

Lesson 1: Insects

A) Learning Objectives

- Students will be able to observe and investigate with mealworms.
- Students will understand the essential characteristics of an animal in order for it to be an insect: 3 body regions (head, thorax-all legs are attached to this, abdomen), 3 pairs of legs, and 1 pair of antennae. Some insects have wings.
- Students will be able to catch and observe insects and identify the different body parts of them.
- Students will be able to make predictions and collect data.
- Students will be able to understand what biodiversity and living organisms' means.

B) Standards

- Nature of Science
 - Use a scientific notebook to record predictions, questions and observations about data with pictures, numbers or in words
 - Generate questions and make observations about natural processes.
 - Make predictions based on observations.
 - Make and use simple equipment and tools to gather data and extend the senses.
- Standard 3: Life Science
 - K.3.1 Observe and draw physical features of common plants and animals.
 - K.3.2 Describe and compare living animals in terms of shape, texture of body covering, size, weight, color and the way they move.
 - 1.3.1 Classify living organisms according to variations in specific physical features (e.g., body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.
 - 1.3.2 Observe organisms closely over a period of time in different habitats such as terrariums, aquariums, lawns and trees. Draw and write about observations.
 - 2.3.1 Observe closely over a period of time and then record in pictures and words the changes in plants and animals throughout their life cycles-including details of their body plan, structure and timing of growth, reproduction and death.
 - 2.3.2 Compare and contrast details of body plans and structures within the life cycles of plants and animals.

C) Materials

- Handouts attached below

- Black and white paper
- Flash lights
- Paper towel
- Magnifying glasses
- Journals
- Plastic containers
- Mealworms
- Butterfly nets
- Potatoes
- Oatmeal
- Animal Kingdom Poster
- Index cards
- Video: (Insects)
 - http://www.gamequarium.org/dir/SqoolTube_Videos/Science/Bill_Nye_Videos/Animals/
- Magnetized Pictures of insects and titles for board (cricket, bee, mosquito, butterfly, beetle, arthropod, insect).
- Sentence Strips

ENGAGE:

- The lesson began by having each student draw their favorite animal on an index card.
- The students that wanted to share their index card shared it with the class.
- We then discussed that we will be discussing animals and plants throughout the next five Saturdays and that they will learn how plants and animals are all different.

EXPLORE:

- Our first investigation was mealworms. The students will be observing the mealworms life cycle throughout the 5 Saturdays.
- We began by having the students draw a picture as a prediction for what they thought a mealworm looked like.
- Then we brought out the mealworms and had the students make observations of the mealworm using their senses (as well as a hand lens) and also draw a picture of what a mealworm actually looked like next to their prediction.
- We then handed out the mealworm journal page below.
- Next the students did further investigations with the mealworm.
 - The students placed white and black paper side by side and tested 3 times to see if the mealworm preferred the white paper or the black paper.

- The students then placed a wet paper towel and a dry paper towel next to each other and tested 3 times to see if the mealworm preferred the dry paper towel or wet paper towel.
- Next the students shined a flashlight on the mealworm 3 times and if the mealworm did not move they checked light, if the mealworm moved they checked no light.
- The students also tested how the mealworm reacted to being touched and drew a picture.
- Lastly, the students tested what the mealworm would do when barriers were placed in front of it.

EXPLAIN:

- When the students had finished investigating their mealworm, we then created a data chart just like the one on the handout and combined all our data.
 - We found that the mealworms preferred the black paper and this is because they like to burrow and hide in the oatmeal.
 - We found that the mealworms preferred the dry paper towel and this is because they like to live in grains which are usually dry.
 - We found that the mealworms liked the light and this is because the mealworms can sense light with their eyes, but they cannot see like humans.
- We had the students predict what they think their mealworm will look like next week and they either wrote or drew a picture.
- The students then constructed their mealworm habitat which consisted of a plastic container with a lid that had holes in it, a potato, and oatmeal.

-----**Snack and Break**-----

ENGAGE:

- We explained to the students that we would be going outside to find insects.
- We set our expectations of what they needed to do while they were outside and that they must remain in their assigned group.
- Students were given butterfly nets and plastic containers to collect their insects in.

EXPLORE:

- Students searched for insects while they were outside. When they found one, they captured it and placed it in the plastic container.
- Once all the containers were full we returned to the classroom.
- The students were given the handout out titled “What does my insect look like?”

- They were asked to observe their insect in detail and record down the different body parts the insect had.
- Students were to do this for two different insects.

ELABORATE:

- We watched the Bill Nye – Insect clip above which discusses the necessary characteristics that an insect has to have in order to be an insect: 6 legs (3 on each side), a head, thorax (where legs are attached), abdomen, and antennae.
- Students then determined if what they caught outside meets those various characteristics that make something an insect.
- Then students filled out a diagram of their insects by filling in the names of the various body parts with the help of a sample outline of a basic insect (see examples below).
- We then discussed how all our insects are similar in that they have similar body parts, but are also unique in their own way because they all look different. We will inform the students that this is called biodiversity.
- Lastly, we will have the students thinking about how their insects are able to survive in their environment and introduce the word adaptation.

EXPLAIN:

- We will review what we have learned today by using the magnetic pictures of the insects the student observed and having the students place these under insects on the board. We will then discuss how insects fit into a larger animal kingdom known as arthropods.
- We will also discuss how many of the students drew a worm that looks like an earthworm for their prediction of what a mealworm looks like. We will then discuss if they think an earthworm fits under the insect category. The students should say no as it doesn't have all the required characteristics of an insect. We will then discuss that the Earthworm fits under a different animal kingdom called annelids.
- Lastly, we will discuss the other science terms we learned today: living organism, observations, prediction, and data chart.

EVALUATE:

- Students' journals will be observed.
- We will observe the students at their tables and listen to what they are discussing.
- We will see if they can determine the different body parts of an insect.
- We will assess their understanding to see if they think a worm would fit under the insect category.

	Insect 1	Insect 2
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Mealworms



Black	White
Dry	Wet
Light	No Light

Draw a picture of what the mealworm does when you touch it lightly:



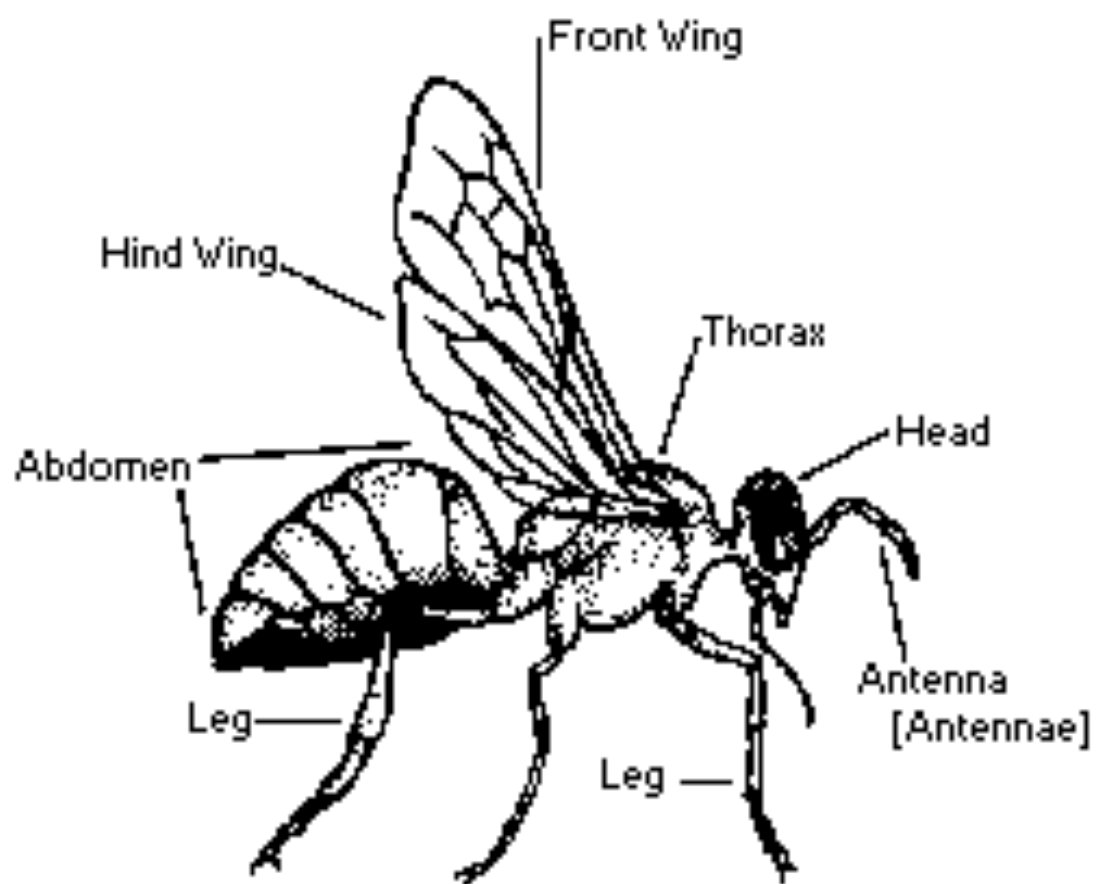
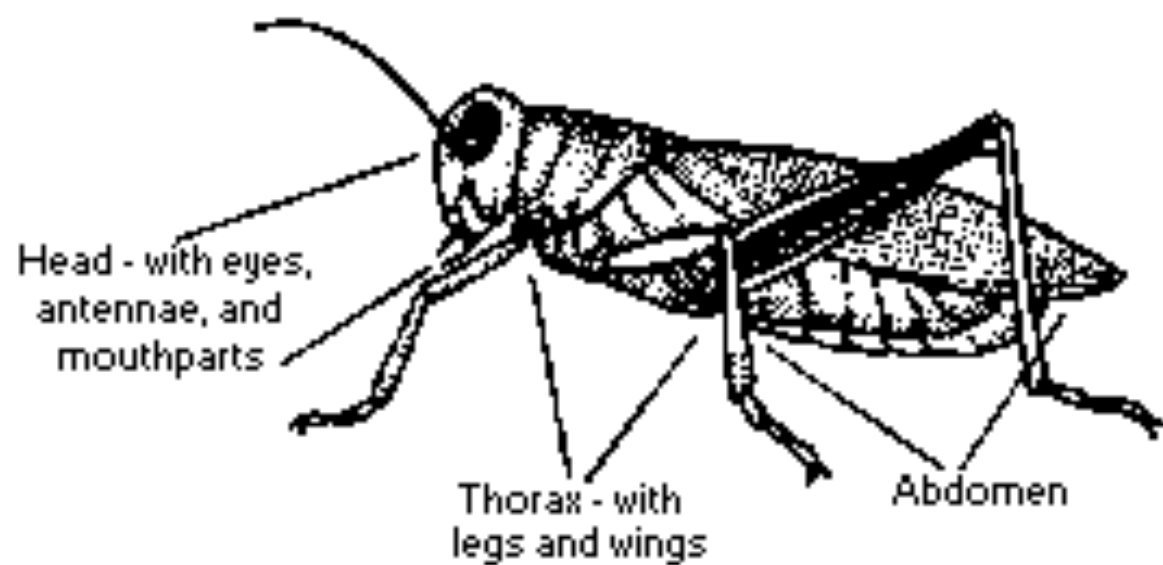
Draw a picture of what the mealworm does when you put barriers in front of it:



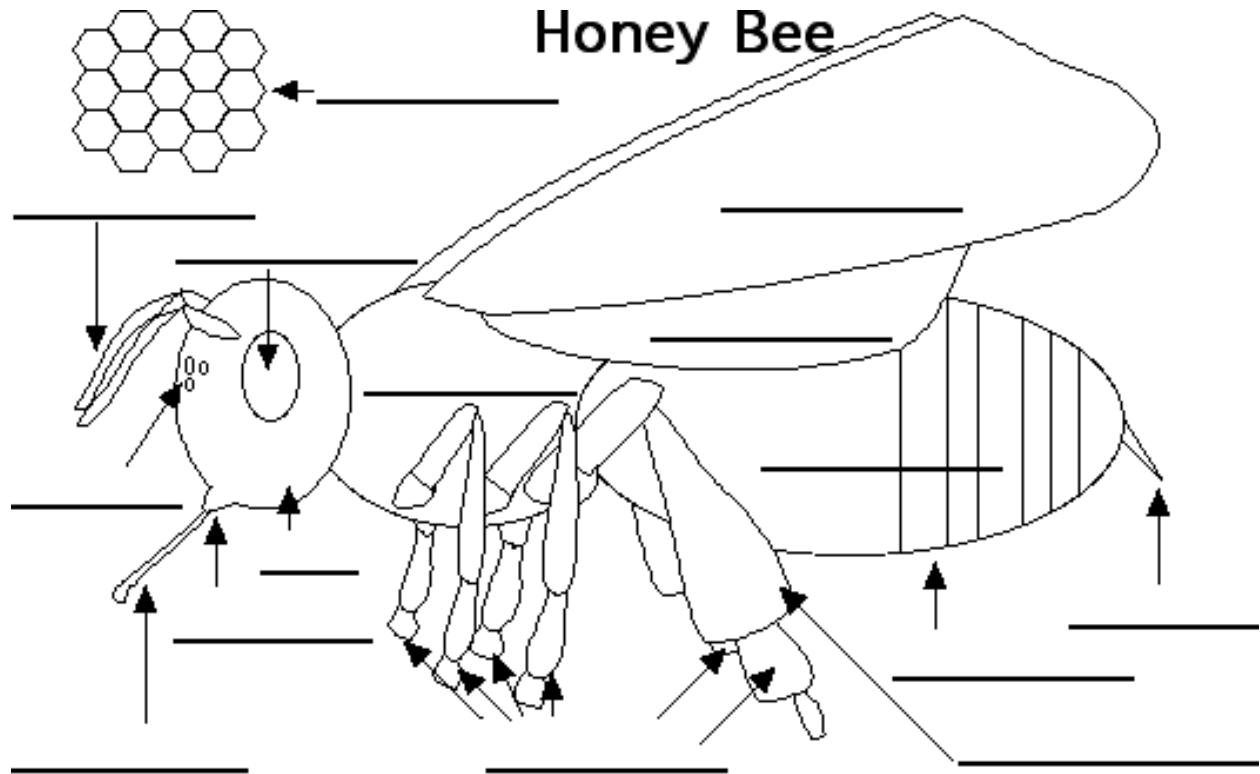
Eyes		
Wings		
Color		
Legs		
Antenna		

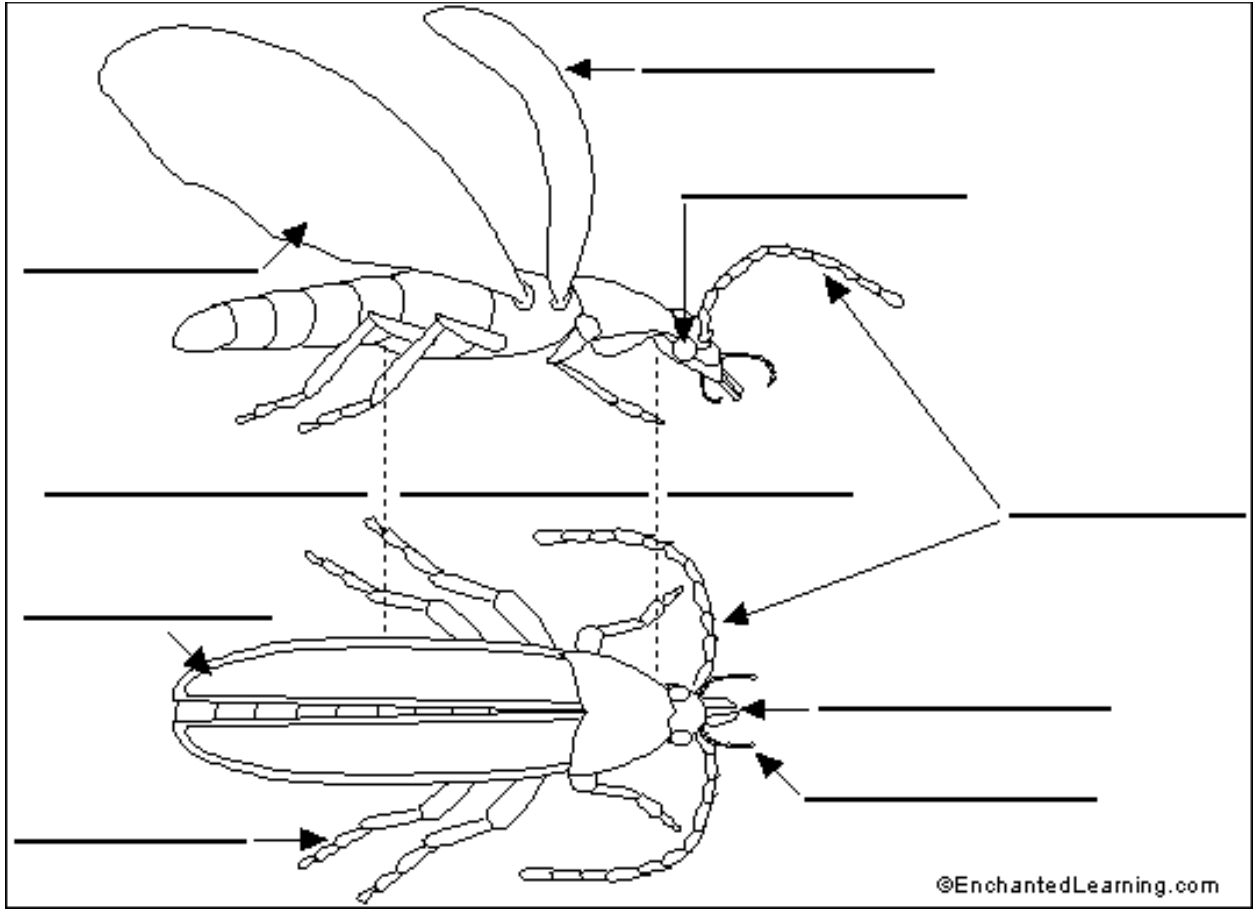
What do my insects look like?

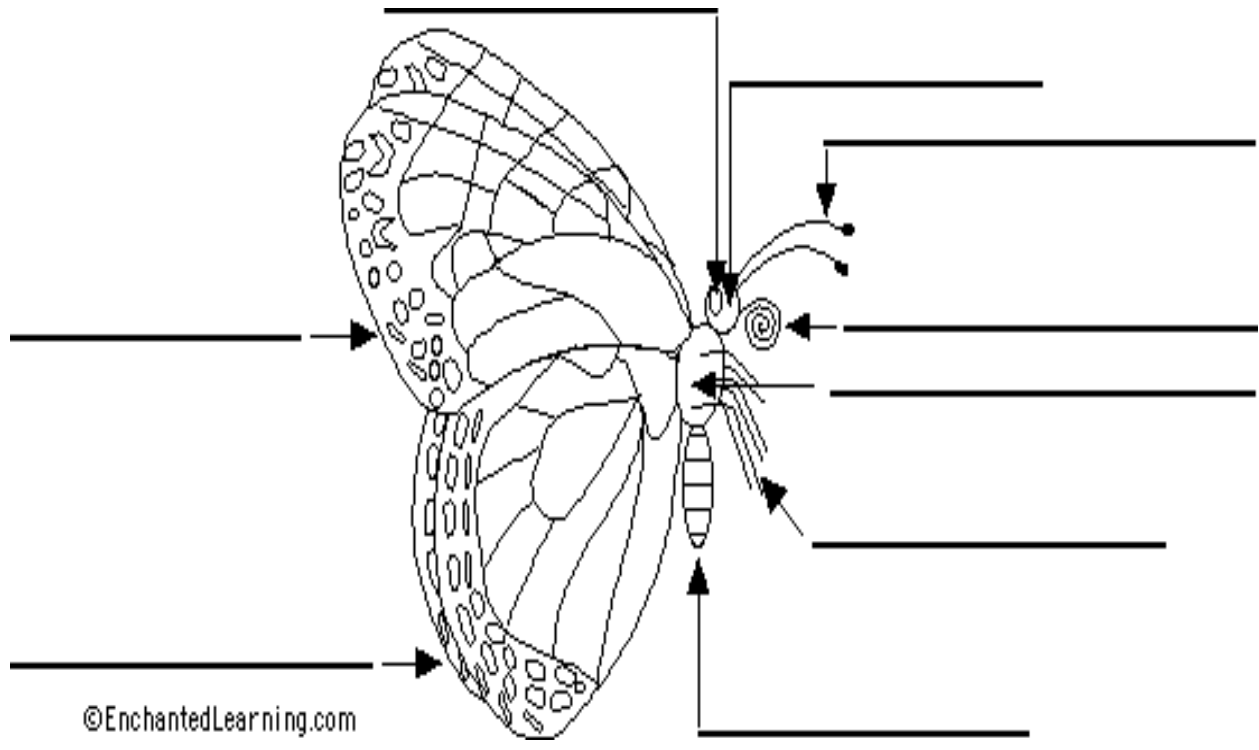


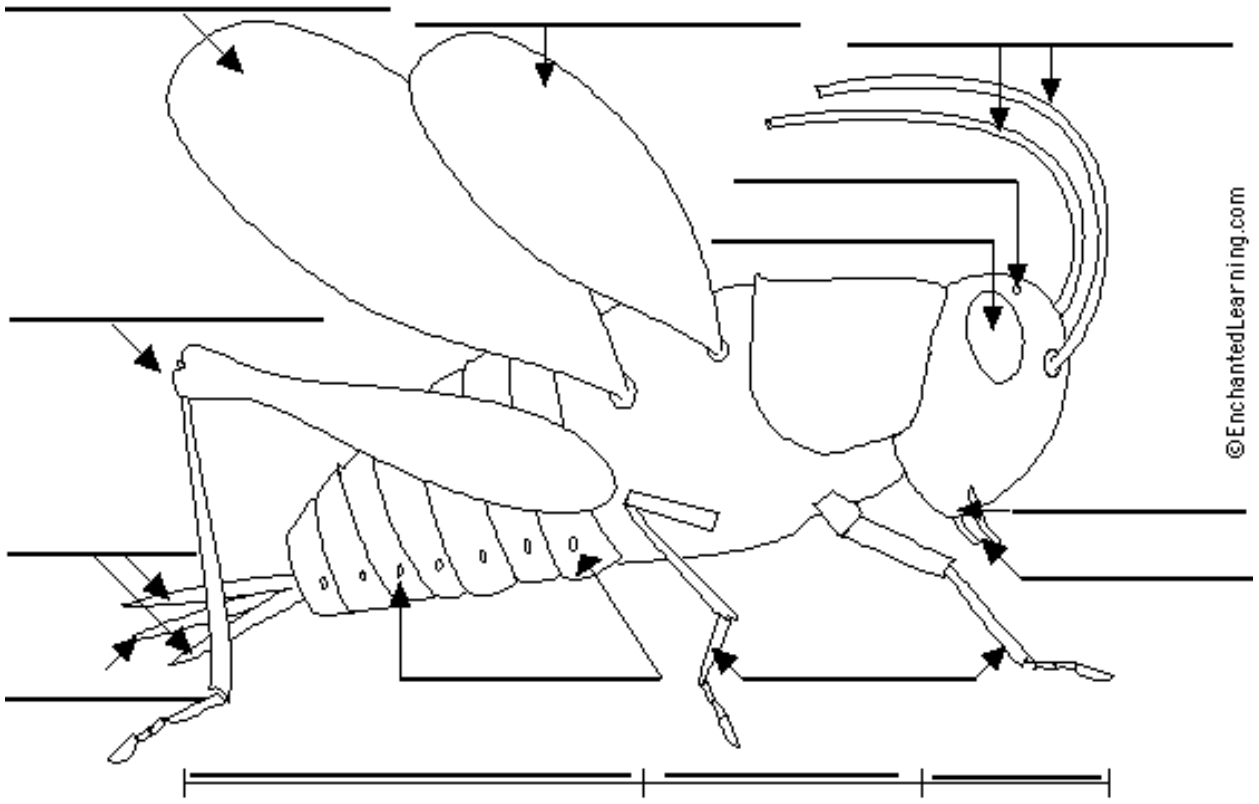


Honey Bee

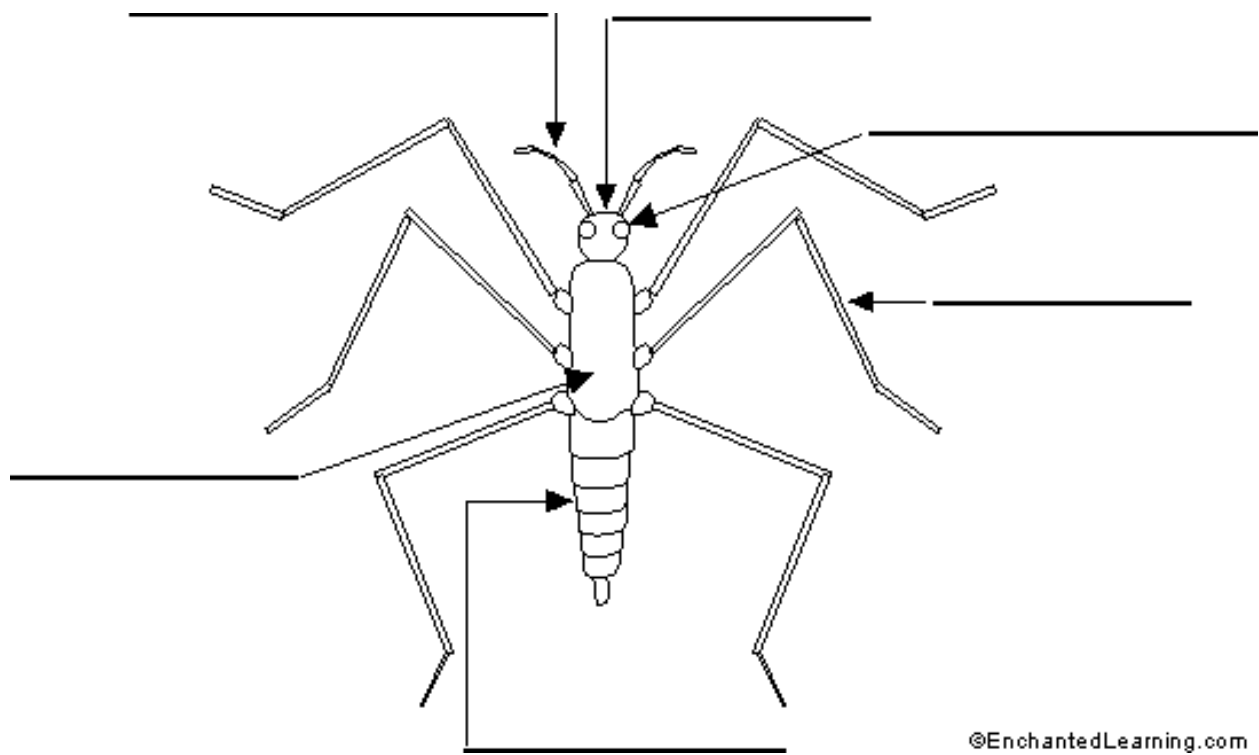








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Lesson 2: Animals

A) Learning Objectives

- Students will be able to observe and investigate with mealworms and be able to understand why mealworms are not annelids.
- Students will understand difference between vertebrates and invertebrates.
- Students will be able to observe animals from different phylum (Ex: Pisces, Amphibian, Mollusks)
 - Snails are invertebrates, mollusks, gastropods
 - Frogs are vertebrates, amphibians
 - Fishes are vertebrates, Pisces.
- Students will learn characteristics of different animals (Ex: skin color, eyes, number of legs).
- Students will learn about adaptation and how adaptation helps animals to survive in nature (Ex: Sucker in butterfly,

B) Standards

- Nature of Science
 - Use a scientific notebook to record, questions and observations about data with pictures, numbers or in words
 - Generate questions and make observations about natural processes.
 - Make predictions based on observations.
 - Make and use simple equipment and tools to gather data and extend the senses.
- Standard 3: Life Science
 - K.3.1 Observe and draw physical features of common plants and animals.
 - K.3.2 Describe and compare living animals in terms of shape, texture of body covering, size, weight, color and the way they move.
 - 1.3.1 Classify living organisms according to variations in specific physical features (e.g., body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.
 - 1.3.2 Observe organisms closely over a period of time in different habitats such as terrariums, aquariums, lawns and trees. Draw and write about observations.
 - 2.3.1 Observe closely over a period of time and then record in pictures and words the changes in plants and animals throughout their life cycles- including details of their body plan, structure and timing of growth, reproduction and death.
 - 2.3.2 Compare and contrast details of body plans and structures within the life cycles of plants and animals.

C) Materials

- Handouts attached below
- Black and white paper
- Flash lights
- Paper towel
- Magnifying glasses
- Journals
- Plastic containers
- Mealworms
- Butterfly nets
- Potatoes
- Oatmeal
- Animal Kingdom Poster
- Index cards
- Video: (Insects)
- <http://www.kidport.com/reflib/science/Videos/Animals/AnimalVideoIndex.htm>
- Magnetized Pictures of animals
- Sentence Strips
- Frogs
- Snails
- Fishes
- Petri dish
- Unifix cubes and cents

ENGAGE: (9:30- 9:50)

The lesson will begin with revising last week's lesson and vocabulary words : Living organisms, Insects Observations, Prediction, Data chart.

We will engage students with different magnet animals cards and will ask them how they can be classified. We will classify these animals on board in front of whole class.

Before entering in today's investigation about animals, we will finish last week's remaining stuff and then enter into frog and snail investigation.

We will read a book about—and will engage students in ...

EXPLORE 1:

- Our first investigation was mealworms. The students will be observing the mealworms life cycle throughout the 5 Saturdays.

- Students will draw a picture as a prediction for what they thought mealworms will look like in week 2.
- Students will make observations of mealworms and will record their observations in journal. Students will compare their prediction with observations.

EXPLAIN 1:

- As students finish their observation about mealworms, we will record all the changes in the mealworm on board.
- If any of the mealworms are turned into pupa, we will show students picture of pupa and will show them this video:
- <http://www.youtube.com/watch?v=BH0aerLzb6U>
- We will also ask them about what have they predicted for next week's mealworm.

EXPLORE 2: (9:50- 10:10)

- Students will get snails in a petri dish and magnifying glass.
- We will give them snail worksheet for making observations.
- Each student will get an individual snail for observation.
- We will give students a card—where they will record two observations that they want to share with class. (Group 1- color and how snail moves) (Group 2- texture and 2 parts of snails) (Group 3- size and how does it look from top and bottom)

EXPLAIN 2: (10:10-10:25)

- We will hear students' observations about snails and will share a figure of snail and different parts of snail.
- We will also share—where snails live, how do they move, their habitat, how long snails live and life cycle of snail.
- <http://www.somers.k12.ny.us/sis/main/sis/research/gr.3research/snails/snailquestions.html#grow>
- We also share snail is a mollusk/ gastropods and will share some other animals from that phylum
- -----**Snack and Break**-----

EXPLORE 3: (10:40-10:55)

- We will give students frog in a container to observe.
- Students will observe a frog using a worksheet. Students will observe frogs' eyes, legs, and color. Students note down their observations on a worksheet.

- We will give students a card—where they will record two observations that they want to share with class. (Group 1- color and eyes of frog) (Group 2- legs and nostril and dot pattern) (Group 3- feet and how frog swims in a fish tank)

EXPLAIN 3: (10:55- 11:10)

- We will share different parts of frog (morphology) as eye, nostril, head, trunk, and tympanum (hearing device).
- <http://hd-wallpapers.dumbs.info/desktop-images/frogs-coloring-pages-frog/frogs-frog-parts-of-frog07/>
- We will also share—where frogs live, what do they eat and adaptations in frog as their legs, sticky pads, webbed toes, breathing through skin
- We also share frog is a vertebrate, amphibian and will share some other animals from that phylum
-

EXPLORE 4: (11:10- 11:25)

- We will ask a group of student to come to a fish bowl and observe fish.
- Students will observe a fish using a worksheet. Students will observe fish's scales, shape, fins, eyes, and gills. Students note down their observations on a worksheet.
- We will give students a card—where they will record two observations that they want to share with class. (Group 1- color and shape) (Group 2- find) (Group 3- eyes and gill)

EXPLAIN 4: (11:25- 11: 40)

- We will share different parts of fish (morphology) as gills, fins, scales.
<http://www.google.com/imgres?um=1&hl=en&sa=N&biw=1243&bih=658&tbn=ish&tbnid=J1-oZThIT9b5iM:&imgrefurl=http://www.tutorvista.com/content/biology/biology-iv/organisms-environment/adaptations-environment-animals.php&docid=fNkSF1TTQql5tM&imgurl=http://images.tutorvista.com/content/organisms-environment/fish-structure.jpeg&w=427&h=183&ei=8MmhTpCVK-epsALUzLSTBQ&zoom=1&iact=hc&vpx=863&vpy=177&dur=1332&hovh=146&hovw=341&tx=162&ty=91&sig=117938013000157633396&page=1&tbnh=81&tbnw=189&start=0&ndsp=15&ved=1t:429,r:4,s:0>
- We will also share—where fishes live, what do they eat and adaptations in fish as their shape, gills.
- <http://www.biology-resources.com/fish-01.html>
- We also share frog is a vertebrate, amphibian and will share some other animals from that phylum

EVALUATE:

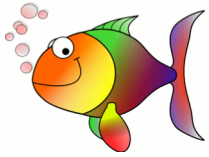
- Students' journals will be observed.
- We will observe the students at their tables and listen to what they are discussing.
- We will see if they can determine the different body parts of an insect.
- We will assess their understanding to see if they think a worm would fit under the insect category.



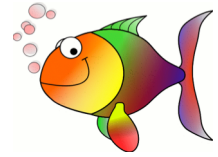
Snail Observation Sheet



Sketch the snail	From top	From botton
Color		
Size (compare with cent, unifix cube)		
Texture		
Does it travel in straight line?		
Different parts of snail		



Frog Observation Sheet



Sketch the fish as it rests	
Color	
Eyes	
shape	
Fins (count them and where are they located)	
Gills (can you see them)	



Frog Observation Sheet



Sketch the frog as it rests	
Color	
Eyes	
What happens to his eyes when you shine a torch light?	
How does it legs look like? (Forelimbs and hindlimbs)	
Observe its feet	
What happens when we put a frog in a fish tank? How does it swim?	

Lesson 3: Why do the leaves change color?

A) Learning Objectives

- Students will be able to observe and investigate with mealworms.
- Students will be able to collect and identify leaves.
- Students will make a herbarium.
- Students will learn the different parts of a leaf.

B) Standards

- Nature of Science
 - Use a scientific notebook to record predictions, questions and observations about data with pictures, numbers or in words
 - Generate questions and make observations about natural processes.
 - Make predictions based on observations.
 - Make and use simple equipment and tools to gather data and extend the senses.
- Standard 3: Life Science
 - K.1.1. Use all senses as appropriate to observe, sort and describe objects according to their composition and physical properties, such as size, color and shape.
 - K.1.2 Identify and explain possible uses for an object based on its properties and compare these uses with other students' ideas.
 - K.3.1 Observe and draw physical features of common plants and animals.
 - 1.3.3 Observe and explain that plants and animals have basic needs for growth and survival: plants need to take in water and need light, and animals need to take in water and food and have a way to dispose of waste.
 - 1.3.4 Describe how animals' habitats, including plants, meet their needs for food, water, shelter and an environment in which they can live.
 - 1.3.5 Observe and describe ways in which animals and plants depend on one another for survival.
 - 2.3.1 Observe closely over a period of time and then record in pictures and words the changes in plants and animals throughout their life cycles- including details of their body plan, structure and timing of growth, reproduction and death.
 - 2.3.2 Compare and contrast details of body plans and structures within the life cycles of plants and animals.

C) Materials

- Mealworms

- Journals
- Grocery bags for collecting leaves
- 11” by 16” cardstock
- Printer Paper
- Leaves
- Leaf identification posters
- Glue
- Newspapers
- Saran Wrap
- Heavy books
- Have a completed Herbarium to show students
- Book – Fletcher and the Falling Leaves by Julia Rawlinson
- Rulers
- Hand lenses
- Leaf handout
- Leaf parts handout
- Magnetized animal kingdom pictures and titles.
- Video: Why trees change color -
<http://www.youtube.com/watch?v=KNnWXkfW8A8&feature=related>

ENGAGE:

- We will begin today’s lesson by reviewing the different animal kingdoms that we covered last week.
- I will give each student a magnetized picture and they will have to determine where it should go on the board based on the different animal kingdoms.
- Inform the students that we will be learning about tree leaves today and why they change color in the fall.

EXPLORE:

- Students will observe and record information about their mealworm.
- They should observe their mealworm, note if there is any molting going on, draw a picture, and note any changes in words if they want.
- We will make sure to change the potato as well.

EXPLAIN:

- If students begin to see that their mealworm has started to look different we will discuss what a life cycle is in more detail.

- There mealworm could now be in the pupa or beetle stage so we will discuss these phases.

ENGAGE:

- I will read to the students the story Fletcher and the Falling Leaves
 - What do you think is happening to the tree? Is Fletcher right? Do you think the tree is sick? Why or why not?
 - What do you think – will Fletcher be able to fix the tree? Why or why not?
 - How do you see the leaves being helpful to others in the story?
 - What do you think – will the leaves stay on the tree after the birds helped Fletcher? Why or why not?
- How many of you like leaves like Fletcher? How have you used leaves in your life? Did you use leaves like the animals to stay warm? Well today we need to come up with an explanation on how to help Fletcher understand why the leaves change their color.

Snack &

Break

EXPLORE:

- The students will be informed of the rules and expectations while we are outside.
- Each student will be given a garbage bag to put 5 leaves to observe and a few flowers that will be used for the Herbarium later.
- The class will come back inside and the teacher will inform them how to fill out their observation sheet of the leaf.
- They will be also shown the identification poster and the leaf diagrams to help them make observations of their leaf.
- Students will be asked to compare and contrast, and sort their leaves based on their properties.

EXPLAIN:

- We will have students share what similarities and/or differences they found in their leaves.
- Many of the students might say that the leaves have different colors. The teacher should then ask the students if they know why leaves have different colors.
- Then play video clip above.

- So based on this video what do you now know about how leaves change their color?
- How will you explain this to Fletcher so that he wouldn't try to keep putting the leaves back on the tree?
- So again we can see that there are many differences between leaves – what is that term again that means variety of life forms again? BIODIVERSITY So you can see how biodiversity is present when looking at different types of leaves.... They are all a little bit different.

ELABORATE:

- Have students begin the initial steps of creating their Herbarium today.
- Inform the students that scientists create identification books for themselves as well to help them identify plants. We are going to start developing our own identification poster today.
- Show students my modeled herbarium.
- Steps for herbarium: http://www.education.com/activity/article/Herbarium_Sheets/
 - Place the plant between two sheets of newspaper and in between some heavy books. Stack more heavy books on top. This process will press your flower and dry it out, and can take up to a week or more.
 - When your flower is pressed, remove it from the newsprint and carefully glue it to the 11x16 paper. Have the paper go the long way (16") so that you have plenty of room for your plant.
 - Take your printer paper, cut a 3" x 4" piece of paper and glue this onto the bottom right corner of your herbarium sheet. On this piece of paper write:
 - Specimen: (See if you can find the Latin name in a flower book)
 - Collector: (your name)
 - Where it was collected:
 - When it was collected:
 - To make it more complete, label your flower parts with a pencil. See if you can identify the stem, leaf, petals, pistil, stamen and root. When you are done you will have a beautiful piece of art and a valuable piece of science. Continue to make sheets and then hole-punch them to make an herbarium book.
- If there is time the students can take a piece of white paper and color over the top of a leaf and then label the different parts of the leaf.

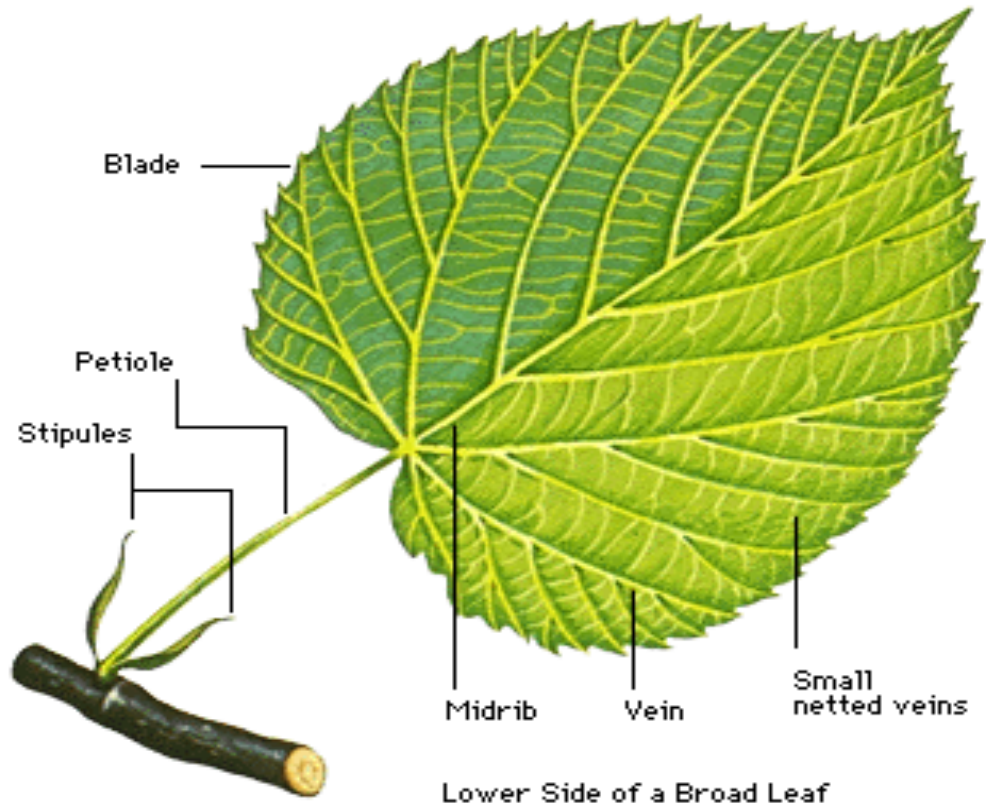
	Leaf 1	Leaf 2
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Draw a leaf		
Name of leaf		
Color		
How many veins does the leaf have?		
What type of margin does your leaf have?		

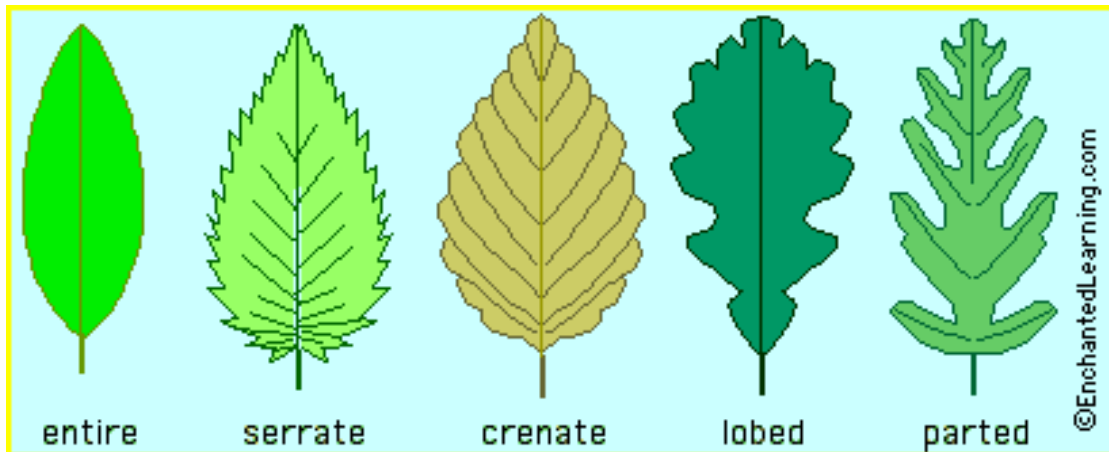


Leaf Observation Sheet





Leaf Margins



Lesson 4: Structure of Flowers

A) Learning Objectives

- Students will be able to observe and investigate with mealworms and be able to understand different phases of mealworm such as pupae or insect.
- Students will understand flowers are important part of a plant and plants belong to plant kingdom.
- Students will understand function of flower as essential pollinating part (reproductive organ)
- Students will learn 4 whorls (Circles) of flower as sepals, petals, stamens and carpals.
- Students will be able to observe different whorls in flowers and be able to realize how each flower has different structure.

B) Standards

- Nature of Science
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 - 2.3.1 Observe closely over a period of time and then record in pictures and words the changes in plants and animals throughout their life cycles- including details of their body plan, structure and timing of growth, reproduction and death.
 - 2.3.2 Compare and contrast details of body plans and structures within the life cycles of plants and animals.

C) Materials

- Handouts attached below

- Black and white paper
- Flash lights
- Paper towel
- Magnifying glasses
- Journals
- Plastic containers
- Mealworms
- Potatoes
- Oatmeal
- Index cards
- Sentence Strips
- Red roses
- Yellow roses
- Star Lilys
- Hibiscus
- Daisy's
- Carnations
- Calla Lily
- **ENGAGE: (9:30- 9:50)**

The lesson will begin with revising last week's lesson and vocabulary words : Invertebrates, Mollusks, Arachnids, Pisces.

We will engage students with asking examples of animals from different phylum and their characteristics. We will also review how we collected different leaves last week and why did we collect them? We will ask:

- What are different parts of plants?
- What do you think is function of different parts of the plants?
- Which parts of the plant have variety of colors and shapes and sometimes have nice, pleasant smell?
- What do you think function of this part of the plant?

Before entering in today's investigation about flowers, we will remind students about mealworms and what do they think mealworms will look like this week.

EXPLORE 1:

- Our first investigation will be mealworms. The students will be observing the mealworms life cycle throughout the 5 Saturdays.
- Students will draw a picture as a prediction for what they thought mealworms would look like in week 4.

- Students will make observations of mealworms and will record their observations in the journal. Students will compare their prediction with observations.
- Students will change habitat for mealworms.

EXPLAIN 1:

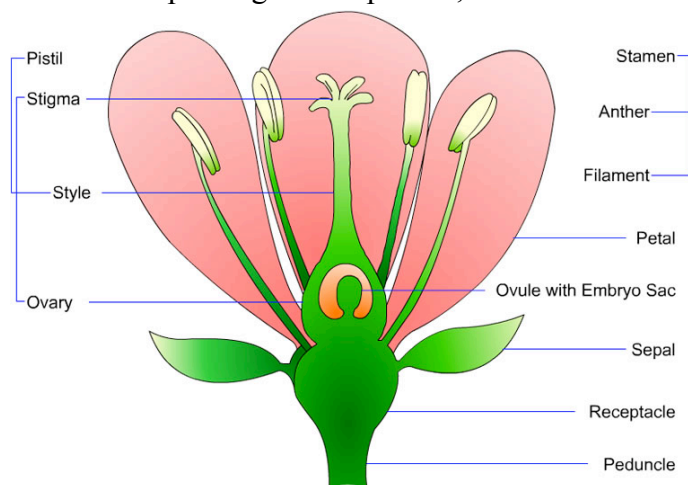
- As students finish their observation about mealworms, we will record all the changes in the mealworm on the board.
- If any of the mealworms are turned into pupa, we will show students picture of pupa and will show them this video:
- <http://www.youtube.com/watch?v=BH0aerLzb6U>
- We will remind them about butterfly pupae which they have seen in the last week and will ask them how is this similar or different to that.
- We will also ask them about what have they predicted for next week's mealworm.

EXPLORE 2: (9:50- 10:10)

- Students will get cross-section of hibiscus flower and they will observe it under microscope.
- They will be guided to make observations about different parts of the flower such as- Calyx, corolla, stamen, pistil .
- Students will observe each part of the flower carefully with lens and will draw it in their journal.

EXPLAIN 2: (10:10-10:25)

- With the help of big flower picture, instructor will explain different part of flower as-



- **Instructor will introduce a word- whorl as circle and each flower has 4 circles**

Functions of main parts of flowers are:

- Calyx is one of the main **parts of a flower** .It is the first whorl. It is made up of sepals and is green in color. Its function is to protect the flower during the bud stage
- Corolla is another one of the important **parts of a flower**. This is the second whorl. It is made up of 4,5 or 6 petals or more. They are colorful, sweet smelling with nectar to attract insects and birds for pollination.
- Stamen is another one of the most important **parts of a flower** .It is the third whorl. It is the male part of the flower. It is made up of a long slender filament. At the tip of the filament is a bag like structure, which contains the pollen. This is called the anther ,The anther contains thousands of pollen grains .The anther when ripe bursts open and releases all the pollen into the air or they settle on top of the stamen.
- Pistil is another one of the important **parts of a flower**. It is the fourth whorl. It is the female part of the flower. It rests on the receptacle.
-
- -----**Snack and Break**-----

EXPLORE & Explain 3: (10:40-11:10)

- Students will get different parts of flower.
- Students will identify parts of flower and will stick them in their journals.
- Students will label parts of their flowers
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EXPLORE 4: (11:10- 11:25)

- Different flowers will be kept at different stations.
- Students will work in pairs and will carry journals with them with flowers handout.
- Students will go to each flower and will observe different parts of flower and will draw on their flower sheet.
- Students will observe each part with help of magnifying glass and by using sense of touch and smell.

EXPLAIN 4: (11:25- 11: 40)

- We will ask student how each part of the flower looked and will compare with flower digram.
- We will explain though each flower will have similar whorls, they look different and this is known as biodiversity.

EVALUATE:

- Students' journals will be observed.
- We will observe the students at their tables and listen to what they are discussing.
- We will see if they can determine the different body parts of an insect.
- We will assess their understanding to see if they think a worm would fit under the insect category.

Observe flower and draw parts of each flower

Name of the flower	Rose	Lily	Daisy	Carnations	Calla Lily
Parts of the flower					
Calyx (sepals)					
Corolla (petals)					
Stamens					
Pistil					

Which whorls are observed in all the flowers?

How are these whorls similar or different from each other?

Lesson 5: Review and Evaluation

A) Learning Objectives

- Students will be able to observe final stage of mealworm as beetle and be able to express their understanding about mealworm lifecycle through journaling (writing a book).
- Students will create herbarium and will understand its purpose as scientists create it for identifying flowers and leaves.
- Students will review different parts of leaves and especially types of margins and observe it.
- Students will review parts of flowers and different animals from animal kingdom with teacher.
- Students will explain their herbariums and mealworm books to their parents.

B) Standards

- Nature of Science
 - Use a scientific notebook to record, questions and observations about data with pictures, numbers or in words
 - Generate questions and make observations about natural processes.
 - Make predictions based on observations.
 - Make and use simple equipment and tools to gather data and extend the senses.
- Standard 3: Life Science
 - K.3.1 Observe and draw physical features of common plants and animals.
 - K.3.2 Describe and compare living animals in terms of shape, texture of body covering, size, weight, color and the way they move.
 - 1.3.1 Classify living organisms according to variations in specific physical features (e.g., body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.
 - 1.3.2 Observe organisms closely over a period of time in different habitats such as terrariums, aquariums, lawns and trees. Draw and write about observations.
 - 2.3.1 Observe closely over a period of time and then record in pictures and words the changes in plants and animals throughout their life cycles- including details of their body plan, structure and timing of growth, reproduction and death.
 - 2.3.2 Compare and contrast details of body plans and structures within the life cycles of plants and animals.

C) Materials

- Handouts attached below

- Black and white paper
- Flash lights
- Paper towel
- Magnifying glasses
- Journals
- Plastic containers
- Mealworms
- Potatoes
- Oatmeal
- Sentence Strips

ENGAGE: (9:30- 9:50)

The lesson will begin with revising previous week's concepts and vocabulary words: parts of flowers, different animals and mealworms

We will engage students with reviewing observations related to mealworms:

- What did we observe about mealworms in the previous week?
- What are the names of different stages of mealworms?
- How did each stage looked similar or different?
- What are different parts of insects?

We will give students mealworm habitats and observe beetles.

Review1 :

- Our first investigation will be mealworms. The students will be observing the mealworms life cycle throughout the 5 Saturdays.
- Students will observe beetles and will identify parts of insects in beetles such as- head, thorax, abdomen.
- Students will make observations of beetles and will record their observations in the journal.
- All students will get a blank book (pre-made) and will write a book about mealworms' lifecycle. Teacher will share one example about how to write a book.
- Students will get pictures of 4 stages of mealworm and if students want, they can cut it and stick in their books or they can draw pictures as they are writing a book.
- We guided students by asking following questions while writing book:
 - What were colors of different stages of mealworms?
 - How did different stages looked similar or different from each other?
 - How many days did it take for mealworms to change from one stage to another?
 - How many segments did mealworm had?

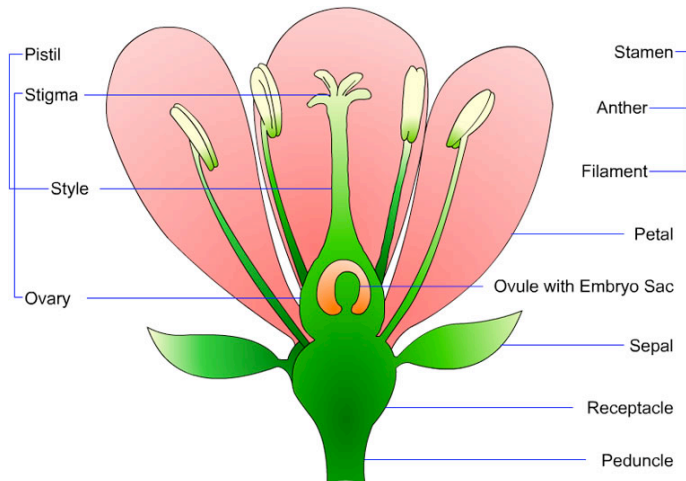
- Did it have legs?
- Why do we think mealworm is insect even if it looks like earthworm?
- As students finish their books, they will share it with their group members and then keep it ready for sharing with their parents

Review 2: (9:50- 10:10)

- Students will get their pressed leaves and flowers, glue and poster board.
- Teacher will assist students to stick their leaves and flowers to poster card.
- As students are sticking their leaves and flowers, teachers will ask students to observe color, shape, and veins.
- Once students stick their leaves and flowers—teacher will explain students this poster board is something that scientists make and it is called as herbarium.
- Scientists use herbarium to identify unidentified leaves and flowers.
- Once students make their herbariums, teachers will ask students to refer to a handout where different parts of leaves and different types of margins are explained.
- Students will be asked to identify leaf margins as—entire, serrate, lobbed.
- Students will write down type of margin after each leaf on their herbarium.

Review 3: (10:10-10:25)

- Students will be asked different parts of flower and what are their functions.
- Students will get different parts of flower and they will make flower out of it on the board.
- Students will be asked for function of each part of flower.
- Teacher will ask students about what did they observe about petals and different parts of flowers? Were they similar or different? And what was different?

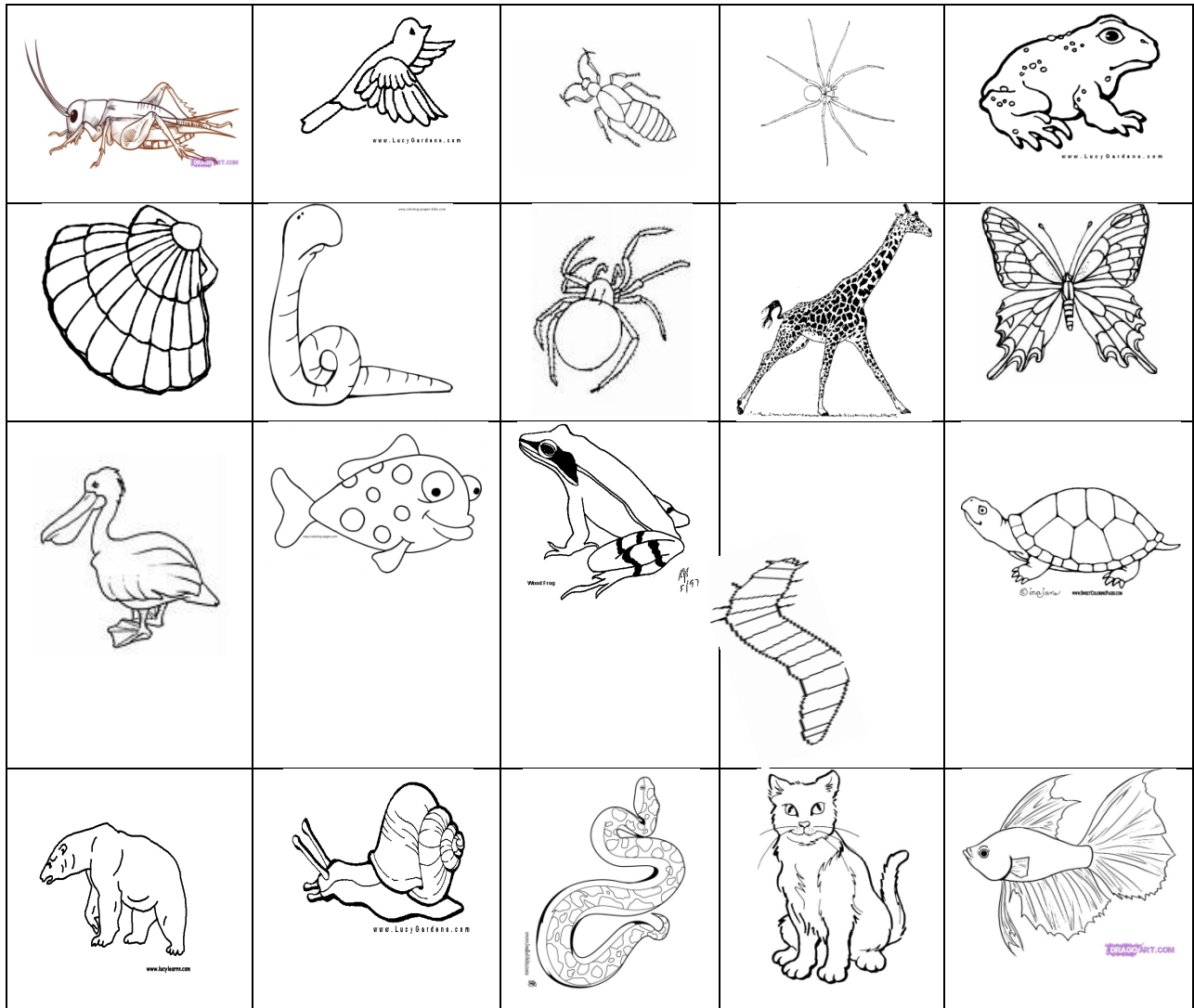


Review 4: (11:10- 11:25)

- Classification of animal kingdom will be put on the board. Teacher will show picture different animals and will ask them to put under write category with reason.
- We will review concepts—vertebrates, invertebrates and phyla—Pisces, Reptiles, amphibians, Aves, Mammals, insects
- Students will also explain characteristics of animals from each phylum.
- We will give students outline of animal kingdom and animals to classify and then stick it to chart.

Presentation and display (11:25-12:00)

- Students will stand near their herbariums and mealworm books and share it with their parents.
- They will explain their parents different stages of mealworm and why mealworm is an insect.
- They will explain different leaves they collected on their herbarium and how do leaves have different margins.
- They will also share their animal kingdom chart to parents.



Invertebrate

Vertebrate

Animal Kingdom



Arthropod

Mollusk

Annelids

Mammals

Ave

Insects

Arachnid