Alive or Not?!  Page 4

• How many different living things do you see in this picture? Page 4 Name them!

• What do all living things have in common?

• How are they different?

Do the chimpanzees ever study Dr. Goodall?!! (in class) What do you think?

The Work of Science page 6

= _________’_______ - an organized way of studying things and finding answers to questions. Types of Science
• physics- energy and matter have a relationship
• ____________ - study of plants
• ____________-study of animals
• Name some others?

Critical Thinking
• Using skills to ______________ ______________
  - to figure out what happened you have to think about it

Example: What should you do in the following situations?
  - CD player does not work?!!

  - Car won't start?!
Scientific Method Solves Problems

- an organized problem solving technique that can be used to solve a problem STEPS
  - State the
  - Gather
  - Form a
  - Perform an
  - Analyze
  - Draw
  - Hypothesis supported (Repeat many times) or Not supported (Revise hypothesis)

Peter in Hungary Eats Delicious Candy Apples

State the

- Do different types of cat litter cause irritation to cats?
- Four healthy cats are brought to the clinic!
- Next day two cats are scratching and chewing at their skin
- Third day, same two cats have bare patches of skin with red sores
- Surroundings or Food?

Gather

is collected with laboratory observations and experiments as well as fieldwork

Data is collected with the cats by observing them for the next two days
sometimes cats change their behavior when they are in a new place......same behavior
 calls owner and checks to see if she is using the same food....yes
How many things in the clinic might the cats be reacting to?
Observed that the cats scratch and chew themselves after using the litter boxes.
Cat litter in clinic contains a deodorant...not in litter from home!
Form a _______________
• _______________ - a prediction that can be tested
• Something in the litter is irritating the cats' skin

Test the Hypothesis with an _______________
• Finds two brands of cat litter with the same ingredients except one contains a deodorant

Controls
• Separates the cats with sores from the other two cats and places each one in its own cage
• ____________ cat is given litter without deodorant
• ____________ cat is given litter with deodorant
• All other conditions are the ____________ (water, food, cage, temperature etc.) Two parts of an Experiment
• _________ - the standard to which the outcome of a test is compared _   .__________ - something in an experiment that can change (only one variable in an

Analyze Data
• observes both cats for a week
• collects data on how often and when the cats scratch or chew
• data shows the control cat scratches and chews more often than the experimental cat
• sores on the experimental cat begin to heal, not the control cat Draw

Conclusions
• Draw _________ - a logical answer to a question based on data and observation
• The deodorant in the cat litter probably irritated the skin of the two cats
• _________the hypothesis
• She realizes she should do further testing but does not want to cause new sores to develop Report

Results
• shares information with owner ""• writes info in her newsletter for other people to read and learn about
Developing Theories
• an explanation of things or events based on scientific knowledge that is the result of many observations and experiment
• an excepted fact that scientists do not usually question until new evidence is presented
• Example: Cell Theory- experimented and took 100 years to develop Laws
• scientific law is a statement about how things work in _______that seems to be true all the time
  - tells you what happens but does not necessarily explain why it happened
  - Example: Laws of heredity- explain how genes are inherited by do not explain how genes work

Measuring with Scientific Units page 12
• _______ _________of Units, or SI- standard system of measurement scientists use to communicate and understand each other's research and results
  - Length- _________
  - Volume- _________
  - Mass- _________ Safety First
• Follow all safety rules!

Living Things Section 2 page 14

Organism
• any_______thing
  - vary in size
  - found just about everywhere
  - have different behaviors and food needs
• In spite of these differences, all organisms have similar traits
  - these traits determine what is means to be alive
**Things are Organized**

- Cells - the smallest unit of an organism that carries on the functions of life
  - __________-celled organisms (unicellular)
  - __________-celled organisms (multicellular)
- Cells take in materials from their surroundings and use them in a complex way
- Orderly structure and contains hereditary material (instructions for cellular organization and function)

**Living Things Respond**

- Interact with their surrounds
- __________-anything that causes some change in an organism
- __________-reaction to a stimulus
- Example:
  - Cat with a can opener
  - Dog with food and a bell
- Water and food inside the body
- __________-an organism's ability to keep the proper conditions inside no matter what is going on outside the organism

**Living Things use Energy**

- Staying organized and carrying on activities requires energy
- Energy used by most either directly or indirectly from the __________
  - Plants and others use the sun's __________ and __________ materials (carbon dioxide and water) to make food
  - Animals and most other organisms can't use the energy of sunlight directly, instead-__________ is the source of energy
  - __________ is needed by most organisms to release the energy of foods

**Living Things Grow and Develop**

- Growth
  - Takes place by taking in raw materials and making more
  - One-celled organisms' growth is due to an increase in the __________ of the cell

- Development
all the changes that take place during the life of an organism

• life span- the length of time an organisms is expected to live
  - Dog 20 years
  - Cat 25 years
  - Mayflies One day
  - Tortoise 180 years
  - Bristlecone Pine 4,600 years

Living Thing Reproduce
• Reproduce-make more of their own kind
• All organisms must reproduce to replace members of their own species that die, or the species will become extinct

What do Living Things Need?
• Place to ________
• ________ Materials

Place to Live
• The environment limits where organisms can live.
• An organism's surroundings must provide for all of its needs
• All organisms need living space in their surroundings Raw Materials (used over and over)

• Water
  - take in and give off large amounts daily
  - use homeostasis to balance the amount lost with amount taken in
  - most composed of more than ________%, humans ________%
  - use water for many things
    • blood transports- 90%
    • sap in plants transports between roots and leaves

• Proteins, Fats and Sugars
  - taken in from foods eaten (animals)
  - taken in and made from substances in the surroundings (plants)
Where Does Life Come From  Section 3  page 19

Spontaneous Generation

- living things come from _________ things - insects and fish came from _________
  Jell from the sky when it rained _came from grain

- when scientists began to use controlled experiments to test this theory, the theory changed Louis Pasteur Mid-1800's
  _________ the theory of spontaneous generation
  _________ - living things come only from other living things

Scientists of the Past  page 21

- 1668-Francesco _________ Maggots form meat
  1745-John cloudy sealed boiled broth .cloudy boiled broth when opened
  1768-Lazzaro bent flask boiled broth
  1924-Alexander _ primordial soup(sun,lightning, earth's heat) _recreation of primordial soup with electric currents..amino acids
  1953- Stanley _

Harold Drey

Life's Origins

- __ billion years ago- Earth's solar system was a whirling mass of gas and dust
- __ billion years ago- Sun and planets formed
- __ billion years old- Rocks in Australia contain fossils of once living organisms

Oparin's Hypothesis

- early earth's atmosphere was made up of gases ammonia, hydrogen , methane, and water vapor
- suggested that gases combined to from the more complex compounds found in living things

Stanley L. Miller and Harold Urey

- set up an experiment to test Oparin's hypothesis 1953
- the experiment showed that _________ found in living things could be produced, it did not prove that life began in this way