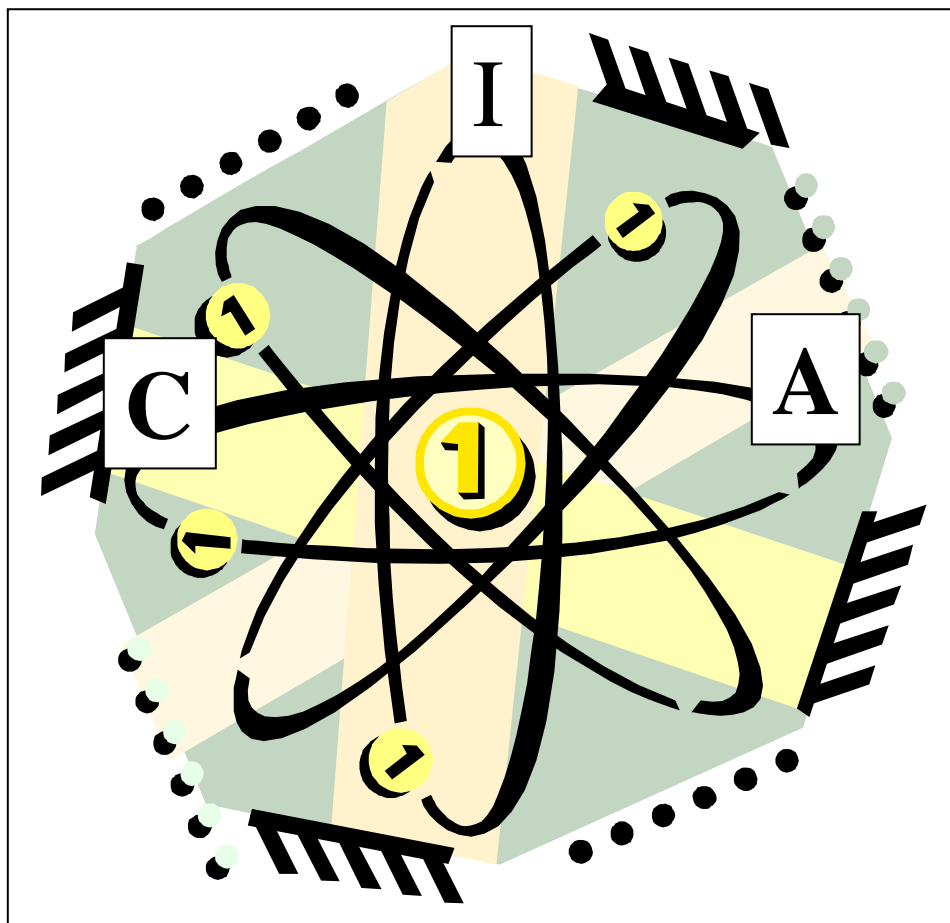


Curriculum, Instruction, Assessment (CIA) Alignment

Science, Grade 1 Unit 6: Life Cycles

Task Analysis and Hands-on Investigations



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Subject Area: Science
Strand F: Processes of Life _____
Grade: 1_____

Benchmarks

SC.B.1.1.5: The student knows that every human action requires energy that comes from food.

SC.F.1.1.3: The student describes how organisms change as they grow and mature.

SC.F.2.1.1: The student knows that living things have offspring that resemble their parents.

TASK ANALYSIS	
The student...	
LIFE CYCLES	
•	provides needed food, energy, and water to classroom animals or plants.
•	recognizes that plants and animals produce offspring with similar characteristics but individual differences (e.g., kittens in a litter may be colored differently).
•	observes that classroom organisms have life cycles that include being born, developing into adults, reproducing, and eventually dying.
•	observes and records that organisms change in some ways and stay the same in some ways as they grow.
•	measures to detect changes in growth of various organisms.



GROWING AND CHANGING

BENCHMARKS and TASKS

SC.B.1.1.5 The student knows that every human action requires energy that comes from food.

SC.F.1.1.3 The student describes how organisms change as they grow and mature.

SC.F.2.1.1 The student knows that living things have offspring that resemble their parents.

- The student observes and records that organisms change in some ways and stay the same in some ways as they grow.
- The student recognizes that plants and animals produce offspring with similar characteristics but individual differences (e.g., kittens in a litter may be colored differently).

KEY QUESTION

How do we change as we grow?



BACKGROUND INFORMATION

Every living thing comes from another living thing of the same kind. Heredity is the passing on of traits and characteristics from parents to offspring. Some characteristics may be good, and some may be undesirable.

MATERIALS

Teacher

several pictures of the teacher that span from infancy to adulthood
colored circle stickers or Post-it notes
bathroom scales
measuring tapes or sticks
1 large sheet of butcher paper
marker

Animals and Their Babies (Benchmark Education Co.)

Growing Older (Benchmark Education Co.)

Growing Up (Dominie Press)

Per student

student's photographs from infancy to present
1 sheet construction paper
markers

TEACHING TIPS

Plan ahead:

1. Ask a parent or an older student to help measure and weigh each student. You may want to measure and weigh the students early in the year and again near the end of the year in order to discuss how the students have changed.
2. Send home a letter to parents requesting several pictures of the student from infancy to present.

ENGAGE

1. Display your personal photographs in random order. Ask students what they notice about these photographs.
2. Select students to put the photographs in order by when they were taken. The class should agree with the order of the photographs. Students should continue to arrange the photographs until they come to a consensus about the order. Ask students how they decided which photograph came first, second, etc.

EXPLORE

1. Display the students' photos one at a time. Have students guess whose photo is displayed. Continue for all students. (This activity could also be done in small groups with parent helpers.)
2. Discuss the similarities and differences between baby photos and the way students look now. Ask: *What do you think caused these changes?* (Eating – supplying energy for growth)
3. Measure the height and weight of each student. To measure height, hang white butcher paper on the wall. As students come up one at a time, the teacher should mark the student's height by placing a dot with the student's name on the paper. Record student's weight next to the dot. (This part of the activity may be done in small groups or with parents assisting.) If weight is an issue, omit that part.

EXPLAIN

1. Show students how to fold the construction paper to make a tri-fold book. Students should draw themselves at 3 stages of life—as an infant, as a first grader, and as an adult. They should then write and complete the appropriate sentence under each picture.
 - a. When I was a baby, I ...
 - b. In first grade, I ...
 - c. When I grow up, I ...
2. Through questioning and discussion, help students recognize that they change as they grow and that children resemble their parents:
Do people change as they grow?
How have you changed since you were born?
How have you stayed the same?
How are humans like animals? How are they different? (If possible, show a set of animal photos (e.g., egg, baby bird; kitten, cat).
Share the book *Animals and Their Babies*.
Are you taller now than you were as a baby?
Do you weigh more now?
Can you think of any other ways you have changed as you have grown older?
How are you like your parents? How are you different?
3. Through questioning and discussion help the students recognize that every human action requires energy that comes from food.
Ask:
What have you done to help your body grow? (Energy comes from food.)

EXTEND/APPLY

1. Have students observe people in different stages of growth. Students may wish to bring in magazine pictures or family photos to share.
2. Share the poem, "Me", with the class.

ME
I am bigger than a baby.
I am bigger than a flea.
I am happy I am growing,
Happy as can be.
When I become a grown-up,
I hope that I will be-
Older, Bigger, Smarter,
And still be glad I'm me.

by Beth Crampton

3. Share the books listed in the teacher materials list.

ASSESSMENT

Students put the photographs of a classmate in order of growth and explain why they chose that order.

Novice	Basic	Expert
Student does not put any photos in the correct order and cannot give any reasonable explanations.	Student puts one or two of the photos in the correct order and gives a reasonable explanation for those.	Student puts all of the photos in the correct order and gives reasonable explanations for the entire order.

ANIMAL ANTICS



BENCHMARKS and TASKS

SC.F.1.1.3 The student describes how organisms change as they grow and mature.

SC.F.2.1.1 The student knows that living things have offspring that resemble their parents.

- The student observes and records that organisms change in some ways and stay the same in some ways as they grow.
- The student recognizes that plants and animals produce offspring with similar characteristics but individual differences (e.g., kittens in a litter may be colored differently).

KEY QUESTION

How do animals change as they grow?

How are offspring similar and different in appearance compared to their parents?

BACKGROUND INFORMATION

Every living thing comes from another living thing of the same kind. Heredity is the passing on of traits and characteristics from parents to offspring.

MATERIALS

Teacher

picture of a young animal when it is a baby

and when it is older

class observation chart

Venn diagram

Animals and Their Babies (Benchmark Education Co.)

Per pair of students

Animals and Their Babies activity sheet

2 pairs of scissors

crayons or markers

ENGAGE

Show a picture of a young animal (e.g., your pet) for the students.

Ask students to describe the animal. List observations on a circle map or chart paper.

Ask how old the animal is and have them tell how they know.

Show the picture of the same animal at an older age and discuss how the pictures are alike and how they are different.

Discuss any changes.

EXPLORE Part 1

1. Give each pair of students a copy of the *Animals and Their Babies* picture sheets. Tell them to color and cut out all the pictures, then sort them into piles. (They may decide how to sort them.)
2. Allow some students to explain how they sorted the pictures.
3. Tell students they may work with their partners to play a memory game—matching the adult animals with the animal babies. Student pairs will mix up one set of pictures and lay them face down on the floor. One at a time each student will pick 2 pictures. If the pictures match—adult animal to baby animal—the student should keep the 2 pictures and take another turn. If the pictures are not an adult/baby match, the student will turn the pictures back over and let the partner take a turn. The game is over when all pictures have been matched.

EXPLAIN

Ask:

Do animals change as they grow?

How do some animals change as they grow?

Do all animals change in the same ways?

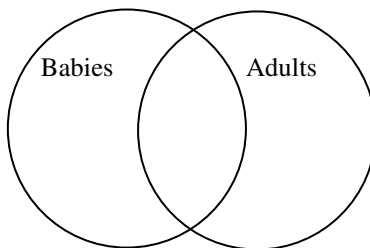
Do you change as you grow?

Do animal babies move like adult animals? If not, what are the differences in movement?

Do animal babies eat the same things as their parents?

EXTEND/APPLY

On the board, draw a Venn Diagram or Double Bubble Map. Ask students to suggest things a baby can do, what an adult can do, and what both can do. Use the headings, *Babies* and *Adults*. Help students think about why animals change as they make their suggestions and discuss them. Put the words in the proper place on the Venn Diagram or Double Bubble Map.



EXPLORE Part 2

Tell the students to sort the pictures into two groups:

- the offspring that look like their parents
- the offspring that do not look like their parents.

EXPLAIN

Ask:

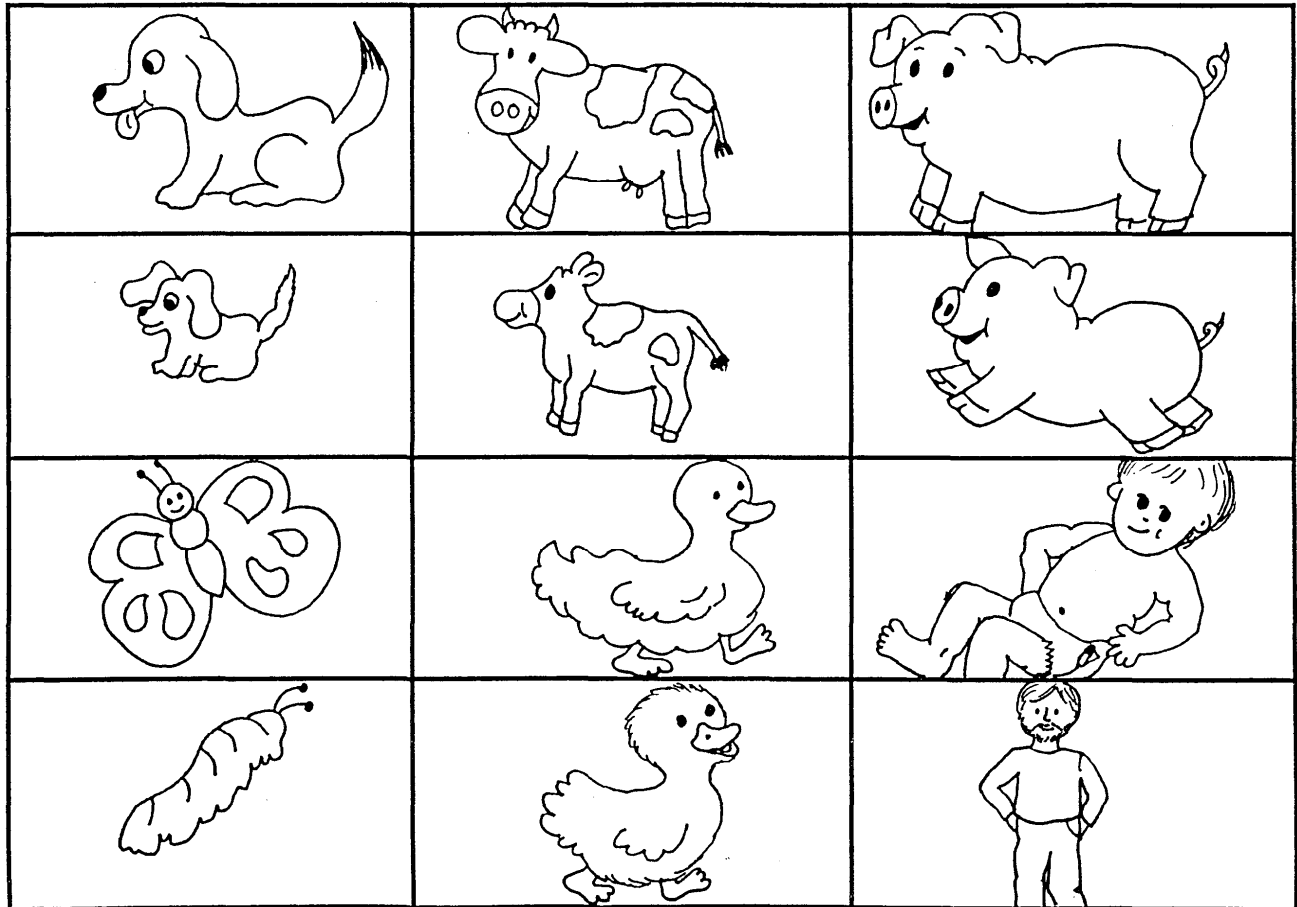
Which offspring look like their parents?

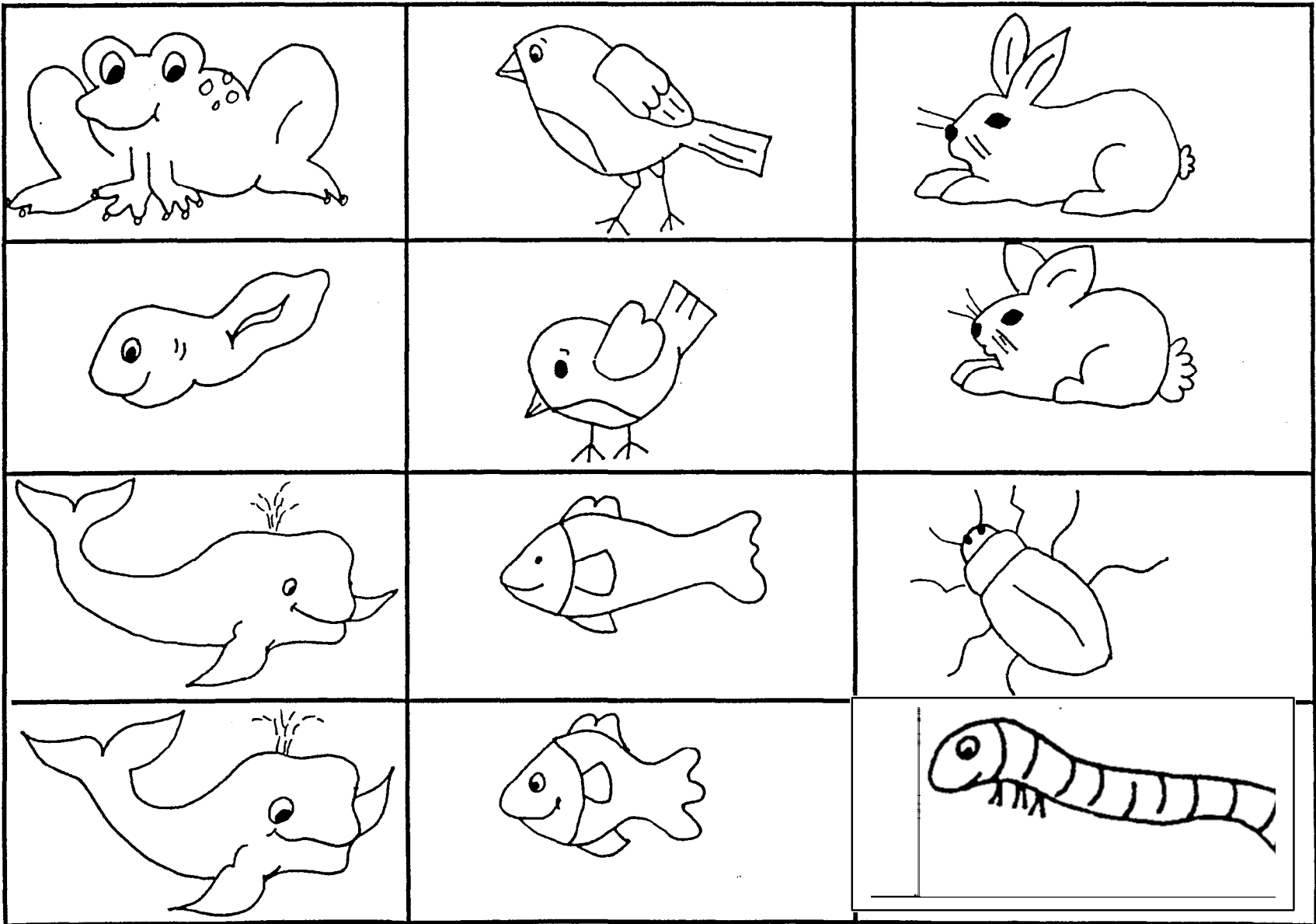
Which offspring do not look like their parents?

Will they ever resemble their parents?

What are some ways you look like your parents?

ANIMALS AND THEIR BABIES





MEET A MEALWORM



BENCHMARKS and TASKS

SC.F.1.1.3 The student describes how organisms change as they grow and mature.

SC.F.2.1.1 The student knows that living things have offspring that resemble their parents.

- The student provides needed food, energy, and water to classroom animals or plants.
- The student observes that classroom organisms have life cycles that include being born, developing into adults, reproducing, and eventually dying.
- The student observes and records that organisms change in some ways and stay the same in some ways as they grow.
- The student recognizes that plants and animals produce offspring with similar characteristics but individual differences (e.g., kittens in a litter may be colored differently).
- The student measures to detect changes in growth of various organisms.

KEY QUESTION

How do mealworms change as they grow?

BACKGROUND INFORMATION

Mealworms are the larva stage of the meal beetle. The larva is brownish-yellow and has 13 segments and 6 legs. Mealworms develop through a complete metamorphosis. The stages are egg, larva, pupa, and adult. Eggs are white spheres too small to be seen even with a hand lens. Newly hatched larvae are almost threadlike, but grow, leaving their old skins behind. Pupae are the resting stage when internal cell changes are taking place. They do not move or eat as pupae. It takes 4 to 8 weeks for the larvae to mature into adult beetles.

Basic food for the mealworms can be uncooked bran, oatmeal, or Cream of Wheat. For moisture, place a slice of raw potato, apple or citrus rind in the container. Replace food as needed. (Potato slices will last a week or more; apple pieces should be replaced more frequently.)

Mealworms can be kept in plastic containers without a lid. They will chew through cardboard boxes. Keep the container out of direct sunlight.

MATERIALS

Teacher

prepared plastic container for mealworms
class chart
daily observation chart

Per student

mealworm journal
magnifier
drawing paper

Per pair of students

mealworm larvae (at least 2)
oatmeal, bran or Cream of Wheat cereal
potato or apple slice
paper towel
cup with their names on it
string
masking tape

TEACHING TIPS

1. Mealworms can be purchased from a science supply house or from certain local pet stores. (They're very inexpensive - about \$1.50 per 100.)
2. You will need to locate or draw a picture of a mealworm egg to show the students, since they will not be able to see this stage. Mealworm eggs are tiny white spheres.
3. Mealworms are living creatures. Children should be taught that all living creatures must be treated with respect. Remind students to handle the mealworms carefully and not to do anything that might injure them.
4. Students will write and draw daily in their mealworm journals their observations of the mealworms including size, color, and shape. Journals can be made from folding half sheets of paper in half and stapling together or they can record in their spiral science journal if they have one.
5. Prepare cups with students' names on them to house their mealworms. Include food and moisture.
6. Prepare a *Daily Observation Chart* (chart paper or transparency) as shown in the **Extend/Apply**.
7. Teacher will need to demonstrate how to carefully measure the mealworm with string.

ENGAGE

1. Display a closed container of mealworms. Ask students to guess what is inside.
2. Open the container and show the mealworms. Ask if anyone knows what kind of animals are in the container.

EXPLORE

1. Distribute mealworms on a paper towel to each pair of students. They will need to watch them closely so that they do not crawl away. Teach them to gently move them with their fingertip if the mealworms get too close to the edge of the paper towel.
2. Give students magnifiers to help them observe the mealworms. Record observations on a class chart.
3. Give each student a mealworm journal. Ask students to draw their mealworms, name them, and record observations.
4. Students should be given time daily to observe the mealworms. Have them continue drawing the mealworms, noting changes in shape, size and color. Students should continue recording observations until the mealworms have completed metamorphosis into a beetle.
5. Have students cut a string once every 3 days to measure the length of their mealworm. Tape or glue the strings in their journals on the measuring days.
6. Have students share each day how many larvae, pupae, and beetles are in their container.
7. At the end of each daily observation, have students place their mealworms in the cup with their names on them.

EXPLAIN

1. Have students report the number of mealworms, pupae, and beetles and record the class total on the *Daily Observation Chart*.
2. Through questioning, develop the concept that mealworms change as they grow. (Children may refer to their journals.)
How did the mealworm look when you first saw it?
What changes did you notice as your mealworm developed?
How many legs does your mealworm have?

*What color is your mealworm?
Did its color change?
Did the size of the strings differ? How?
How much food did your mealworm eat?
Does your mealworm look the same now as when you first saw it?*

EXTEND/APPLY

1. Make a chart of the stages of the mealworm's life by folding a piece of drawing paper into fourths. Label the parts with teacher direction.
2. Write a class poem about mealworms.

EXTENSIONS

Students can make models of the stages of mealworms using clay. Encourage them to make careful observations first so their models will be accurate.

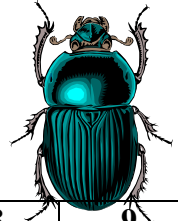
ASSESSMENT

Have students write or tell two true statements from the *Daily Observation Chart*.



DAILY OBSERVATION CHART

(Number of living organisms each day)



	1	2	3	4	5	6	7	8	9
Larvae									
Pupae									
Beetle									
	10	11	12	13	14	15	16	17	18
Larvae									
Pupae									
Beetle									
	19	20	21	22	23	24	25	26	27
Larvae									
Pupae									
Beetle									
	28	29	30	31	32	33	34	35	36
Larvae									
Pupae									
Beetle									

SNAIL TRAIL



BENCHMARKS and TASKS

SC.F.1.1.3 The student describes how organisms change as they grow and mature.

SC.F.2.1.1 The student knows that living things have offspring that resembles their parents.

- The student provides needed food, energy, and water to classroom animals or plants.
- The student observes that classroom organisms have life cycles that include being born, developing into adults, reproducing, and eventually dying.
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- The student recognizes that plants and animals produce offspring with similar characteristics but individual differences (e.g., kittens in a litter may be colored differently).
- The student measures to detect changes in growth of various organisms.

KEY QUESTION

How do snails grow and change?

BACKGROUND INFORMATION

There are 80,000 kinds of snails. They range in size from 2 mm to 61 cm and live from two to twenty years. Snails are invertebrates (no backbone). Their body is soft and covered by a coiled shell. The body parts include a head with eyes, tentacles, a mouth, and tiny teeth that are attached to their tongue. It has a strong muscular organ (foot) with tiny glands that leaves a slimy trail that the foot slides across. Most snails have lungs. Snails have no sense of hearing. A snail has a radula, a tooth like tongue. Snails are mollusks (shelled animals). Some other mollusks are clams and squids. Snails need a moist environment. If it is too hot and dry, a snail will seal itself in its shell. Snails use their teeth to shred their food into small pieces. They eat rotting vegetation and plants, usually eating late in the evening or at night.

MATERIALS

Teacher

transparent container with mesh lid
snails (one per student - extra snails are needed in case some of the snails are sluggish)
shallow water dish
sticks and twigs
leaves
lettuce
mister
shallow pan
white paper
chart paper
markers
The Snail's Spell by Joanne Ryder
chalk or eggshells

Per pair of students

one snail
clear plastic cup
wet paper towel
dry paper towel
metric ruler
few small objects (e.g., pencil, Unifix cube, crayon, crinkled paper)

Per group

balance
overhead acetate sheets
Teddy bear counters, paper clips, or gram weights

Per student

science journal for recording observations
magnifier

TEACHING TIPS

1. Store all snails in teacher's transparent container with mesh lid (nylon stockings may be used). An aquarium w/fine screening as a lid works well. They will get out if not enclosed.
2. Remind students that the shells are fragile and they need to be careful not to squeeze the snails. Newly hatched snails are **extremely** fragile.
3. Keep a piece of chalk or eggshells in the habitat to provide calcium for their shells.
4. Students must wash their hands after handling the snails.
5. Snails love to eat lettuce or carrots (keep fresh).
6. Snails will chew through paper.
7. Prepare plastic cups with student names.

ENGAGE

1. Read the book, *The Snail's Spell*, by Joanne Ryder.
2. Read the poem, *Snail Trail* (see attached).
3. Make a circle map or KWL chart. Record everything students know about snails.
4. Have students draw a picture in their journal of what they think a snail looks like. Tell them to include as many details as possible.

EXPLORE Part 1

1. Place a snail in a small plastic cup and give to each pair of students. Give them ample time to observe and interact with their new "pet".
2. Provide magnifiers for the students to "get up close and personal". Have them draw a picture of their snail in their journal. Discuss how the two pictures they have drawn are alike and different.
3. Discuss the parts of the snail.
4. Have students observe the underside of a snail by placing their snail on a piece of transparency film and looking under the film. Have students illustrate their observations.

EXPLAIN

1. Discuss the physical features of the snail.
2. Refer to circle map or chart to see if changes or additions need to be made.

Ask:

How was the real snail different from your first drawing?

What are the parts of a snail?

What does the snail eat?

EXPLORE Part 2

1. Provide metric rulers for the students to measure the height and length of their snail.
2. Using small paper clips, Teddy bear counters, or gram weights, have students find the mass of their snails using a balance.
3. Record the length, height, and mass in a journal.
4. Observe the movements of snails and discuss the slime trail.

EXPLAIN

1. List on a class chart the measurements of each snail and compare.

Ask:

Are all the snails the same height?

Are all the snails the same weight?

Are all the snails the same length?

2. Discuss how snails move.

How does the snail move from place to place?

What did you observe on the transparency film as the snail moved?

Why does the snail leave a slime trail?

Is there a pattern as the snail moves?

EXPLORE Part 3

1. Each pair of students will receive one wet and one dry paper towel. Students observe and compare movement of their snail when placed on each surface.
2. Place wet paper towel touching dry paper towel. Observe which path the snail will travel when placed in the middle of touching towels. Repeat this activity several times to see if the snail behaves the same each time.
3. Place small objects as obstacles for the snails. Observe what happens.
4. Students will need to observe the snails in the snail habitat over several weeks.
5. In journal, students record the date when eggs appear and when they hatch.
6. Over the next few weeks, students observe and compare new snails to their adult parents.
7. Separate several “hatchlings” after one week and move into a separate container with a covering.
8. Have students compare and contrast mature hatchlings to original adult snails.

EXPLAIN

1. Discuss what happened when the snail was placed on the wet paper towel. Discuss what happened when the snail was placed on the dry paper towel. Compare.

Ask:

Does the snail move faster on the wet paper towel or the dry paper towel?

Is the pattern of movement different on the two paper towels?

2. Discuss what the snail does when given a choice to travel on a wet or on a dry paper towel.

Ask:

Does the snail appear to prefer one paper towel to the other? Why?

3. Discuss what happens when obstacles are placed in the path of the snails.

Ask:

Does the snail go around any of the obstacles?

Does the snail go over any of the obstacles?

Does the snail change direction?

Does the snail stop moving?

Does the snail try to go under any of the obstacles?

4. Compare and discuss newly hatched snails with their adult parent.

Ask:

Do the baby snails look like their parents?

How are they the same?

How are they different?

How do the newly hatched snails change as they grow?

5. Have students draw/write what they now know about snails in their journals.
6. Revisit the KWL chart. Ask students what they have learned about snails. Record responses.

EXTEND/APPLY

1. The students will write a story about the life of a snail.
2. Write a class poem about a snail.
3. Make a wet trail on a dry paper towel. Place snail on paper towel close to but not on the trail and observe what happens.

EXTENSION

Give the students several different small objects (e.g., paper rings, paper cup with a small door cut out of lip of cup, pencils, crayons, craft sticks) to make an obstacle course for their snail. Allow time for students to alter their obstacle course. Observe the snail's movement when placed before the objects.

ASSESSMENT

Evaluation of journal entries and observation of activities.

SNAIL TRAIL

How do you move my little friend?
With a trail behind that has no end?
Slow, slow, slow,
But steadily you go.
You eat the plants all around,
With teeth on your tongue they are finely ground.
Chew, chew, chew
Is what you do.
Keeping wet is how you must be,
Or sealed up in your shell no more will we see.
The years of your life are two to twenty,
And watching you grow is oh so funny.
Grow, grow, grow,
What a fun show!

by *Diane E. Billen*

