# Big Idea/ Topic

**Traits, Characteristics, and Behaviors**

## Standards Alignment

**S5L2. Obtain, evaluate, and communicate information showing that some characteristics of organisms are inherited, and other characteristics are acquired.**
   a. Ask questions to compare and contrast instincts and learned behaviors.
   b. Ask questions to compare and contrast inherited and acquired physical traits. *(Clarification statement: Punnett squares and genetics are taught in future grades.)*

**Connections to other content areas:**

**ELAGSE5W2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.**
   a. Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.
   b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
   c. Link ideas within and across categories of information using words, phrases, and clauses (e.g., in contrast, especially).
   d. Use precise language and domain-specific vocabulary to inform about or explain the topic.
   e. Provide a concluding statement or section related to the information or explanation presented.

**ELAGSE5W7: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.**

**ELAGSE5W8: Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work and provide a list of sources.**

**ELAGSE5W9: Draw evidence from literary or informational texts to support analysis, reflection, and research.**

**ELAGSE5W10: Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline specific tasks, purposes, and audiences.**

**ELAGSE5L1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others’ ideas and expressing their own clearly.**
   a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
   b. Follow agreed-upon rules for discussions and carry out assigned roles.
   c. Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
   d. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.

**ELAGSE5L3: Use knowledge of language and its conventions when writing, speaking, reading, or listening.**
ELAGSE5L4: Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.
   a. Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase.
   b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., photograph, photosynthesis).
   c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.

ELAGSE5RI7: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

ELAGSE5RI3: Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

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## Instructional Design

**Teacher Notes**

This lesson will focus on students asking questions about characteristics that are inherited (eye color) and characteristics that are acquired (hair style, scar on knee). Students will gain a better understanding of instinct and learned behavior. The goal of this instructional segment is to build a foundation for scientific classification and sets the stage for deeper analysis of inherited traits that allow scientists to classify organisms. Awareness of circumstances that could emotionally impact a student in this segment include adoption, foster homes, traits that skip a generation, genetic physical disabilities, and illnesses, etc. The use of Punnett squares and genealogy charts are not part of this standard or grade level.

For these reasons, it is suggested that the examples used during the learning phases are limited to other organisms (animals and plants). General references to human traits and acquired behaviors are scaffolded into the instruction and evaluation after students have gained an understanding of the terms and examples of plants and animals are studied.

See [Dear Parent Letter](#).

Background for this segment: [Handout Inheritance](#) and [Safety Information](#)

**DISCLAIMER**

The books used as examples for the Georgia Home Classroom’s Digital Learning Plans were selected by Georgia teachers to reinforce skills and knowledge found within the Georgia Standards of Excellence. The Georgia Department of Education (GaDOE) cannot and does not endorse or promote any commercial products, including books. Therefore, the books that were selected serve as examples and are not endorsed or recommended by the GaDOE. Please remember that when selecting books to support instruction, Georgia’s public school teachers and leaders should consult their local school district’s policy for determining age and content appropriateness for their students.

**Part One**

**Phenomenon:** Spiderlings

Literature Link: [Charlotte’s Web](#), chapter XXII, A Warm Wind

See handout “[Charlotte’s Web](#)” or use this link: [Charlotte’s Web: A Look at Springtime Spiders](#)

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Read aloud or allow students to read the portion of the book that explains the hatching of the baby spiders and their behaviors/traits as spiderlings.

Engage
The handout Spiderling Facts is provided as background information on spiderlings. Links to websites and studies are included. Ask: Have you ever seen baby spiders hatching from an egg? Why do they do the things they do? Write down at least five questions about baby spiders and their behaviors. You can have more than five questions but make sure you have at least five!

Teacher note: The SEP of this standard expects students to ask questions. This is a learned behavior and takes practice. Model good questioning but let them take the lead on asking quality questions. Talk about how questions are helpful and sometimes need rewording.

Plugged: Provide students with the link to the Journey North website lesson Charlotte’s Web: https://journeynorth.org/tm/spring/MaySpiders.html. Encourage students to follow the links for more information and to answer the journal questions at the end of the article.

Unplugged: Provide students with the handout Charlotte’s Web. Have them use the handout and answer the journal questions. These questions give students a model of questioning.

- Write down all the questions you can think of. What reliable sources can you look to for finding the answers? Go for it!
- Why is it important for spiderlings to drift away from the place their mother chose so quickly after leaving the egg sac?
- Why do you think spider silk is so very strong?
- Experts have long known that tiny insects and spiders drift through the sky in the same way that plankton drifts in an ocean. Why would there be more insects and spiders floating in the air during daytime than at night?

Explore
Look at your questions and design a plan to find the answers. What will you research? You might come up with more questions as you learn more about spiders and their babies.

Plugged: Remind students to summarize, not cut and paste their information. A worksheet is provided for students to keep track of their research and summaries. Handout: Answering Questions through Research

Teacher Note: Help students find their way through the research process by providing them guidelines of expectations: Dates of work to show perseverance, question to give purpose to their search, key words for searching, sources they used in their search, summaries in the form of lists or sentences, and the date they found the answer they were researching. Remember that the focus of this standard is for students to practice asking questions. Guide students to tailor their questions to find answers. Some students will need to work on asking quality questions.

Unplugged: Students can check out library books or use the information in the handouts on spider facts provided to work on this skill.

Explain
Handout
Ask: How does the spiderling know what to do? How do they know what kind of web to weave? What are reasons for weaving a web?
Explain: Some things that animals do are traits that they inherit (innate behavior). The animals are born knowing. Some things that animals do are learned behaviors. Think about the things you have learned about spiderlings and decide what traits and behaviors are inherited. Challenge students to compile a chart to capture the essence of the research they have conducted on Spiders. Have them design their own chart or provide them with an example.

**Spider Research**

<table>
<thead>
<tr>
<th>Type of Spider</th>
<th>Inherited Physical Trait</th>
<th>Acquired Physical Trait</th>
<th>Inherited Behavior Instinct</th>
<th>Learned Behavior</th>
<th>Other</th>
</tr>
</thead>
</table>

What other questions do you have about spiders and other organisms?

**Elaborate**

The following information is also included as a handout [Spiders and Their Webs](#). Spiders are born with the ability, features, and need to spin webs. This innate ability to spin webs and find food are also called instinct. How can scientists use these inherited traits to group spiders? Various species of spiders are grouped based on their body type and the type of web they weave. Different types of spider webs include:

- **Spiral Orb Webs** - Spiral orb webs are the most common spider web. This web design is associated with the family *Araneidae* and species include orange garden orb weaving spiders, banded orb weaving spiders, bolas spiders and silk spiders, just to name a few. This web looks like a wheel with spokes. Orb-weaving spiders and their webs are typically found outdoors.

- **Tangle Webs or Cobwebs** - Tangled webs or cobwebs are associated with the family *Theridiidae* and common species include the house spider and ogre-faced stick spider. Tangled webs lack symmetry and are jumbles of threads typically attached to a support system like the corner of a ceiling. Cobwebs have the same lack of structure as tangled webs and often collect dirt and debris.

- **Sheet Webs** - Sheet webs are flat sheets of silk between blades of grass or branches. When creating sheet webs, spiders spin a net of crisscrossed threads above the sheet. *Flies* end up hitting the net and bouncing into the sheet web. If the sheet web is damaged, the spider quickly patches up any holes or tares. Sheet webs are associated with the family *Linyphiidae* and species include the bowl and doily spider and the platform spider.

- **Funnel Webs** - Funnel webs are large, flat horizontal webs with openings at both ends so the spider can escape. Funnel web spiders can feel the vibration of prey once present and bites it so it can bring it back to the funnel web. Funnel web spiders belong to the *Agelenidae* family and a popular species of this family includes the hobo spider.

- **Triangle** - The *Uloboridae* family is often associated with this type of web. Hence their name, triangle webs are silky strands of spokes and spirals that connect to three strands. Triangle webs are horizontal and fuzzy, which helps trap and smother prey. The *Uloboridae* family is the only family of spider without venom glands, so their web’s fuzzy material compensates for the lack of their venomous bite.


Brainstorm a list of other animals that are grouped according to behavior as well as a physical characteristic. (Examples could include predator/prey, vocalizations, etc.). Use this link for other examples and an explanation: [Instinct](#).
There are scientific studies of spiders’ behavior in stalking prey and food sources. These studies suggest that spiders change their paths, strategies, and remember their choices using their observations of towers, mazes, etc. What questions do you have about how spiders learn? How can you find these answers?

*Teacher note:* If students choose to study spiders more closely, you or they can set up a spider habitat for observations. Do check with parents first if they decide to keep an animal in their home since there are some fears and anxieties about spiders and remember that we do have poisonous spiders in Georgia. See *Dear Parent.*

If spiders are not an option, there are other arthropods (invertebrate with jointed legs) for research: mealworms, pillbugs, ants, crickets, and caterpillars/butterflies/moths. Caution must be used with ants as fire ants can deliver painful bites, some students may not be able to differentiate between types of ants, and some students may be allergic.

Handout *Invertebrate Habitats*
Students can also observe the animal in its home outside if they can’t bring them inside. Have students do a search outside to find specimen to observe. Encourage students to observe the arthropods and sketch/describe/photograph inherited physical traits, innate behaviors (instinct), and learned/acquired behaviors. Have students ask several “what if” questions for their observations. Examples could include
- What if I put the food in a certain place every day?
- What if I moved the food to another place?
- What if I change the position of the container?
- What if I feed them at the same time?
- What if I talk to them or play music?
- What if I design the container with a dark area and a light area?

*Plugged and Unplugged:* Provide students with a handout *Spiders and Their Webs.* Encourage students to find an observation post to watch a spider or insect or other invertebrate if they don’t choose to house one. They should keep an illustrated observation journal about traits and behaviors they observe.

**Evaluate**
What are four physical traits that arthropods inherit?
What are some inherited behaviors (instinct) of an arthropod?
What are some acquired or learned behaviors of arthropods?

**Other Organisms**  
**Part Two: Plants**
Like spiders, plants inherit ways of responding to their surroundings:
- Roots grow down toward water.
- Stems grow toward the sunlight.
- Leaves turn toward the light.
- Leaves of some plants close up if something touches it.

*Sensitive Plant:* a plant that responds to touch

Additional Phenomena-
*Exploding Seeds*  
*Squirting Cucumber*

Inherited and learned traits are different. Learned characteristics are things taught to an offspring by the...
parents. Hunting, creating tunnels, and caring for young are all behaviors that are taught through observation and repetition. These are things that need to be learned. Inherited traits are genetic and with an animal from birth. Both of their parents pass these traits to them, and they become a mix of their parents. Hair color, eye color, fur patterns are all examples of inherited traits.

Plants inherit traits. Some common inherited characteristics are flower color, flower position, seed color, seed shape, seed pod shape, pod color, leaf pattern, and stem length.

Some acquired traits that are not inherited:
- A tree is bent by the constant wind.
- A potted plant that doesn’t have enough light will grow differently than a plant with adequate light.

Challenge students to find pictures of different kinds of plants and to use the physical characteristics of the different kinds of plants to sort them into like groups: Seed producer (have flowers that make seeds), Non-seed producers with roots, stems and leaves (mosses and ferns), Non-seed producers without roots, stems and leaves (algae).

Part Three: Vertebrates

Phenomena: Learned Behaviors

This handout shows a parent wolf and pups howling. Students need to recognize things that are learned and things that happen naturally. They need to recognize how the environment affects actions and behaviors. Have students ask questions about other animal behaviors. Other phenomena about animal instinct and behavior can be found here.

Teacher Note: This is a fun time in the lesson to say, “Well, I guess you weren’t born knowing that. I’ll have to teach you. Are you ready to learn?”

The environment also affects the traits that the organism develops. Environmental differences that affect organisms are where they grow, climate differences, events that change their location or home. The food they consume may cause organisms that are related to end up looking or behaving differently.

A literature link of instinctual behavior not matching expectations could include The Story of Ferdinand by Munro Leaf. Ask: How did Ferdinand behave that was different from expected? What traits did Ferdinand inherit? What traits did Ferdinand acquire? Have students suggest other books that show how environment has impacted inherited traits or learned behaviors.

Engage

Have students brainstorm lists of animal behaviors. Examples are provided to get the thinking started:

Animal Instincts
- When the weather becomes cold, animals prepare for winter.
- Some animals migrate to warmer climates, others hibernate.
- Birds protect their eggs and babies. Frogs and some other animals are not born with this instinct and leave their eggs.
- People sneeze to clear their noses.

Learned behavior is a skill that an animal develops after it is born.
- Mother bear shows her cubs how to fish or find berries.
- A bird may teach its babies to fly.
- A parrot can mimic words and phrases.
- A young horse may learn to stay away from an electric fence.
- A person can learn to speak different languages.
- A person can learn to play sports or a musical instrument.
- A fifth grader learns to study for a test.
Challenge students to make a chart showing how they sort inherited and acquired traits and a chart showing how they sort instinct and learned behaviors. Handout: Sorting Traits and Behaviors

### Examples of Inherited and Acquired Traits

<table>
<thead>
<tr>
<th>Inherited Trait</th>
<th>Acquired Trait</th>
</tr>
</thead>
<tbody>
<tr>
<td>A girl has blue eyes.</td>
<td>The woman changed her hair color from dark to blonde.</td>
</tr>
<tr>
<td>A bird eats seeds.</td>
<td>A bird finds different materials to build a nest.</td>
</tr>
<tr>
<td>A dog has brown fur.</td>
<td>A dog can catch a Frisbee.</td>
</tr>
</tbody>
</table>

### Examples of Instinct and Learned Behaviors

<table>
<thead>
<tr>
<th>Instinct</th>
<th>Learned Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>The boy sneezed to clear his nose.</td>
<td>A boy can play the piano.</td>
</tr>
<tr>
<td>A Canadian goose migrates to other climates during the year.</td>
<td>A bird can find the bird feeder.</td>
</tr>
<tr>
<td>A dog barks when startled.</td>
<td>A dog will come when called.</td>
</tr>
</tbody>
</table>

**Plugged and Unplugged:**

Provide students with examples of each and have them brainstorm a list after talking with family, friends, or neighbors.

**Explore**

Remind students that practicing a learned behavior will make it stronger. Have students choose a plant or animal to research using the previous skills during the Explore phase.

Ask: What questions would you want to know about inherited traits of an organism? What questions would you want to know about learned behaviors of that organism? Use your questions to drive your research. See Handout: Researching a Plant or Animal.

**Unplugged:** Handout: Observation Journal

Have students keep a journal of observations of a plant or animal (a household pet works well.) Have them list behaviors and traits that the animal was born with or that the plant had naturally. Then have them list behaviors and traits that have developed over time such as a pet dog asking to go outside, a bird coming to a bird feeder, or a plant growing toward the sun. Unplugged students with library access can complete as assigned.

**Explain**

Check student work to see if the data compiled in the chart is accurate. Have students share their findings in a presentation: Power point, video, recording, comic strip, story.

**Plugged:** Have students upload their work onto the class platform by the deadline.

**Unplugged:** Give students the option of sharing their work with the class so they can feel a part of the process. Have students return their class packet at a designated time and location as they pick up the next assignment. Calling the student will allow them to tell you what they found out and you can listen for cues that they need more time or more clarity in understanding the concepts. If students used actual pictures, make sure they are returned with the graded assignment. If they shared their work, let them know of interesting comments from fellow classmates.

**Elaborate**

Remind students that humans also inherit characteristics (eye color, hair color, etc.) and learned behaviors (learning to walk, eating with a spoon, writing with a pencil, reading, playing a musical instrument or sports, etc.). Have them do a storyboard of their life showing things they were born with and things they have learned at different ages. Encourage them to insert drawings or photos of accomplishments. Handout: All about Me
**Plugged:** Students can upload their storyboard in a platform of your choosing such as a video, Power point or Prezi presentation.

**Unplugged:** Handout: [All about Me](#)

**Evaluate**
Ask and discuss: If there were questions that remain unanswered, why do you think it was difficult to find those answers?
The rubric for All about Me is included in the handout.

**Plugged/Unplugged:** Return with scores or comments on work in a timely manner, so students understand that they are just as part of the class as those who are in the room and online with you.

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**Lesson Goals Checklist**

**Handouts/Supplies**

All about Me  
Answering Questions through Research  
Charlotte’s Web  
Dear Parent  
Learned Behaviors  
Researching a Plant or Animal  
Spiderling Facts  
Inheritance  
Instinct  
Invertebrate Habitats  
Observation Journal  
Sorting Traits and Behaviors  
Spiders and Their Webs  
Spider Research

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**Evidence of Student Success**

Handouts provide venues for assessing student understanding. Some students will need intervention due to not understanding differences in inherited, acquired traits and learned behaviors and instinct. Discussions or writing comments on paperwork will help students clarify their thinking. Listen to how they explain and provide ways to clarify the science concept for them. Listen to their questions. The focus is that they ask questions, not that you find the answers for them. Keep the culture of asking questions and searching alive.

**PROJECT:** All about Me

Use what you know about inherited traits, learned behavior, and instinct to design a storyboard, journal, or illustrated booklet of your life. Include

- Inherited traits: things you were born with such as eye color, hair color, etc.
  - List at least 4 traits
- Learned behaviors: things you learned to do such as learning to walk, writing with a pencil, reading, playing an instrument or sports.
  - List at least 5 learned behaviors
- Instinct: things that you do without thinking such as reflexes like sneezing, yawning, mouthwatering, etc.
  - Draw a cartoon or tell a joke or write a story about an instinct.

Sequence these things in a timeline format with pictures, sketches, or drawings.

**RUBRIC FOR PROJECT**
<table>
<thead>
<tr>
<th></th>
<th>Excellent</th>
<th>Fair</th>
<th>Needs improving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timeline</td>
<td>There are 9 items in order from birth to fifth grade.</td>
<td>Less than 9 but more than 6 items are included but not in any sequence</td>
<td>Most of the items are missing.</td>
</tr>
<tr>
<td>Inherited Traits</td>
<td>Includes inherited traits explained correctly.</td>
<td>Limited traits and explanation</td>
<td>Wrong information given or missing</td>
</tr>
<tr>
<td>Learned behaviors</td>
<td>Includes a list of behaviors that were learned in correct sequence</td>
<td>Limited or some incorrect information about learned behaviors</td>
<td>Wrong information given or missing</td>
</tr>
<tr>
<td>Instinct</td>
<td>Included a joke, cartoon, or story that correctly noted a behavior that was an instinct.</td>
<td>A joke, cartoon, or story was included but it was not related to an instinct.</td>
<td>This was not included.</td>
</tr>
</tbody>
</table>

**FORMATIVE ASSESSMENT ITEMS:**
Ask students to brainstorm a list of traits and behaviors that baby animals are born with and record answers on a class chart. If a student mentions that a puppy has black fur like its mother, write “fur color” or if a student answers that a kitten meows when hungry, write “instinct-sounds” so that students begin to see the general concept of a trait and behavior. Make another chart with a brainstormed list of traits and behaviors of plants. Genetics, genes, chromosomes, Punnett squares, and probability are dealt with in upper grades. Fifth graders need to begin to understand how traits and behaviors are classified/sorted.

**SUMMATIVE ASSESSMENT ITEMS:**
Since the SEP of the standard focuses on asking questions, the assessment items should do the same. Here are the Sample Items from the Georgia Milestones Grade 5 EOG Study/Resource Guide for Students and Parents:

1. Two students listed some traits of their favorite football player.
   - Is the youngest of four children
   - Has brown hair and brown eyes
   - Is taller than the other teammates
   - Is good at throwing and catching a football

Which question would help the student determine which trait on the list is an acquired physical trait of the football player?
A. How tall is the football player?
B. Does the football player have any siblings?
C. Why does the football player have brown eyes and hair?
D. Has the football player always been good a catching a football?

Explanation: The correct choice is D. A is incorrect because body height is an inherited trait. B is incorrect because having siblings is not a physical trait. C is incorrect because this is an inherited trait from parents, not an acquired trait.

2. Bottlenose dolphins live off the coast of Georgia. The list shows some characteristics of bottlenose dolphins.
• Have 86 to 100 sharp teeth
• Are light gray to almost black in color
• Can be eaten by sharks and killer whales
• Live in groups of females and groups of males

Which question can be asked to find out which characteristic of bottlenose dolphins is an instinct?
A. Why do bottlenose dolphins live in groups?
B. Why do sharks and killer whales hunt bottlenose dolphins?
C. How many teeth do bottlenose dolphins have when they are born?
D. How does the color of bottlenose dolphins help them hid from predators?

Explanation: A is correct. B is incorrect because this is an instinct of sharks and killer whales, not dolphins. C and D are incorrect because physical characteristics are not instinctive behavior.

3. The eastern box turtle lives in Georgia. The list shows some characteristics of the eastern box turtle.

Can live 50 years or more
Will hide in its shell when frightened
Has a dark shell with many yellow or orange spots
Eats mushrooms, berries, fruits, worms, and insects

Which question can be asked to find out which characteristic is a learned behavior?
A. Do all eastern box turtles like the same food?
B. Do eastern box turtles in other states live for 50 years?
C. Do eastern box turtles in other states have the same color of spots?
D. Do all eastern box turtles hide in their shells when they are frightened?

Explanation: A is the correct choice. B is incorrect because length of life span is not a learned behavior. C is incorrect because physical characteristics are not learned behaviors. D is incorrect because this is an instinctive behavior.

4. The picture shows a cow.

Which question can be asked to learn about the inherited physical traits of the cow?
A. How old is the cow?
B. Has the cow been fed today?
C. Is the cow tame enough to pet?
D. Why does the cow have those black and gray patches in its fur?

Explanation: D is correct. A is incorrect because age is not an inherited physical trait. B is incorrect because feeding is not a physical trait. C is incorrect because behavior is not an inherited physical trait.

Other general assessment items focused on concept:

5. The trees in Amanda’s yard have pollen from the blossoms on their branches. Are the trees seed producers or non-seed producers?

6. Jerry’s mother is blonde, has blue eyes and plays the piano. She is teaching blonde and blue-eyed Jerry to also play the piano. He sits straight on the bench and curves his fingers over the keys just like his mother. Which traits are acquired, and which are inherited? Explain your thinking.

7. A baby duck begins swimming behind its mother shortly after hatching. Did the baby duck inherit its ability to swim? Explain your thinking.

8. Mary sets aside a time for getting her homework done. Is this an instinct or a learned behavior? Explain your thinking.

Part A Determine whether each characteristic is the result of the environment, inheritance, or both the environment and inheritance.

The height of a tree in a forest is the result of
A. the environment.
B. inheritance.
C. both the environment and inheritance.

Explain your choice.

9. A burn mark on a tree in a forest is the result of
A. the environment.
B. inheritance.
C. both the environment and inheritance.

Explain your choice.

10. Part B Inherited characteristics of trees come from which of the following?
A. air particles
B. parent trees
C. nutrients from soil
D. several nearby trees

11. A bright-red male cardinal comes to a school bird feeder every morning. Like other cardinals, this bird makes a sharp chirping sound as it hops around the bird feeder. Which of these is a learned behavior of this bird?
A. Having red feathers
B. Eating seeds during the day
C. Coming to the bird feeder each morning
D. Making a chirping sound

12. A family takes a group picture in a park where bluebonnets are blooming. The family notices that some of the blooms are white and others are blue. The color of the blooms is most likely determined by —
A. air temperature
B. the age of the plant  
C. the types of consumers that eat the plant  
D. inheritance from parent plants

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**Student Learning Supports**

The goal for science education in the state of Georgia is as follows: All Students, over multiple years of school, actively engage in science and engineering practices and apply crosscutting concepts to deepen their understanding of the core ideas in these fields. The learning experiences provided for students should engage them with fundamental questions about the world and with how scientists have investigated and found answers to those questions. This lesson includes the disciplinary core ideas, science and engineering practices and crosscutting concepts to actively engage students in exploring science concepts with real world topics. As part of the vision, we must support the inclusion of all students in science learning.

Some general strategies to include all students in the learning process of science are as follows:

- Provide consistent and positive feedback.
- Keep directions brief and clear.
- Make sure parents and students know schedules, due dates, requirements, expectations, and how assignments/tests are going to be collected.
- Share evaluation results in a timely manner to students and parents.
- Package assignments in a way that students know the sequence, what is required, when it is required, what is available as choice and what is for fun.
- Provide/encourage organizational strategies such as where to work, store work, when and where to turn in assignments, graphic organizers, etc.
- Provide reminders of important dates and requirements.
- Go over notebook and journal ideas and share your entries with students so they can see what you expect.
- Allow dictation and/or text to speech software programs and tools.
- Check in with students by phone or online to answer questions, give reminders, and check progress.
- Provide parents with updates on progress and upcoming assignments. Communicate often.
- Provide resources that students can access offline.
- Allow students to give information orally or in drawings.
- Model expectations and demonstrations in video/online/phone.
- The teacher should have students match letter prior to reading or writing to remind them of the alphabet.
- The teacher can have students identify words that they know in any text that they are reading.
- The teacher can provide students with sentence frames to assist students frames to help students get started writing.
- Provide students with the opportunity to interact with numbers.
- The teacher should provide multiple ways for students to gain and show their knowledge.

Some strategies specific to this lesson are as follows:

- The teacher should keep in mind that fear of spiders is very common. The teacher may want to have a backup phenomenon in mind to engage students that are afraid of spiders.
- The teacher should consider read aloud for texts that students are expected to read.
- The teacher should consider using videos and images to engage students with the material and help them obtain information.
• The teacher should consider showing videos more than once to allow students to make observations and obtain information as needed.
• The teacher should consider providing students with a graphic organizer or guiding questions to help the students obtain information from the video.
• The teacher should provide multiple ways for students to ask questions, show their knowledge and share ideas with others.
• The teacher may want to consider providing students with resources that they can use to find information about spiders. This could include videos, articles, websites or images.
• The teacher should consider modeling to students the way to write scientific questions and then assist students in editing their questions to make them more open ended.
• The teacher may need to discuss with students what an observation is. Then model and practice making observations before asking students to do it on their own.
• The teacher should consider observing some organisms together or providing resources of places that students can observe organisms. Many zoos and aquariums have cameras that could be used to help students observe organisms.
• The teacher may want to lead a class discussion about the observations that students are making of different living organisms.
• The teacher may need to use pictures and student observations to help students understand what an arthropod is.
• The teacher may want to provide students with a card sort to help them practice knowing the difference between inherited/acquired traits and learned/instinctive behaviors.
• The teacher may want to provide students with images of plant behaviors.
• The teacher should consider a graphic organizer for students to organize their research.
• The teacher may encourage students to work collaboratively to find answers to their questions. This can be done using technology or in pairs. This depends on student needs and district policy.
• The teacher should provide students with multiple ways to share their work.
• The teacher should consider student comfort with sharing their work. One way to do this is to have students share with a partner or small group before sharing the whole group. Another way to do this is to allow students to share anonymously.
• The teacher may want to consider providing an example or model of what the all about me project should look like at the end. The teacher may want to consider sharing their own all about me project to make students feel more comfortable making their own.
• The teacher should consider for the formative and summative assessments having students answer the questions and then provide justification for their answer.
• The teacher should be sure that students have the correct answers before moving on from a question.

Engaging Families

- Dear Parent Letter
- Families can do all activities together.
- Families can use Georgia Home Classroom as a resource.
Dear Parent or Caregiver,

This instructional segment focuses on the concept of inherited and acquired traits as well as learned behaviors and instincts. It encourages students to ask questions and research to find answers to as many questions as they can. Fifth graders will understand that there are some things we are born with and some things we learn as we grow. Students will study genetics in the future grades, not 5th.

Examples of Inherited and Acquired Traits

<table>
<thead>
<tr>
<th>Inherited Trait</th>
<th>Acquired Trait</th>
</tr>
</thead>
<tbody>
<tr>
<td>A girl has blue eyes.</td>
<td>The woman changed her hair color from dark to blonde.</td>
</tr>
<tr>
<td>A bird eats seeds.</td>
<td>A bird finds different materials to build a nest.</td>
</tr>
<tr>
<td>A dog has brown fur.</td>
<td>A dog can catch a Frisbee.</td>
</tr>
</tbody>
</table>

Examples of Instinct and Learned Behaviors

<table>
<thead>
<tr>
<th>Instinct</th>
<th>Learned Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>The boy sneezed to clear his nose.</td>
<td>A boy can play the piano.</td>
</tr>
<tr>
<td>A Canadian goose migrates to other climates during the year.</td>
<td>A bird can find the bird feeder.</td>
</tr>
<tr>
<td>A dog barks when startled.</td>
<td>A dog will come when called.</td>
</tr>
</tbody>
</table>

In this study students will observe the traits and behaviors of plants and animals. Students can choose to make a temporary home for an insect or spider (a handout is available for your child), watch how a plant or pet grows, and keep a journal about what is an inherited trait and what is a learned behavior. Fifth graders may enjoy observing how babies and young children learn at different stages. Encourage them to ask questions and write about their observations in their journals. Do remember that some ants bite and some spiders are poisonous.

If you don’t want plants or animals inside the home, help your child find a spot they can visit outside each day to make their observations.

Students will also research a plant or animal to learn answers to questions they may have about traits, behaviors, and instincts. Encourage your child to keep a list of questions they have about what they observe or want to know about this.

This study will culminate with a project (All about Me) that you can help them complete with pictures and stories about themselves:

Use what you know about inherited traits, learned behaviors, and instincts to design a storyboard, journal, or illustrated booklet of your life. Include

- Inherited traits: things you were born with such as eye color, hair color, etc.
  - List at least 4 traits
- Learned behaviors: things you learned to do such as learning to walk, writing with a pencil, reading, playing an instrument or sports.
  - List at least 5 learned behaviors
- Instinct: things that you do without thinking such as reflexes like sneezing, yawning, mouthwatering, etc.
  - Draw a cartoon or tell a joke or write a story about an instinct.

Sequence these things in a timeline format with pictures, sketches, or drawings.

This project will be returned so students may wish to include actual photos in their project. Your child has a handout with this information as well as a guide for how I will score the work.
Inheritance

Animals inherit traits from their parents. Some common inherited characteristics are fur color, fur length, eye color, height, length of tail, ear shape, and patterns such as spots, stripes, or patches. A horse's color, the color of the mane, and the horse's height are all inherited characteristics.

Plants inherit such characteristics as leaf structure, flower petal structure (size, shape, color), height, stem structure (bark of trees).

Inherited traits include things such as hair color, eye color, muscle structure, bone structure, and even features like the shape of a nose.

Though human beings are unique, there are a set of common characteristics that we all share with the members of our family, with our peers etc. We possess a unique set of traits. While some traits are governed by genes which are inherited from parents to the off springs, there are traits that are acquired through observing, learning, most of which are determined by a combination of environmental factors and inheritance. Listed below are a few examples of inherited traits:

- Tongue rolling
- Earlobe attachment
- Dimples
- Curly hair
- Freckles
- Handedness
- Hairline shape
- Green/Red Color blindness
- Hand clasping

Animals and plants are sorted in many ways.

- Some of the ways are physical characteristics inherited from their parents such as height, eye color, hair color, beak shape, leaf shape, body covering, spines on a cactus, etc.
- Some of the ways are traits that are acquired, such as a plant bending to grow toward the light, a person getting larger muscles from playing sports, an animal getting stronger by running to catch food, a prey animal hiding from a predator, etc.
- Some of the ways are instincts of animals such as a baby grasping a finger placed in his or her palm.
- Some of the ways are learned behaviors such as a person playing the piano, a bird mimicking words or songs, a dog fetching a ball, or a student knowing how to study for a test.
- Many characteristics are inherited from the parents. Other characteristics result from individual's interactions with the environment, which can range from diet to learning.
- Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.
- Scientists have identified and classified many plants and animals.
- Many characteristics involve both inheritance and environment.
- Offspring acquire a mix of traits from their biological parents.
- Different organisms vary in how they look and function because they have different inherited information.
- In each kind of organism there is a variation in the traits themselves, and different kinds of organisms may have different versions of the trait.

What does innate behavior mean?
Innate behavior is behavior that occurs naturally in all members of a species. For innate behavior to occur, it just needs a particular stimulus to trigger it. Innate behavior is also called instinctive behavior.

There are two types of innate behavior reflex and instinct. A reflex is an automatic response that does not involve a message from the brain. Reflex Examples: Sneezing, shivering, yawning, quickly pulling your hand away from a hot surface, blinking your eyes. An instinct is a complex pattern of innate behaviors.

Instincts are defined as non-learned, inherited patterns of behavior generally ensuring the survival of a species. Common examples include spinning a web by a spider, nest building, migration patterns of animals, social behavior in pack animals, plants growing toward the light.

Hibernation is an innate behavior or instinct. Hibernation is a resting state that helps animals survive the winter.

An **instinct** is the ability of an animal to perform a behavior the first time it is exposed to the proper stimulus. For example, a dog will drool the first time—and every time—it is exposed to food. A plant’s roots will grow into the soil.
Charlotte’s Web: A Look at Springtime Spiders

The all-time favorite **CHARLOTTE’S WEB** ends in the springtime, as tiny spiderlings emerge from Charlotte's egg case. The gray orb spider called her egg sac her *magnum opus*, Latin for "great work." Charlotte told her friend Wilbur the pig that the egg sac held 514 eggs and would hatch in the spring. Her friend Wilbur the pig patiently waited, and this was his reward:

One fine morning, a tiny spider crawled from the sac. Then another, and another. They were no bigger than the head of a pin. For several days and nights young spiders crawled here and there, up and down, around and about, waving at Wilbur, trailing tiny draglines behind them and exploring their home. There were dozens and dozens of them. Wilbur couldn’t count them, but he knew that he had a great many new friends. They grew quite rapidly. Soon each was as big as a BB shot. They made tiny webs next to the sac.

Wilbur was surprised and amazed when they hatched out, and even more surprised and amazed a few days later when they did something he’d never imagined they would do. One spring day, a warm draft of rising air blew softly through the barn cellar. The baby spiders felt the warm updraft and one of Charlotte's children climbed to the top of the fence. Wilbur was surprised to see the baby spider stand on its head and point its spinnerets in the air. The spider let loose a cloud of fine silk that formed a balloon. Wilbur was frantic when he saw the spider let go of the fence, float into the air, and sail through the door with a "good-bye." At last one little spider took time enough to stop and talk to Wilbur before making its balloon. It was time for the baby spiders to set forth as aeronauts. They were going into the world on a warm updraft to make webs for themselves. The air was soon filled with tiny balloons, each balloon carrying a spider. That's our summary, but you'll enjoy reading the whole chapter. You'll find the ballooning spiders in Chapter XXII: A Warm Wind.

**Super Spinners and Wheels of Silk**

Charlotte and her babies in the book *Charlotte's Web* were orb weavers. It's easy to spot an orb weaver's web. Just look for a wheel of silk. The pattern in each web may be slightly different, but most of the webs are round. *Orb* means circle, and their round webs explain how these weavers got their name.

Orb spiders weave beautiful, complicated webs. You usually see orb webs, like wheels of silk, in open areas between branches or stems. But some orb weaver webs are so huge that they stretch across small streams. Others are tiny and tucked out of sight. No matter the web size, the purpose is the same: to trap flies, butterflies, grasshoppers, beetles, and other food. When an insect comes flying or hopping by, it gets tangled in the web. The spider feels the vibrations, either by sitting in the middle of the web or on a nearby branch attached to the web by a trap line and then she comes in to eat her prey. Tiny hairs and slits on an orb weaver's legs and body can feel the slightest movements. These movements let the spider know when prey smacks into the web. Like all spiders, orb weavers have poison glands on the tips of their fangs. When they sink their fangs into prey, the poison paralyzes their victims. Quickly they wrap their prey in wide bands of silk and tuck them away to eat later.

Building a web is a skill these spiders are born with. They also get a lot of practice. Lots of orb weavers rebuild their webs every night, eating up the old line while spinning a new one. Many orb weavers can spin a web in less than an hour. That's hard to believe when you take a close look at the webs. Many of the lines are made stronger with several strands of silk. The spokes and the rest of the web are non-sticky silk, but the spiral part of the web is usually sticky.

Orb weavers have some tricky ways to stay out of sight, and webs can help them. Some weave special designs into their webs that match patterns or colors on their bodies. These designs offer such good camouflage that many spiders are hard to see even when they are sitting smack in the middle of their webs.
Sometimes orb weavers stay out of sight by leaving their webs to hide in nearby leaves or under pieces of bark.

**Journey North: A Spider's Life**

Thousands of species of spiders exist. Each is unique, but spider lives do follow certain patterns:

- Like Charlotte in CHARLOTTE’S WEB, many spiders die in autumn after producing an egg sac. But some adults live through the winter, mate in the spring, and then die, and some survive for two or more years. Large wolf spiders may live for several years, and tarantulas have lived as long as 20 years.
- Most baby spiders hatch when the weather gets warm, but a few hatch from their eggs during fall or winter. It’s hard to notice that they’ve hatched, though, because they stay quietly inside the egg sac until spring.
- The first thing most kinds of spiderlings do after emerging from the egg sac is to spin a dragline and balloon away.
- While spiderlings are still very tiny, they climb to a branch, fencepost, or other tall object and tilt their spinnerets up into the air. The breeze pulls silk threads out of the spinnerets. These threads form a "dragline." The spider is still very tiny and light. When the thread gets long enough, the wind suddenly plucks it up, along with the spiderling at the other end, and carries them away! This works because the spiderling is so light and its dragline long enough to give them a lot of surface area for their weight.
- The average female spider's egg sac holds about 100 eggs, but some large spiders can produce a sac that holds 2,000 eggs.
- Some mothers protect their egg sac until the spiderlings emerge. Some spiders attach the sac to a web, or to a plant or other structure. Some carry the egg sac wherever they go on their abdomen, and some even drag it behind them, attached to their spinnerets! (Charlotte is quite likely the only spider known to have entrusted her egg sac to a pig.)
- While they are growing, baby spiders molt, or shed their skin, several times. The new, larger skin is very soft when the old skin falls off, but quickly dries and hardens to provide protection. The bigger a spider grows, the more times it must molt. Tarantulas must molt more than 20 times before they're fully grown!
- All spiders eat animal food, but each kind of spider catches this food in its own way.
Spiderling Facts

The Wolf spider is a super-mom! She will attach the egg sac to spinnerets and carry the sac with her until the eggs hatch. Once the babies are born they climb onto her back and stay there until they are fully developed, living off their egg yolks (from their egg). This could take weeks. They go everywhere with her, including hunting. If one falls off, mom will stop what she is doing until it is back on top!

Comb-footed spiders will feed their spiderlings liquid from their mouths.

Many spiders will go off on their own after their eggs hatch, leaving the babies to fend for themselves.

Female spiders lay their eggs inside an egg sac which looks like a cocoon. It depends on the species, but there could be hundreds of eggs. The egg sac, like a spider's web, is made of silken thread.

Some females carry their sacs - in their jaws or on their spinnerets - until the eggs hatch. Other species hide their egg sacs under a rock, attach them to a plant stalk or encase them in the web. When the spiderlings (baby spiders) hatch, they are usually on their own.

Let's examine the egg sacs of a few spiders:

- A mother guards her egg sac.
- This South African spider is carrying an egg sac.
- Another female spider, from South Africa, sits on her nest.
- Some spiderlings ride on their mother's back after they hatch.
- Other spiderlings must stay in a web one week after hatching.

As part of the life cycle of some spider-species, the mother dies after she lays her eggs. When the eggs hatch, the spiderlings will be able to make their way in the world.

Although they do not have wings, the baby spiders will "fly" to different locations by "ballooning" on lines of gossamer silk.

Spiderling, the Immature Stage

Immature spiders, called spiderlings, resemble their parents but are considerably smaller when they first hatch from the egg sac. They immediately disperse, some by walking and others by a behavior called ballooning.

Spiderlings that disperse by ballooning will climb onto a twig or other projecting object and raise their abdomens. They release threads of silk from their spinnerets, letting the silk catch the wind and carry them away. While most spiderlings travel short distances this way, some can be carried to remarkable heights and across long distances.

Spiders Spin Balloons to Fly Away: National Geographic Video
Watch a Ballooning Spider Take Flight: Science Magazine Video

Spiders spin their silk for far more than just webs: guy lines, egg sacs, and even cocoons to hold their still-living prey. But another piece of handiwork—sheetlike sails that help them catch the breeze—has gotten little scholarly attention, even after the practice of “ballooning” was first documented in the 1600s.

To find out how ballooning spiders lift off, colleagues from the Technical University of Berlin put 14 large crab spiders (Xysticus) on a mushroom-shaped platform exposed to the natural breeze, serendipitously in the same Berlin park where aviation pioneer Otto Lilienthal once tested heavier-than-air gliders. In a separate experiment, the researchers placed the spiders in a wind tunnel, where they could control wind speed and temperature.

The spiders did not release their silk balloons at random, the team found. Instead, they raised one or two hairy legs aloft, apparently testing the wind for 5 to 8 seconds. On cold and windy days, the spiders huddled on the side of the platform and most did not launch. But if conditions were right—a warm, gentle breeze no stronger than 3 meters per second—the spiders raised their abdomens and released up to 60 silk threads, forming a triangular sheet that bore them skyward. The study is the first to show that spiders, like any good aviator, carefully evaluate wind conditions before takeoff.
## Answering Questions through Research

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<thead>
<tr>
<th>Dates Researching</th>
<th>Question and Summaries</th>
<th>Found it! Date</th>
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<td>Question:</td>
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<td>I reworded the question:</td>
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<td>Sources</td>
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<td></td>
<td>Summary</td>
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</table>

I did not find the answer to this question because

What I will try next:
## Spider Research

**Name**

<table>
<thead>
<tr>
<th>Type of Spider</th>
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<tr>
<th>Inherited Physical Traits</th>
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<th>Acquired Physical Traits</th>
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<table>
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<tr>
<th>Inherited Behaviors</th>
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<td>Instinct</td>
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<th>Learned Behaviors</th>
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<tr>
<th>Other Interesting Facts</th>
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What other questions do you have about spiders and other organisms?
Spiders and Their Webs

Spiders are born with the ability, features, and need to spin webs. This innate ability to spin webs and find food are also called instinct. How can scientists use these inherited traits to group spiders?

Various species of spiders are grouped based on their body type and the type of web they weave. Different types of spider webs include:

- **Spiral Orb Webs** - Spiral orb webs are the most common spider web. This web design is associated with the family *Araneidae* and species include orange garden orb weaving spiders, banded orb weaving spiders, bolas spiders and silk spiders, just to name a few. This web looks like a wheel with spokes. Orb-weaving spiders and their webs are typically found outdoors.

- **Tangle Webs or Cobwebs** - Tangled webs or cobwebs are associated with the family *Theridiidae* and common species include the house spider and ogre-faced stick spider. Tangled webs lack symmetry and are jumbles of threads typically attached to a support system like the corner of a ceiling. Cobwebs have the same lack of structure as tangled webs and often collect dirt and debris.

- **Sheet Webs** - Sheet webs are flat sheets of silk between blades of grass or branches. When creating sheet webs, spiders spin a net of crisscrossed threads above the sheet. Flies end up hitting the net and bouncing into the sheet web. If the sheet web is damaged, the spider quickly patches up any holes or tares. Sheet webs are associated with the family *Linyphiidae* and species include the bowl and doily spider and the platform spider.

- **Funnel Webs** - Funnel webs are large, flat horizontal webs with openings at both ends so the spider can escape. Funnel web spiders can feel the vibration of prey once present and bites it so it can bring it back to the funnel web. Funnel web spiders belong to the *Agelenidae* family and a popular species of this family includes the hobo spider.

- **Triangle** - The *Uloboridae* family is often associated with this type of web. Hence their name, triangle webs are silky strands of spoked and spirals that connect to three strands. Triangle webs are horizontal and fuzzy, which helps trap and smother prey. The *Uloboridae* family is the only family of spider without venom glands, so their web's fuzzy material compensates for the lack of their venomous bite. [https://www.westernextterminator.com/spiders/types-of-spider-webs/](https://www.westernextterminator.com/spiders/types-of-spider-webs/)

Brainstorm a list of other animals that are grouped according to behavior as well as a physical characteristic. (Examples could include predator/prey, vocalizations, etc.)

There are scientific studies of spiders’ behavior in stalking prey and food sources. These studies suggest that spiders change their paths, strategies, and remember their choices using their observations of towers, mazes, etc. What questions do you have about how spiders learn? How can you find these answers?
Instinct

Behaviors that are closely controlled by genes with little or no environmental influence are called **innate behaviors**. These are behaviors that occur naturally in all members of a species whenever they are exposed to a certain **stimulus**. Innate behaviors do not have to be learned or practiced. They are also called instinctive behaviors. An **instinct** is the ability of an animal to perform a behavior the first time it is exposed to the proper stimulus. For example, a dog will drool the first time—and every time—it is exposed to food.

Innate behaviors are rigid and predictable. All members of the species perform the behaviors in the same way. Innate behaviors usually involve basic life functions, such as finding food or caring for offspring. Some examples are shown in these photographs. If an animal were to perform such important behaviors incorrectly, it would be less likely to survive or reproduce.
Invertebrate Habitats for Investigation and Research

Important: Have a plan for letting the animal go back to its home after you have completed observations. If the animals do not do well after a couple of days, put them back outside where you found them. You can certainly observe the animal in its own home without bringing it inside. Do not bring any animal inside without checking with your family. Remember, some spiders are poisonous and should not be handled.

Deli Cups A simple budget option:
A deli cup is a perfect option for a cheap no-frills home. Turn upside down so it opens on the bottom. Use a tack to make breathing holes on the sides and top. You can decorate with tape and paper. Cover the inside bottom of the enclosure with a piece of paper towel. Change this paper towel out as it collects the animal’s waste. You can also use upright and cover opening with plastic wrap.

An ideal home for a spider should have
- Ventilation: air holes to allow in air and out moisture
- An opening from the bottom or side for feeding and water drops: spiders will build their nest on the top of the enclosure, if it opens from the top you may disturb or destroy their nest
- Placed in indirect sunlight or lighted (see Terrarium lighting section). Direct sunlight can overheat your spider and kill it.

Mealworms
Because mealworms are a food source for small mammals, reptiles, birds and fish, some people will raise them. Mealworms can thrive in captivity and can be purchased at pet shops.
- A clean, plastic storage container with air holes pre-drilled or drilled in is ideal, although a shoe box with air holes also will do.
- Temperatures should be kept on the warm side. Mealworms are resilient but thrive at temperatures between 70 and 80 degrees F.
- Fill the container with wood shavings, rocks, mulch, dried leaves and sticks – anything the mealworm can use to bury itself beneath.
- Feed them oats and pieces of apple.

Keeping a Pet Cricket
- A fishbowl or terrarium covered with wire mesh is ideal. Or any glass or plastic enclosure is fine as long as there is proper ventilation (so the insects can breathe) with good air flow.
- Add moist dirt or sand and leaves to the bottom of the jar. A piece of bark can also create a comfortable atmosphere for your cricket. Toilets rolls also allow them to hide.
- Because they’ll need a constant source of water, provide a water tray that’s shallow enough that they can’t drown. You could use the lid of a plastic medicine jar. It can be put in with tweezers or a bacon turner. You can fill the water dish by drawing water through a straw.
- Add a food container; a bottle cap is fine. Crickets need clean food every day. They like most everything, especially raw vegetables such as cucumber as well as grains including granola and oats. They will also need a little protein (tofu, chicken, or even a dog biscuit) or they will start eating each other. You can also buy specifically made cricket food from pet shops. They also like fish food.
- Avoid all pesticides which will kill your cricket. Using insecticides around the home can kill your crickets, too. Put them outside if you’re spraying chemicals.
- The best place to catch a cricket is inside your house. In the fall, crickets come inside, attracted by the warmth. You can also buy crickets at a pet shop (they are food for lizards and frogs).
• Once you catch your cricket, wrap him loosely in a handkerchief and transfer him into his jar. We might do this in a glass enclosed shower stall.
• Crickets don’t like extreme colds or heats. They prefer a regular temperature of about 86 degrees.
• Clean their home every few days. Always remove any dead crickets. Make sure the food doesn’t have any mold on it.

Caterpillar and Butterfly/Moth Enclosures
• If you find your own caterpillars in the wild, you need to build a habitat for them.
• A large glass jar or small aquarium works great.
• Make sure it has a secure lid with lots of breathable fresh air (more than just poking a couple holes in a lid). Try using cheesecloth or mesh over the top.
• Gather some leaves of the host plant you found your caterpillars on and put them in a large jar with some sticks for crawling on and some grass in the bottom of the jar.
• Caterpillars only like fresh leaves, so change them out daily. And they get their hydration from the leaves, so no need to put any water in the habitat.

Pillbug Habitat
• A pillbug habitat consists of a plastic container with a lid that has small air holes poked through.
• The habitat should be kept in a cool dark place away from direct sunlight.
• Cover the bottom with a damp paper cloth.
• Then add sand and soil but do not completely cover the edges of the paper towel.
• You will need to wet the habitat each day lightly with mist or by dampening the paper towel.
• Then add natural materials like leaves, rocks, bark or twigs.
• You can also add pieces of lettuce of carrot shavings for food.
• Finally, add your pillbugs.
Learned Behaviors

Wolf pups have their first howling lessons. Photo credit: Jim Zuckerman

You aren’t born knowing how to do some things. You learn. Think about how animals learn their skills. Ask some questions about how animals learn.

1. ____________________________________________________________

_________________________________________________________________

2. ____________________________________________________________

_________________________________________________________________

3. ____________________________________________________________

_________________________________________________________________
4. __________________________________________________________________________

____________________________________________________________________________

5. __________________________________________________________________________
### Sorting Traits and Behaviors

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<th>Animal</th>
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### Instinct vs Learned Behavior

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Researching a Plant or Animal

My Name: __________________

The plant or animal I am researching ____________________________________________

Questions I want to answer:

1. __________________________________________

2. __________________________________________

3. __________________________________________

4. __________________________________________

5. __________________________________________

What I found out:

1. __________________________________________

2. __________________________________________

3. __________________________________________

4. __________________________________________

5. __________________________________________

Characteristics the organism inherited (physical traits and instinct).

Characteristics the organism learned or acquired.

Sources I used for the research:
**Observation journal**

Name ________________________

I will observe ____________________________.

___ I give my permission for the class to view my work on this assignment.

___ I do not give permission for the class to view my work on this assignment.

Sketch or attach a picture of the plant or animal.

List the traits the animal or plant inherited.

<table>
<thead>
<tr>
<th>Date</th>
<th>Observed a behavior</th>
<th>Instinct or Learned?</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

What I found out

Questions I have
All about Me

Use what you know about inherited traits, learned behavior, and instinct to design a storyboard, journal, or illustrated booklet of your life.

Include

- Inherited traits: things you were born with such as eye color, hair color, etc.
  - List at least 4 traits
- Learned behaviors: things you learned to do such as learning to walk, writing with a pencil, reading, playing an instrument or sports.
  - List at least 5 learned behaviors
- Instinct: things that you do without thinking such as reflexes like sneezing, yawning, mouth watering, etc.
  - Draw a cartoon or tell a joke or write a story about an instinct.

Sequence these things in a timeline format with pictures, sketches, or drawings.

Let me know if I can share this with the rest of the class. I will return this to you.

This is how I will score your work:

<table>
<thead>
<tr>
<th></th>
<th>Excellent</th>
<th>Fair</th>
<th>Needs improving</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Timeline</strong></td>
<td>There are 9 items in order from birth to fifth grade.</td>
<td>Less than 9 but more than 6 items are included but not in any sequence</td>
<td>Most of the items are missing.</td>
</tr>
<tr>
<td><strong>Inherited Traits</strong></td>
<td>Includes inherited traits explained correctly.</td>
<td>Limited traits and explanation</td>
<td>Wrong information given or missing</td>
</tr>
<tr>
<td><strong>Learned behaviors</strong></td>
<td>Includes a list of behaviors that were learned in correct sequence</td>
<td>Limited or some incorrect information about learned behaviors</td>
<td>Wrong information given or missing</td>
</tr>
<tr>
<td><strong>Instinct</strong></td>
<td>Included a joke, cartoon, or story that correctly noted a behavior that was an instinct.</td>
<td>A joke, cartoon, or story was included but it was not related to an instinct.</td>
<td>This was not included.</td>
</tr>
</tbody>
</table>