Remainder of the Life Cycle Lessons -there are no dates because you will not be able to do these lessons consecutively. There will be filler lessons to use when we have “wait-time”.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Observing Change:****Growth & Molting****Lesson 5** | SCoS Objective(s):

|  |  |
| --- | --- |
| 1.1 | Describe the life cycle of animals including:* Birth
* Developing into an adult
* Reproducing
 |
| 1.2 | Observe that insects need food, air and space to grow. |
| 1.3 | Observe the different stages of an insect’s life cycle. |
| 1.4 | Compare and contrast life cycles of other animals such as ladybugs, crickets, guppies or frogs. |

**Vocabulary:**

| **Concept/Vocabulary Word**  | **Definition**  |
| --- | --- |
| exoskeleton | stiff outer skeleton that covers an insect |
| molting | time when an insect sheds the exoskeleton and grows a new one |
| spinneret  | specialized organ located behind the mouth that spins silk |

**Materials:*** Caterpillars, hand lenses, smartfile

**Procedure:*** Ask students how they have changed since Kindergarten. Can they wear the same shoes or clothes that they wore in Kindergarten?
* Continue the discussion by asking children to reflect on their own growth and development since they were babies. (They are bigger, more hair and teeth, etc.)
* Discuss the relationship between food and growth. Do students know that food is responsible for their growth?
* Have students observe the caterpillars. Have them share discoveries they make about how they know the caterpillars are growing. (Some cups might have frass, shed skins, or head capsules)
* After a few minutes of observation, discuss the molting process
	+ For detailed summary see TG pg 29
	+ The caterpillars have an exoskeleton, and cannot grow bigger unless they shed this
	+ Molting is the term for when the caterpillar sheds its exoskeleton and grows a new one
	+ Before a molt, a caterpillar stops eating and becomes very still. The body begins to pulse
	+ The exoskeleton near the head begins to split and the caterpillar begins to wiggle out of the old exoskeleton. The head capsule is shed last
	+ You can see evidence of molting even if you don’t witness it happening…the old skin will look black and wrinkled up in a wad. The dark, shiny head capsule will also be there. Sometimes the caterpillar eats the old skin (FYI)
	+ Immediately after the molt the bristles and exoskeleton are very soft and pale…it’s a good time to see the eyes and mouth parts!
* Students write observations of molting in their science notebooks.
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| **Silk Spinning****Lesson 6** | SCoS Objective(s):

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| --- | --- |
| 1.1 | Describe the life cycle of animals including:* Birth
* Developing into an adult
* Reproducing
 |
| 1.2 | Observe that insects need food, air and space to grow. |
| 1.3 | Observe the different stages of an insect’s life cycle. |
| 1.4 | Compare and contrast life cycles of other animals such as ladybugs, crickets, guppies or frogs. |

 (No New Vocab)**Materials:**Caterpillars, hand lenses, smart file**Procedure:*** Begin by observing caterpillars. Direct students’ attention to the silk. Have students concentrate on the amount of silk that has been spun and the patterns. Describe how the caterpillar spins silk when it moves its head from side to side. Have children look for evidence of this.
* Discuss that caterpillars spin silk as they walk. It can act as a bridge across leaves, or a ladder. The silk helps ensure safe travels. The painted lady caterpillars often use silk to lace leaves together to form a tent…creating their shelter. In our cups, the caterpillars will hang upside down from the silk and eat/rest.
* Have students draw a picture of the silken threads from their cup in their science journals
* Discuss what they observed. Where have you seen evidence of this in the real world? Some may have seen caterpillars that appear to be hanging in mid-air from a leaf, or silk “ladders” or “bridges” that caterpillars are walking across
* If any students notice caterpillars that are hanging in a “J-shape” this indicates they will soon become chrysalises.

Extra Questions:* What do you see in the cup that was not there the last time you looked?
* Where do you think it came from?
* What do you think it might be?
* Does the caterpillar seem larger?
* Why do you think these changes have occurred?
 |
| **From Caterpillar to Chrysalis****Lesson 7** | SCoS Objective(s):

|  |  |
| --- | --- |
| 1.1 | Describe the life cycle of animals including:* Birth
* Developing into an adult
* Reproducing
* Aging and Death
 |
| 1.2 | Observe that insects need food, air and space to grow. |
| 1.3 | Observe the different stages of an insect’s life cycle. |
| 1.4 | Compare and contrast life cycles of other animals such as ladybugs, crickets, guppies or frogs. |

**Vocabulary**

| **Concept/Vocabulary Word**  | **Definition**  |
| --- | --- |
| chrysalises or chrysalides  | plural forms of chrysalis |
| compound eye  | an eye with hundreds of lenses enabling the butterfly to see well enough to fly |
| proboscis  | a “mouth tube” on the head of a butterfly and some other animals; a butterfly unrolls it to suck sweet fluid from flowers |
| pupa | the third stage in the butterfly’s life cycle; also called chrysalis or cocoon |

\*\*Note: 2-3 days after the transformation, you will need to move the chrysalises into the butterfly cage.* Begin by observing caterpillars. Have student focus on the changing caterpillar. Ask them to notice the size of their caterpillars, their level of activity, whether they have spun a silk button, and whether they are in the j-shape
* You will probably have caterpillars in different stages, so allow students to observe a few different caterpillars at their tables.
* Have a discussion about how the caterpillars will change into the chrysalis.
	+ During the time the caterpillar is in the chrysalis its body is changing into a butterfly
	+ The true legs at the front of the caterpillar body will become the long legs of the butterfly. The prologs will disappear.
	+ The jaw will become the nectar-sucking organ called a proboscis.
	+ Wings will develop
	+ The simple eyes will develop into compound eyes which allow the butterfly to see better
	+ The chrysalis may twitch from time to time, but mostly it will be still
	+ This life cycle stage is also called the pupa
* Make sure the students write the date they noticed the chrysalises in their notebooks.
* Have them draw a picture of what the chrysalis looks like.
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| **Observing the Chrysalis****Lesson 8** |

|  |  |
| --- | --- |
| 1.1 | Describe the life cycle of animals including:* Birth
* Developing into an adult
* Reproducing
* Aging and Death
 |
| 1.2 | Observe that insects need food, air and space to grow. |
| 1.3 | Observe the different stages of an insect’s life cycle. |
| 1.4 | Compare and contrast life cycles of other animals such as ladybugs, crickets, guppies or frogs. |

No new Vocab* Review what they learned about the chrysalis.
* Have students gather around the butterfly net to observe.
* Discuss the parts of the chrysalis that are forming the butterfly (silk button, abdomen, antenna, wings, proboscis, and eyes)
* Have students observe these with the hand lenses
* Have them draw the parts they could see on the chrysalis.
* (See TG pg 48 for the diagram)
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| **The Butterfly Emerges****Lesson 9** | SCoS Objective(s):

|  |  |
| --- | --- |
| 1.1 | Describe the life cycle of animals including:* Birth
* Developing into an adult
* Reproducing
* Aging and Death
 |
| 1.2 | Observe that insects need food, air and space to grow. |
| 1.3 | Observe the different stages of an insect’s life cycle. |
| 1.4 | Compare and contrast life cycles of other animals such as ladybugs, crickets, guppies or frogs |

Vocabulary:

| **Concept/Vocabulary Word**  | **Definition**  |
| --- | --- |
| emerge  | to come out; opening of cocoon |
| meconium | red liquid waste tissue left over from metamorphosis |
| nectar  | natural food for butterflies; sweet liquid found in flowers |

* Enjoy watching the butterflies emerge!
* Ask if anyone could tell which chrysalis the butterfly came from
* Students will make frequent observations over the next few days as butterflies continue to emerge. Have the look for:
	+ Butterflies pumping their wings
	+ Process of them using the proboscis
	+ Empty chrysalises
	+ Differences in color in the top and bottom wings
	+ How the butterfly uses its feet, wings, antennae, and proboscis
* Discuss meconium, and assure students that it is not blood, but waste tissue that comes out after they emerge.
* Don’t forget to write the date the first butterfly emerged in science notebooks.
* Color the pictures of the life cycle on activity sheet 8, cut out and glue in science notebooks in the correct order.
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