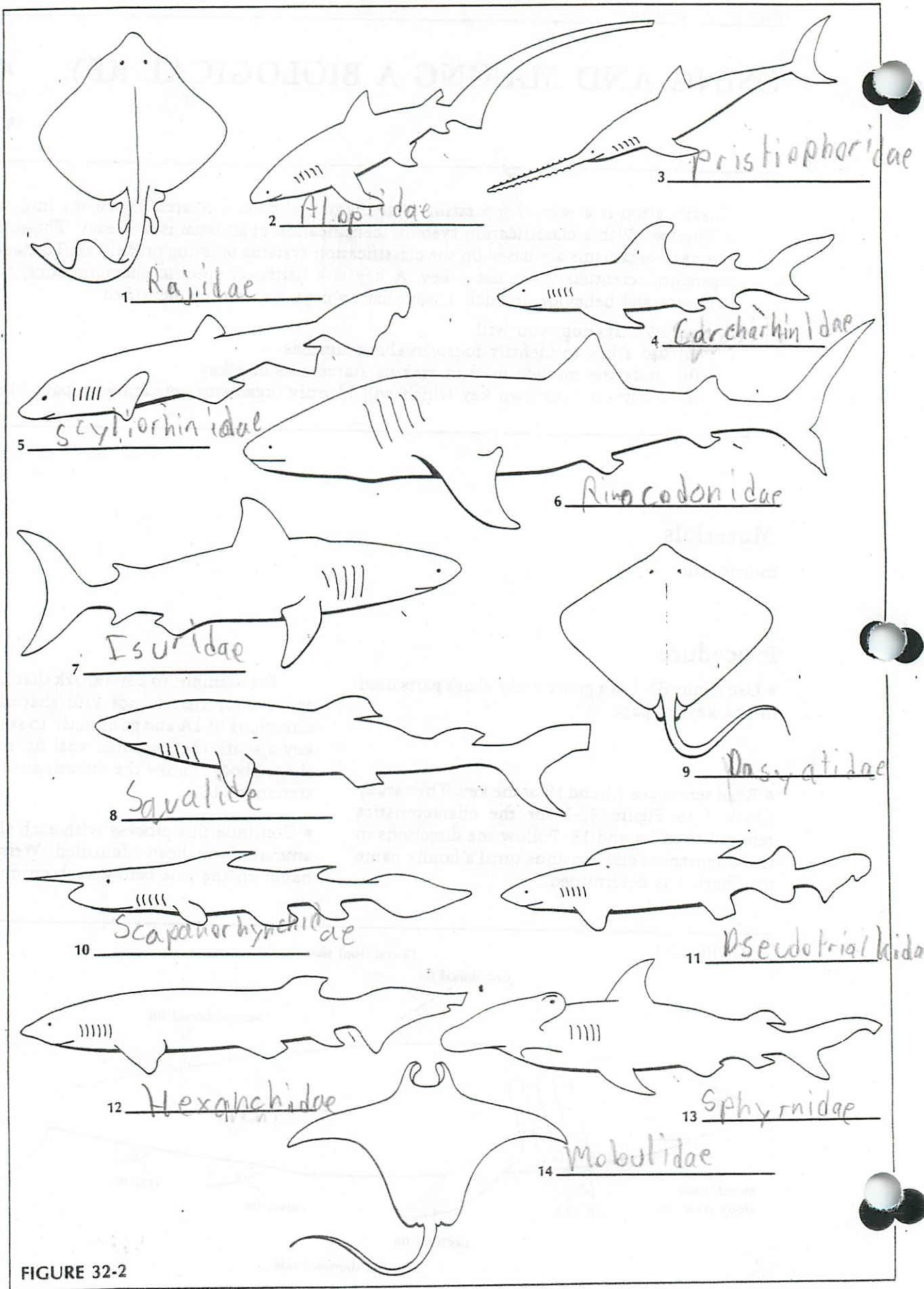


FIGURE 32-2

Name Michael P. Basmeyer

Date

No

Key

- 1. A. Body kitelike in shape (if viewed from the top)..... ~~Go to statement 12~~
B. Body not kitelike in shape (if viewed from the top)..... ~~Go to statement 2~~
- 2. A. Pelvic fin absent and nose sawlike..... ~~Family Pristiophoridae~~
B. Pelvic fin present..... ~~Go to statement 3~~
- 3. A. Six gill slits present..... ~~Family Hexanchidae~~
B. Five gill slits present..... ~~Go to statement 4~~
- 4. A. Only one dorsal fin..... ~~Family Seylierhinidae~~
B. Two dorsal fins..... ~~Go to statement 5~~
- 5. A. Mouth at front of head rather than back
along underside of head..... ~~Family Rhinocodontidae~~
B. Mouth back along underside of head..... ~~Go to statement 6~~
- 6. A. Head expanded on side with eyes at end of expansion..... ~~Family Sphyrnidae~~
B. Head not expanded..... ~~Go to statement 7~~
- 7. A. Top half of caudal fin exactly same size and shape as bottom half..... ~~Family Isuridae~~
B. Top half of caudal fin different in size and shape than bottom half..... ~~Go to statement 8~~
- 8. A. First dorsal fin very long, almost half total length of body..... ~~Family Pseudotriakidae~~
B. First dorsal fin regular length..... ~~Go to statement 9~~
- 9. A. Caudal fin very long, almost as long as entire body..... ~~Family Alopiidae~~
B. Caudal fin regular length..... ~~Go to statement 10~~
- 10. A. A long needlelike point on end of nose..... ~~Family Scapanorhynchidae~~
B. Nose without long point..... ~~Go to statement 11~~
- 11. A. Anal fin absent..... ~~Family Squalidae~~
B. Anal fin present..... ~~Family Carcharhinidae~~
- 12. A. Small dorsal fin present near tip of tail..... ~~Family Rajidae~~
B. No dorsal fin present near tip of tail..... ~~Go to statement 13~~
- 13. A. Front of animal with two hornlike appendages..... ~~Family Mobulidae~~
B. No hornlike appendages..... ~~Family Dasyatidae~~

Analysis

- 1. What is a biological key and how is it used? To identify animals
- 2. List four different characteristics or traits that were used in the shark key. All that are above
- 3. (a) What main trait could be used to separate shark 4 from shark 8? # of dorsal fins
(b) What main trait could be used to separate shark 4 from shark 7? " or fin shape
(c) What main trait could be used to separate shark 5 from shark 12? Kite shaped

Look at
Wrong
one