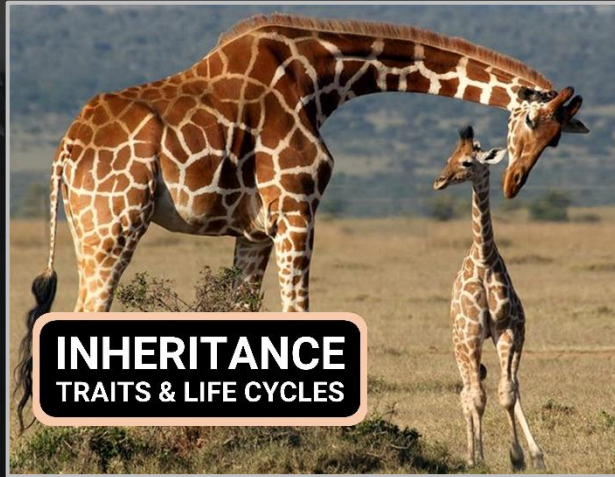


TEACHING POWERPOINT



8 IN-DEPTH TOPICS

- Life Cycles of Organisms
- Patterns in Life cycles
- Plant Reproduction
- Animal Reproduction
- Inherited Traits
- Variations of Traits
- Patterns of Traits
- Traits Influenced by Environment



EACH LESSON INCLUDES:

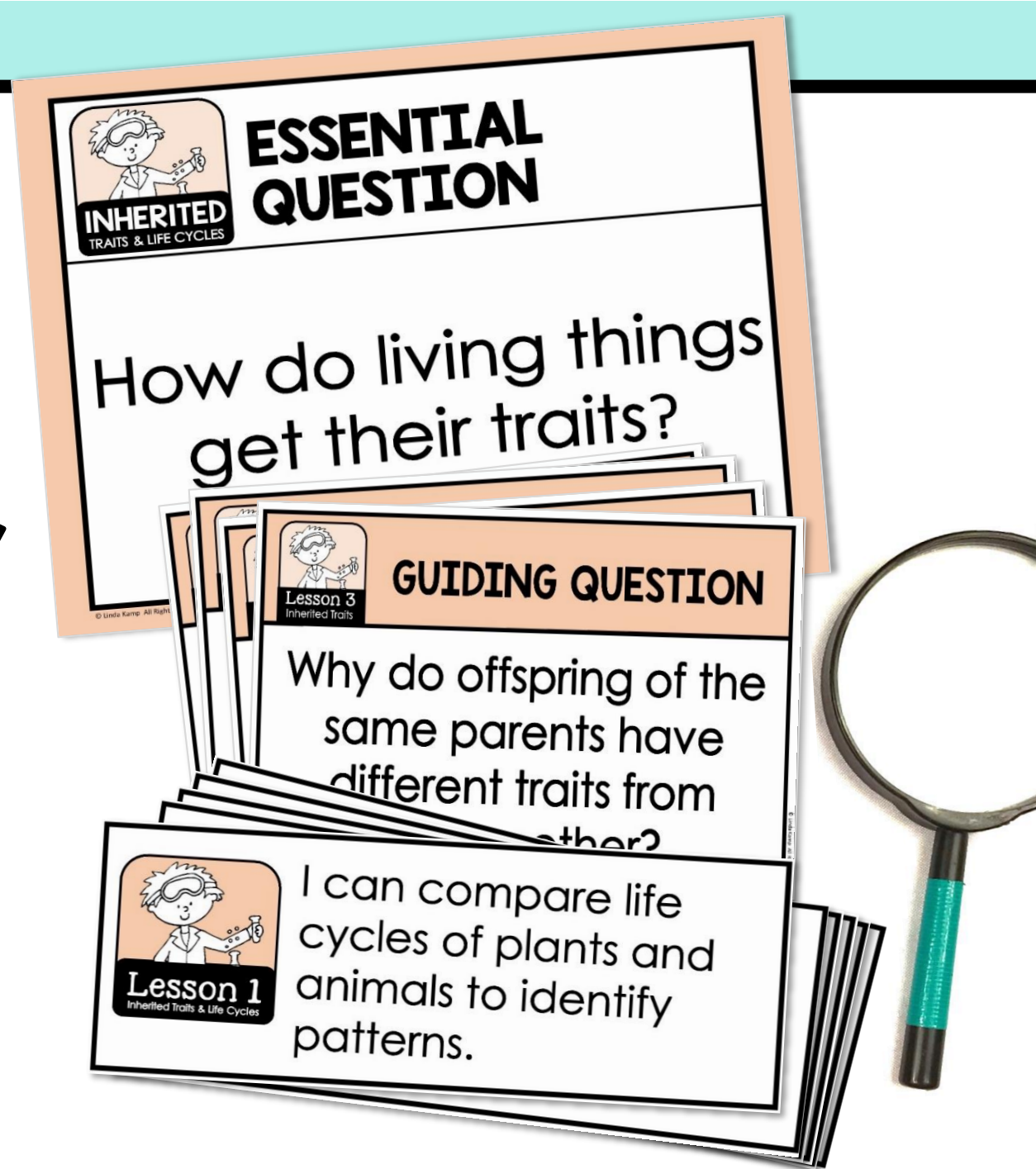
- Detailed, scripted lesson plan
- Interactive lesson slides
- Science journal activity
- Lab investigations
- Lesson quizzes in 2 formats
- Vocabulary posters
- Turn & talk partner questions
- Embedded videos
- Science center activity

The collage features several educational components:

- Lesson 1: Quick Check** - A worksheet with a name field and a table for recording observations of living things.
- Inherited Traits & Life Cycles Videos** - A section with Lesson 3 and Lesson 4, including a video of students and a diagram of a life cycle.
- Investigation: Investigate Inherited Traits** - A detailed lesson plan with a TEACHER GUIDE, objectives, materials, and a procedure for observing traits in a group of cats.
- Activity 2.2: PARENTS & OFFSPRING** - A worksheet with a photo of a dog and instructions to color and label traits in parents and offspring.
- Interactive Parents and Offspring Traits 1** - A table with columns for Parents, Offspring, and Similar Trait, accompanied by illustrations of various animals.
- Activity 2.1: OBSERVING TRAITS** - A lab activity using green onions or scallions to observe and record traits.
- Physical Traits** - A text-based activity about kittens, explaining that they have similar features because they inherit traits from their parents.
- Vocabulary** - A poster with the words 'traits', 'inherit', and 'observe' and a photo of horses.
- ESSENTIAL QUESTION** - A poster asking 'How do forces on an object cause motion?' with a list of three points and a photo of laboratory glassware.
- Lesson 2: TALK ABOUT IT** - A partner activity where students compare parents and offspring, featuring images of a tapir, swan, elephant, and frog.
- Lesson 2: INVESTIGATE** - A journal activity asking 'What patterns of traits can you observe in a group of animals?' with a photo of cats and a data table.
- Lesson 2: JOURNAL** - A journal prompt 'Write About It' for completing Lesson 2 in a science journal, featuring a cartoon scientist.
- Lesson 3: I can identify forces acting on an object** - A learning objective card with a cartoon girl.
- Lesson 4: I can write a scientific explanation of how forces act on objects** - A learning objective card with a cartoon girl.
- Lesson 2: Inherited Traits** - A large photo of a brown horse and her foal in a field.

SAMPLE LESSON

Aligned to
Next Generation
Science Standards,
TEKS
and
Common Core
State Standards
for 3rd Grade



STANDARDS-ALIGNED

TEACHER GUIDE

- Scripted lesson plans
- Standards & objectives
- Performance tasks
- Teacher instructions
- Management tips
- Lab procedures & photos
- Extension activities
- Assessments

Binder Spine & Divider Tab Options

Lesson Plans | Journal

Investigations | Centers

Assessments | Answer Keys

GRADE 3

INHERITED TRAITS & LIFE CYCLES

Name: _____ **ANSWER KEY** Lesson 3: Quick Check

Answer the questions in complete sentences.

What causes variation in animals from the same parents?
Sample answer: Living things inherit traits from both parents. Each animal will then have a combination of traits that are similar but not exactly like its siblings.

In what ways can organisms within a species vary?
Sample answer: Organisms vary in the same way as their parents. They inherit traits from both parents.

Investigation

Lesson 2: Investigate Inherited Traits

QUESTION: What inherited traits can you observe in a group of animals?

OBJECTIVE: Students will use photos to gather data about the traits of a group of cats. Students will compare animal offspring to their parents.

MATERIALS:
 Prep per group:
 -Lesson 2 Investigation slide or picture cards
 -Student recording page

Inherited Traits & Life Cycles

Name: _____ **Answer Key**

UNIT TEST

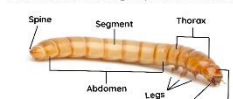

Vocabulary Match

Write the letter to match each word with its definition.

organism C A. the process where a living thing makes more of its species
 traits E B. the children of animal parents
 offspring B C. a living thing
 inherit F D. a difference in offspring with the same parent

TENEBRIO FACTS

Life cycle timeline: The Tenebrio life cycle can take 30-90 days depending on the age of the larvae when you purchase them.

Activity 1.1

Materials:
 mealworm larvae
 oatmeal
 plastic container
 hand lens
 observation journal

Lesson 2: Inherited Traits

Day 5: LESSON 2 INVESTIGATION: Investigate Inherited Traits

OBJECTIVE: Students will create a table to gather and analyze data about the traits of a group of related animals.

1. Project the Lesson 2 Investigate slide.
 2. Introduce the lab by telling students that they will be comparing life cycles by making models of two life cycles. Ask, "Who can explain what a model is?" Add to students' responses by explaining that a model can take many different forms. A model can be a drawing, a diagram, a clay or paper or plastic object built to explain.

Inherited Traits & Life Cycles

Lesson 1: Life Cycles of Organisms

OBJECTIVE: Students will compare life cycles of plants and animals to identify patterns.

GUIDING QUESTION: How are organisms similar and different?

VOCABULARY: organism, reproduce, pattern, diverse, life cycle, offspring

Day 1

KEY CONCEPT: Life cycles follow the same basic pattern of birth, growth, reproduction, and death, no matter what the organism is.

PROCEDURE:

1. Set the purpose for the lesson by introducing the learning target and guiding question.
2. Tell students, "There are millions of different kinds of organisms on Earth, and while each one is very different, they all have one thing in common. Their life cycles all follow the same pattern. Today we'll learn more about the pattern that all living things go through during their lives."
3. Project the Patterns Within Life Cycles slide. Side the Patterns Within Life Cycles slide. Side the sentence stems to distribute to each student in a separate envelope or paper bag.
4. Read the lesson and have students pause to think and discuss the photos. Pause after slide 18 (the sunflower life cycle diagram).
5. Watch the plant life cycle videos. Students will have formed about a plant's life cycle. Have students share their ideas of growth rather than death. You may want to have students compare an organism's life cycle to the life cycle of a butterfly. (Ex. begin with an egg, it grows, it has a pupa stage, it goes through a metamorphosis etc.)

OBSERVE THE TENEBRIO LIFE CYCLE

Activity 1.1

Objective: Students will observe the darkling beetle life cycle and compare it to a similar life cycle of another organism.

Organisms

TEACHER GUIDE

CYCLES

Life cycles of plants and animals.

Slide 30, discuss to students why.

Slide 44. Ask students, "Is take for each of these?"

Slides 45 and 46.

Watch the video.

Project the lesson slide of its life cycle.

Complete the

Compare Models of Life Cycles

Inherited Traits & Life Cycles

Unit Overview

KEY CONCEPTS:

- Life cycles follow the same basic pattern of birth, no matter what the organism is.
- Many characteristics of organisms are inherited from their parents, or among siblings.
- Traits vary within a species.
- Organisms have some traits we can't see.
- Patterns are the similarities and differences in the traits of organisms.
- Traits can be influenced by inheritance, environment.
- Some traits, like injuries, are determined by an organism.

In this unit, students investigate a variety of plant and animal life cycles.

Inherited Traits & Life Cycles

Unit Pacing

Day	Lesson
1	Lesson 1.1 Life Cycles of Organisms
2	Lesson 1.2 Animal Reproduction
3	Activity 1.1 Observe the Darkling Beetle Life Cycle
4	Lesson 1.3 Patterns Within Life Cycles
5	Lesson 1 Lab: Compare Models of Life Cycles


Next Generation Science Standards Alignment

Lesson 1: 3-LS1-4: Develop models to describe that organisms have unique and diverse life cycles, but all have in common birth, growth, reproduction, and death. SEP 2: Developing and Using Models: Develop models to describe phenomena.

Lesson 2: 3-LS3-1: Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of those traits exists in a group of similar organisms. SEP 4: Analyzing and Interpreting Data: Students analyze and interpret data from an investigation to provide evidence. DCI.LS3.A: Inheritance of Traits: Many characteristics of organisms are inherited from their parents. DCI.LS3.B: Variation of Traits: Different organisms vary in how they look and function because they have inherited different information.

Inherited Traits & Life Cycles

Related Book List



Inherited Traits & Life Cycles

Videos

Lesson 3: THE PERILS OF A VIRTUAL CLASSROOM

Lesson 4: VARIATION OF TRAITS | THE PARK | https://www.youtube.com/watch?v=7rsk41_21tE

Lesson 3: VARIATION OF TRAITS - GENERATION GENIUS | https://www.generationgenius.com/10best/10best/variation-of-traits-video-for-kids/

Unit Materials


The following materials are needed to do all of the labs. Please see the teacher directions page for each lab activity and investigation as some of the materials are optional or can be replaced with items you may already have.

index cards	For Raising Tenebrions: mealworm larvae
hole punch	oatmeal
yarn	apple slices
celery stalks	scallops (green onions)
celery stalks (green onions)	hand lenses
1 live rose or other fragrant flower (optional)	paper plates
plastic spoons	plastic spoons
hand lenses	rulers
plastic cups	plastic containers

21-Day Pacing Guide


DETAILED LESSON PLANS

INTERACTIVE DIAGRAM SLIDES


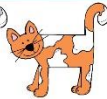







Interactive Trait Variation

Trait	Fur Pattern	Nose Color	Tail Color	Ear Color
Variation				


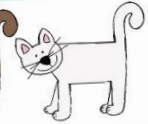

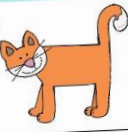







Interactive Parents and Offspring Traits 1


Parents	 	 	 
Offspring			




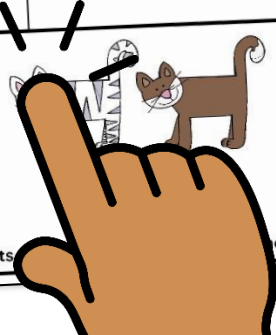
Interactive Parents and Offspring Traits 2 EXAMPLE


Parents	 	 	 
Offspring			
Similar Trait	black nose	pink nose spots	tan fur


orange fur











Directions: Choose one offspring that is likely to have come from each set of parents

The diagram slides are initially used during the lesson to explain inheritance, variations, and patterns within groups by sliding animals and traits to match possible offspring with each set of parents.

Students can practice further by uploading the slides onto their devices or desktop.

HIGH-ENGAGEMENT LABS

Students work with partners to discuss, write and investigate.

Meet a Wildlife Ecologist



Hello!
My name is Dr. Rae Wynn-Grant. I am a wildlife ecologist and conservation scientist. I work with the National Geographic Society to study black bears and how they are affected by changes in their environment. I'm currently investigating how pollution in an environment affects the organisms that live there.

Watch a Video:
Tracking Black Bears: Exploring with GIS



LESSON 4 TALK ABOUT IT

Environmental Factors



Recall and tell your partner things in the environment that can affect an organism's traits.

How would your pet dog be affected if it



Activity 2.1

OBSERVING TRAITS

MATERIALS:
1 green onion or scallion
Activity recording sheet



LESSON 2 RESEARCH

How are traits inherited?

Choose a research project

- Research how traits are passed from animal parents to their offspring
- Research how traits are passed from plant parents to their offspring.



LESSON 4 RESEARCH

Environmental Effects

Choose a research project

- Research plant and animal traits that can be affected by environment.
- Create an informative writing piece about traits of plants or animals that could be affected by



Interactive Trait Variation

Trait	Fur Pattern	Nose Color	Tail Color	Ear Color
Variation				



Activity 2.2

PARENTS & OFFSPRING

1. Color each parent to show some traits. Label the traits in your drawing.
2. Color the offspring to show a trait it inherited.
3. Explain the trait the offspring inherited, and from which parent, to a partner.



LESSON 4 INVESTIGATE 1

The Celery Experiment

QUESTION:
How does the environment affect inherited traits?

Design a test to investigate how environment affects traits.



LESSON 3 INVESTIGATE

Variations of Traits

QUESTION: What variations might their offspring have?



LESSON 4 INVESTIGATE 2

Pollution Simulation

QUESTION: How does pollution in an environment affect organisms that live there?

Use dry active yeast to investigate the effect of pollution on an organism.



LESSON 2 INVESTIGATE

Patterns of Traits in a Group

QUESTION: What patterns of traits can you observe in a group of animals?

Decide which traits you want to observe. Make a chart to collect and analyze data about a group of kittens.

Write a scientific explanation of your



LESSON 1 INVESTIGATE

Compare Models of Life Cycles

QUESTION: How are all life cycles alike and different?

Make a model that shows how a plant life cycle, and an animal life cycle, are alike and different.



Activity 1.1

OBSERVE THE DARKLING BEETLE (TENEBRIO) LIFE CYCLE

MATERIALS:
Mealworm larvae
Observation journal

1. Obtain information about the life cycle of Tenebrio by watching a video.
2. Prepare a habitat for your mealworm larvae.
3. Observe and record changes during each stage of the organism's life cycle.



6 HANDS-ON INVESTIGATIONS

STUDENTS EXPLORE:

- Traits of organisms
- The Tenebrio life cycle
- Inherited traits in offspring
- Variations of traits
- Variations within groups
- Effects of environment on an organism

The collage displays various educational materials for six hands-on investigations:

- Investigation 4: The Celery Experiment** (Lesson 4): Includes a teacher guide with a question about environmental effects on inherited traits, an objective about diet, and materials like celery and water.
- Investigation 2: Picture Cards**: Features a photo of a mother cat and a 'Mother cat' label.
- Investigation 4: Pollution Simulation** (Guided Lab Directions): Includes a note about yeast packets and photos of control and experiment beakers.
- Investigation 3: Creature Offspring Models** (Guided Lab Directions): Shows a parent-offspring trait chart and a 'CREATURE OFFSPRING' activity sheet.
- Investigation 3: Creature Offspring Models** (Lesson 3): Includes a teacher guide with a question about offspring traits, an objective about modeling, and materials like Play-Doh.
- Investigation 3: Creature Offspring Models** (Activity 2.1): Shows a magnifying glass over a plant and a recording sheet titled 'How can we describe traits?'.
- Investigation 2: Investigate Inherited Traits** (Lesson 2): Includes a teacher guide with a question about inherited traits, an objective about photos, and materials like a mother cat photo and offspring photos.
- Investigation 2: Investigate Inherited Traits** (Activity 1.1): Titled 'OBSERVE THE TENEBRIO LIFE CYCLE', it includes an objective about observing beetle life cycles, materials like mealworm larvae, and a photo of a beetle.

LESSON RESPONSE JOURNAL

WORKBOOK INCLUDES:

- Applying vocabulary
- Writing to explain
- Labeling diagrams
- Comparing traits
- Interpreting data

Lesson 2 Inherited Traits

How do organisms get their traits?

A grey female rabbit and a white male rabbit produce the offspring shown in the table.

Rabbits	
Color of fur	Number of offspring
grey	8
white	0
grey and white	0

Write two sentences that best describe the offspring.

A. All offspring inherited fur color from the female parent.
 B. The offspring all inherited fur color from the male parent.
 C. None of the offspring inherited both fur colors.
 D. The offspring inherited fur color equally from both parents.

INHERITED TRAITS

SCIENCE JOURNAL

NAME _____

Lesson 4 Traits and Environment

What does inherit mean?

These gourds came from the same plant. Mark an X to show the variations.

Why do living things reproduce?

Compare the sunflower life cycle to the frog life cycle. Think about how each begin their life. Describe how they are similar and different.

Why do cactuses have different shapes? Branches did not get enough sunlight. shape from one parent. size of them get influences their shape. color of fur color equally from both parents.

What affect the height of a tree?

Lesson 1 Life Cycles of Organisms

What is an organism?

What pattern does every living thing go through? Write them in order.

True or False?

Write T if the statement is true and F if it is false.

A life cycle is a series of changes all living things go through before they are born.

Unit Vocabulary

organism, diverse, life cycle, reproduce, offspring, pattern, traits

obvarious, ins, sp, en, in

Write new vocabulary

Lesson 2 Inherited Traits

How do organisms get their traits?

A grey female rabbit and a white male rabbit produce the offspring shown in the table.

Rabbits	
Color of fur	Number of offspring
grey	8
white	0
grey and white	0

Circle two sentences that best describe the offspring.

A. The offspring all inherited fur color from the female parent.
 B. The offspring all inherited fur color from the male parent.
 C. None of the offspring inherited both fur colors.

Lesson 3 Forces and Motion

What is a contact force?

Mark an X to show the forces acting on the baseball.

gravity spring force
 friction magnetic force
 contact force electric force

Why will the baseball eventually fall to the ground?

What are some examples of non-contact forces?

Lesson 3 Variation of Traits

What is variation?

What causes variation?

What are some variations you might see in a group of puppies?

Circle the sentences that describe the variations in these plants.

A. The centers in each plant are different colors.
 B. The plants are all the same height.
 C. Some of the flowers have more petals than others.

Organisms have observable traits. Give an example of a trait you can observe with each of these senses.

hearing	
sight	
smell	

What is a trait all birds have? _____
 What is a trait all dolphins have? _____
 What is a trait all trees have? _____

True or False?

Write T for true and F for false.

_____ A trait is how a living thing looks and acts.
 _____ Organisms inherit traits from one parent.
 _____ Apples inherit their taste from the mother tree.
 _____ Offspring don't always look like their parents.
 _____ Organisms have traits that are similar to their parents' traits.

LITERACY-BASED SCIENCE CENTERS



Integrate science in your literacy centers

Use them as lesson extensions or for early finishers



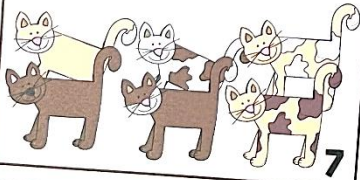
INHERITED TRAITS

SCIENCE CENTERS



NAME _____

What fraction describes the number of cats with spots?



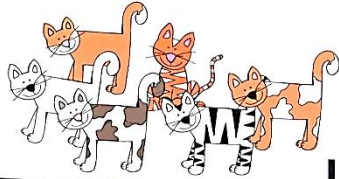
7

MATH & SCIENCE SOLVE ITS

MATH & SCIENCE SOLVE-IT

1	2	3
4		
7		

What fraction describes the cats with orange fur?



1

Practice MATH & LITERACY SKILLS

Reinforce SCIENCE CONTENT

INHERITED TRAITS

SCIENCE CENTERS



NAME _____

INHERITED OR ENVIRONMENTAL?



INHERITED OR ENVIRONMENTAL?

Write I if the trait is inherited
Write E if the trait is caused by the environment.

1	2	3
4		
7		
10		



Inherited **TRAIT**

TRAIT
Influenced by Environment



Centers included in color and black & white

LESSON SUPPORT

Vocabulary cards



Variation

inherit

traits

physical characteristics
passed down by parents

Lesson 1

**ESSENTIAL
QUESTION**



How do living things
get their traits?

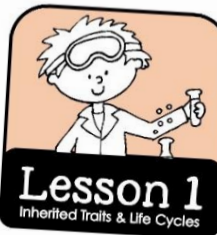
GUIDING QUESTION



Why do offspring of the
same parents have
different traits from
one another?

Focus Wall Cards

I can compare life
cycles of plants and
animals to identify
patterns.



Objectives Cards

variation



instinct



observe



influence



instinct



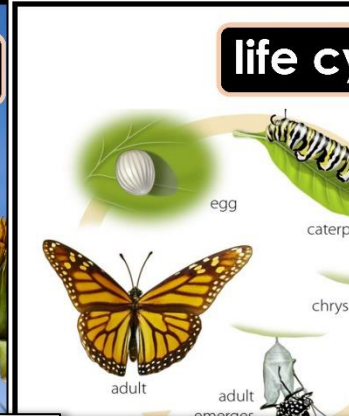
environment



pattern



life cycle



diverse



reproduce



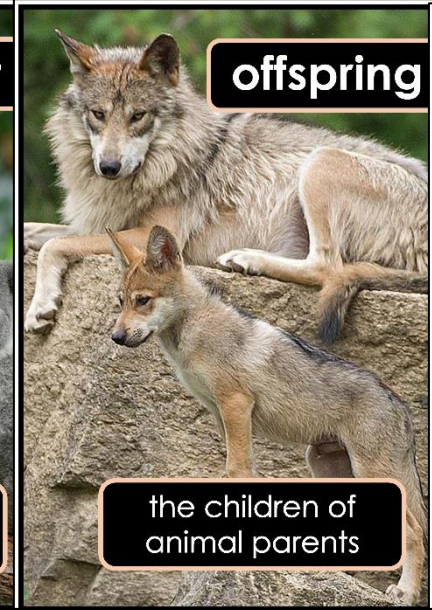
the process where a living thing makes more of its species

inherit



to receive a trait from a parent

offspring



the children of animal parents

traits



physical characteristics passed down by parents

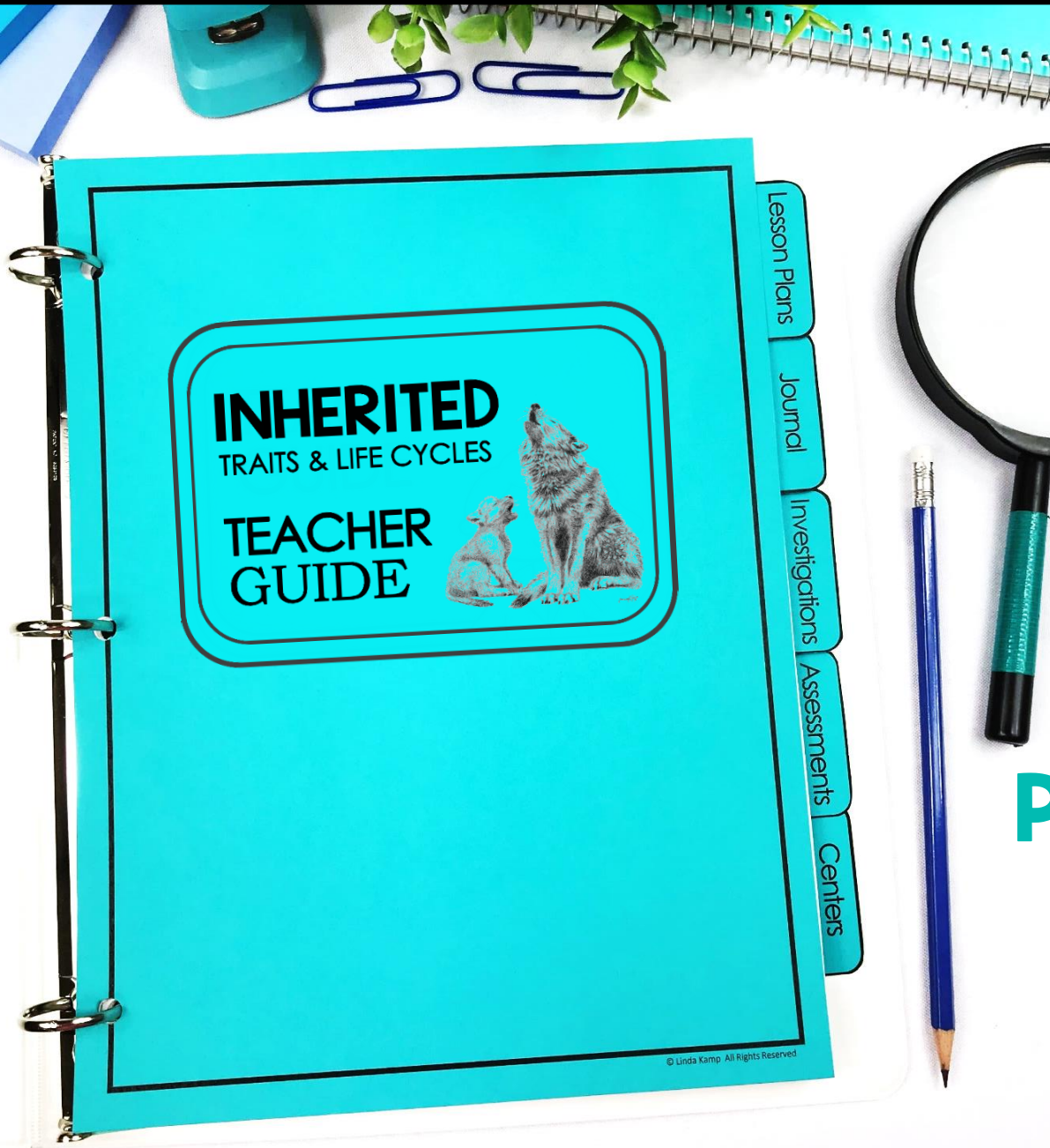
organism



a living thing

Full Page Vocabulary Posters

UNIT PLANNING BINDER



Organize your unit
in a handy
planning binder

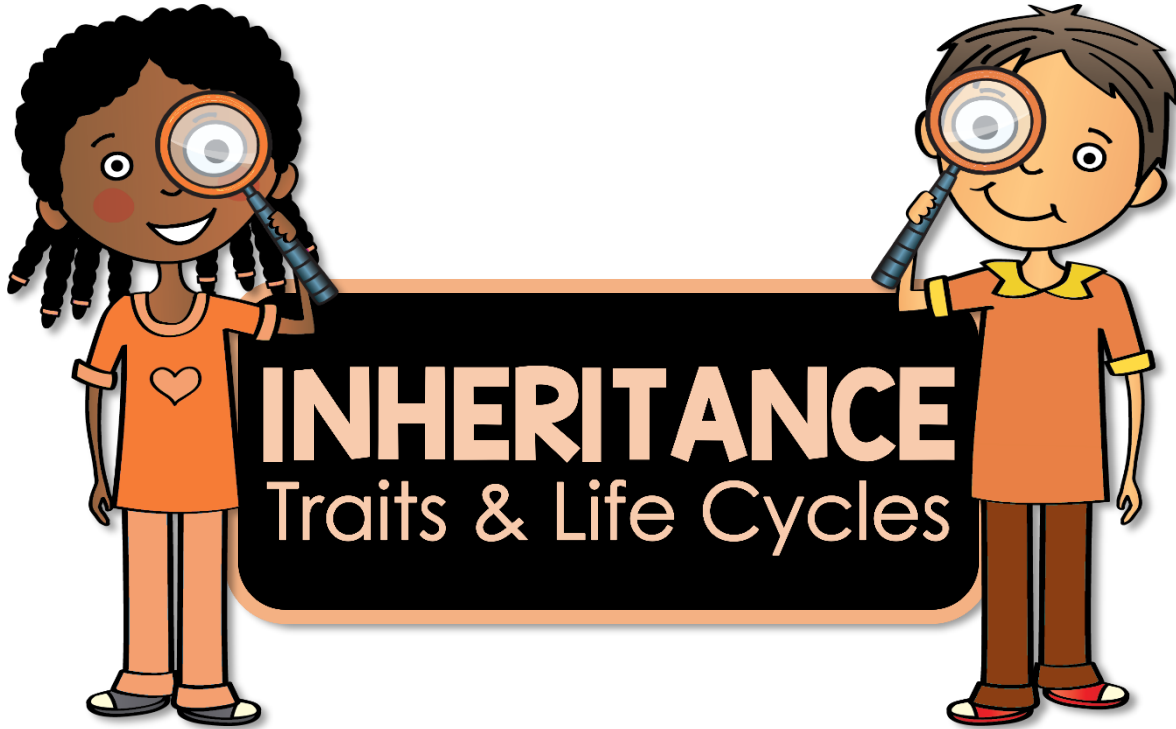
Binder includes:

- cover & spines
- section dividers
- divider tabs

PLAN-TEACH-ASSESS

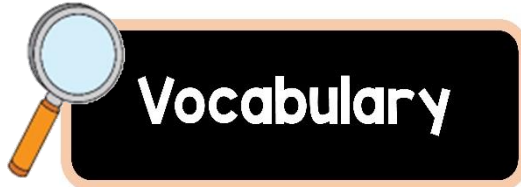
an in-depth,
effective, and
highly engaging unit

BONUS Bulletin Board Elements



CREATE A SCIENCE FOCUS WALL

Display your
learning targets,
guiding questions,
and vocabulary
posters



INHERITED Traits & Life Cycles

GRADE
3



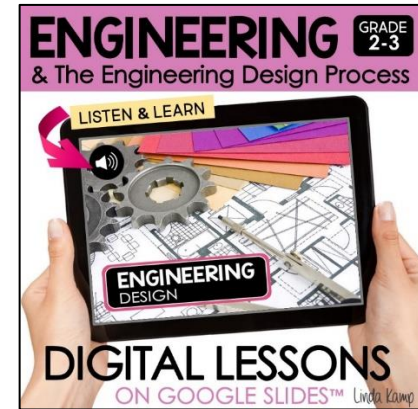
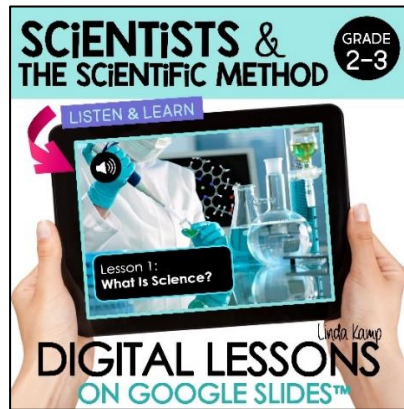
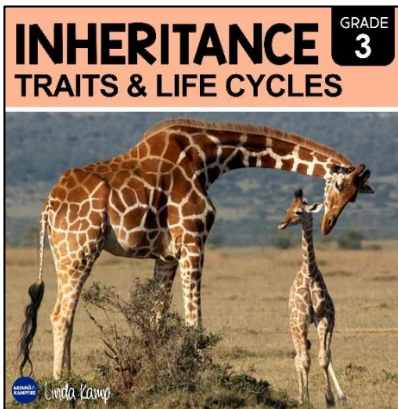
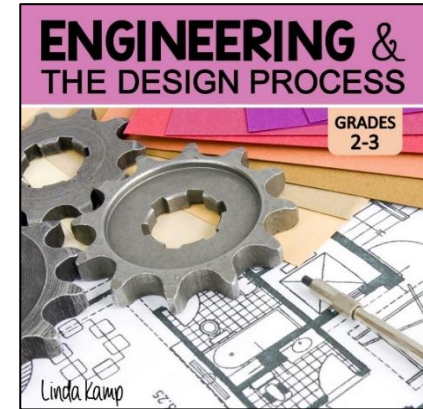
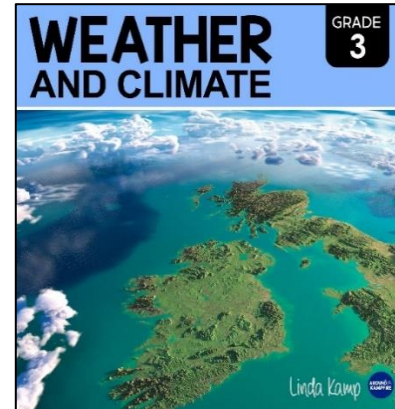
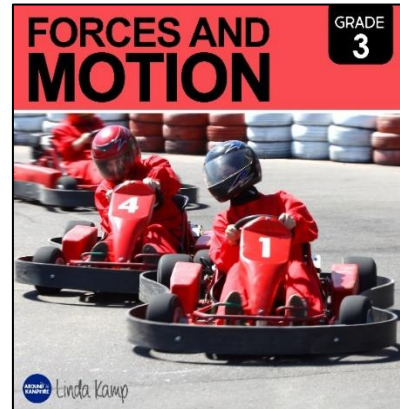
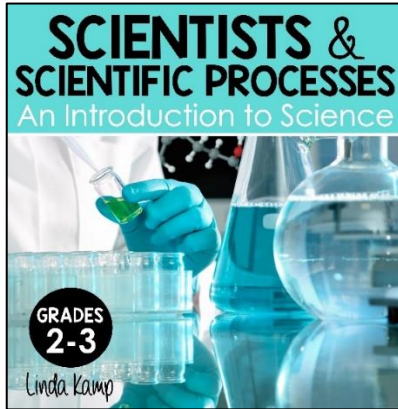
STUDENTS GAIN AN UNDERSTANDING OF:

- How organisms get their traits
- Identifying variations in offspring
- Identifying patterns
- Collecting & analyzing data
- Organizing data in tables
- Planning & carrying out investigations
- Building models
- Drawing diagrams
- Writing a scientific explanation



Additional Third Grade Units

[CLICK HERE](#) to see them all!



Third Grade Science Curriculum