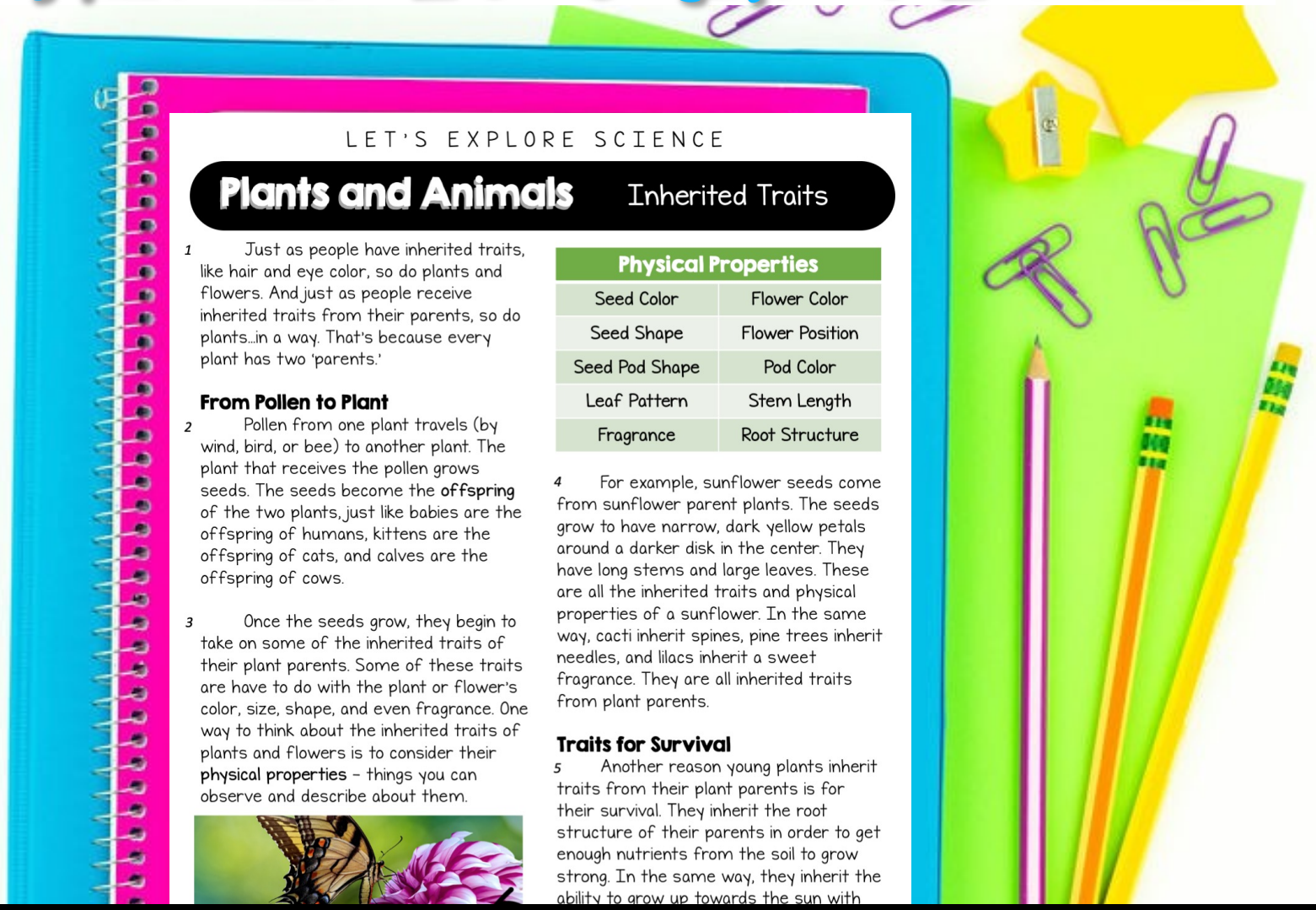
Supports science, reading, writing, and vocabulary!

SCIENCE PASSAGES

6 HEREDITY ARTICLES



LET'S EXPLORE SCIENCE

Plants and Animals — Inherited Traits

1 Just as people have inherited traits, like hair and eye color, so do plants and flowers. And just as people receive inherited traits from their parents, so do plants...in a way. That's because every plant has two 'parents.'

From Pollen to Plant

2 Pollen from one plant travels (by wind, bird, or bee) to another plant. The plant that receives the pollen grows seeds. The seeds become the **offspring** of the two plants, just like babies are the offspring of humans, kittens are the offspring of cats, and calves are the offspring of cows.

3 Once the seeds grow, they begin to take on some of the inherited traits of their plant parents. Some of these traits are have to do with the plant or flower's color, size, shape, and even fragrance. One way to think about the inherited traits of plants and flowers is to consider their **physical properties** – things you can observe and describe about them.

Physical Properties	
Seed Color	Flower Color
Seed Shape	Flower Position
Seed Pod Shape	Pod Color
Leaf Pattern	Stem Length
Fragrance	Root Structure

4 For example, sunflower seeds come from sunflower parent plants. The seeds grow to have narrow, dark yellow petals around a darker disk in the center. They have long stems and large leaves. These are all the inherited traits and physical properties of a sunflower. In the same way, cacti inherit spines, pine trees inherit needles, and lilacs inherit a sweet fragrance. They are all inherited traits from plant parents.

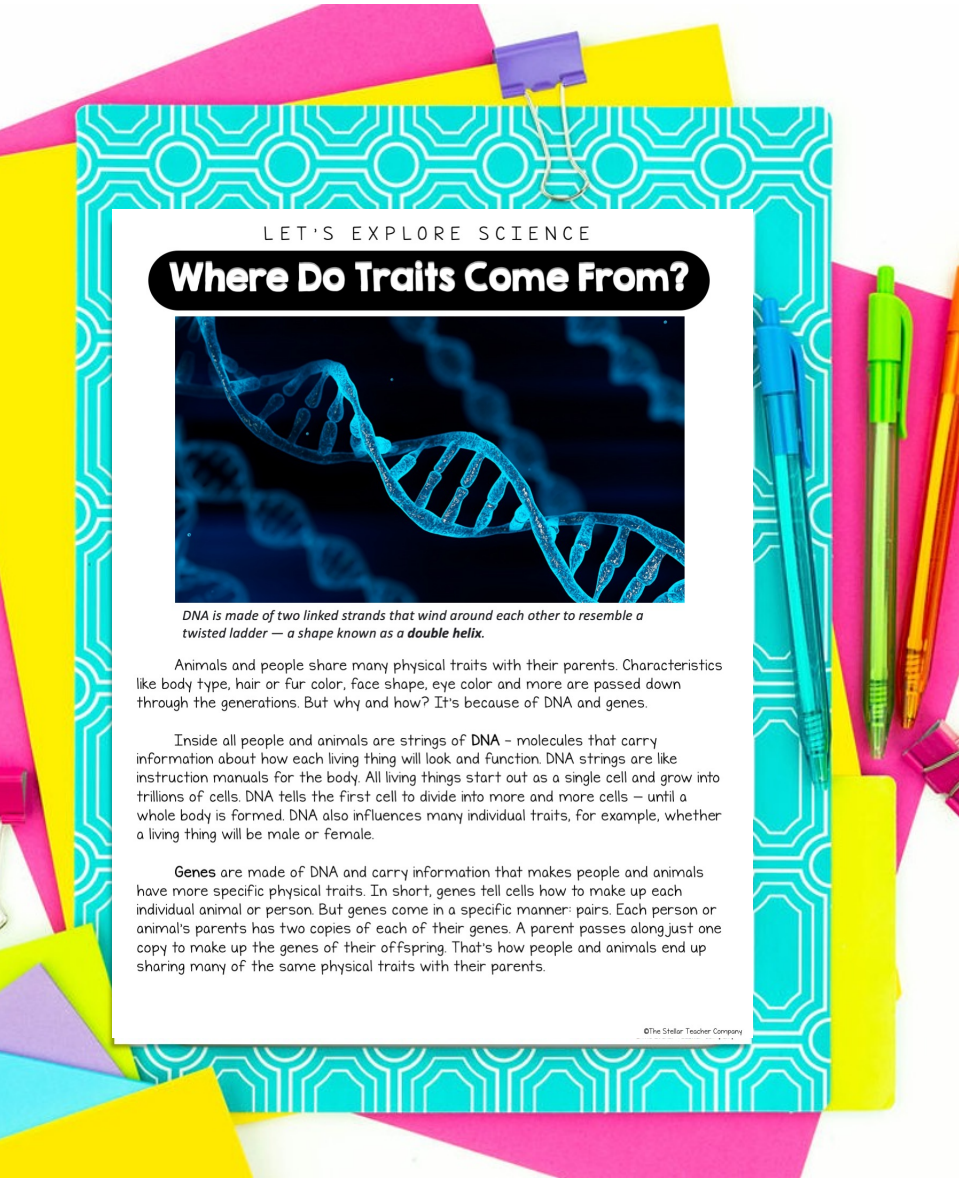
Traits for Survival

5 Another reason young plants inherit traits from their plant parents is for their survival. They inherit the root structure of their parents in order to get enough nutrients from the soil to grow strong. In the same way, they inherit the ability to grow up towards the sun with

READING ACTIVITIES • COMPREHENSION CHECKS

3 REASONS TO LOVE

THESE NONFICTION SCIENCE ARTICLES



CROSS-CURRICULAR INSTRUCTION

Teachers are always short on time, and unfortunately this often means that science can take a hit. These texts make it easy for you to teach key science content through a rich and engaging reading lesson. You'll tackle multiple subjects at once.

BUILDS KNOWLEDGE

Building knowledge in science is a key part of teaching reading. Each text in this set connects to the overarching topic of heredity. As students are reading, they will be able to connect what they learned in one passage to another passage they read from this set.

HIGH INTERESTS TEXTS

Not only do these texts connect to key sciences topics and concepts, but they are also highly engaging and interesting to read. Your students will love learning about the topics included in this science set!

WHAT'S INCLUDED

LET'S EXPLORE SCIENCE

Gregor Mendel

THE FATHER OF MODERN GENETICS

In our modern world, much science is based on genes, traits, DNA, and heredity. But did you know that without a 19th century monk and a humble pea plant, we probably wouldn't know as much about it today? Here's why.

Johann Mendel was born in 1822 in Austria. When he was 11, one of his schoolteachers realized he was very bright. Since he lived in a small town, the teacher suggested Johann attend school in a larger city with more resources. Even though Mendel's family was poor, they made sacrifices so Johann could receive an education. He graduated with honors in 1840, then went to college to study math and science.

After college, Mendel's father hoped he would come home to work on the family farm. But Johann chose a very different path. He decided to become a monk. **Monks** are men who dedicate their lives to religion. But many 19th century **monasteries** (where the monks lived and worked) were also hubs for learning and culture. Monks were encouraged to study and create, which was a great fit for a smart man like Mendel. After becoming a monk, Johann changed his name to Gregor.

Gregor's life at the monastery meant he could continue with his education.

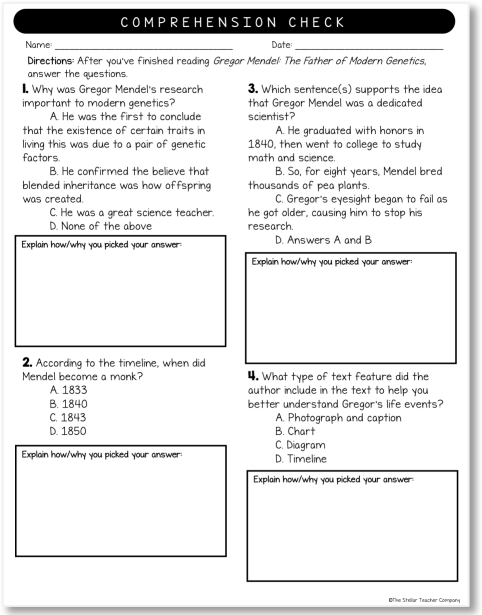
Gregor Mendel conducted his experiments on pea plants at St. Thomas Augustinian from 1856 to 1863.

He learned from university scientists and became a great science teacher himself. Plus, Gregor had access to a large research library at the monastery. And after he was put in charge of upkeep for the monastery's garden, Gregor started conducting experiments with plants.

At the time, most people believed in "blended inheritance." This was the idea that the traits of parents blended together to create offspring. However, as Mendel observed the pea plants in the garden, he saw that they were not following these 'blended' rules. So, for eight years, Mendel bred thousands of pea plants. He cross-pollinated ones with different features (like color, length, and seed texture) to observe how their traits were passed down.

Reading Passages

Get six nonfiction science based articles. Each text is written in a different text structure and includes a variety of text features to support both reading and science standards.



COMPREHENSION CHECK

Name: _____ Date: _____

Directions: After you've finished reading *Gregor Mendel: The Father of Modern Genetics*, answer the questions.

1. Why was Gregor Mendel's research important to modern genetics?
A. He was the first to conclude that the existence of certain traits in living this was due to a pair of genetic factors.
B. He confirmed the believe that blended inheritance was how offspring was created.
C. He was a great science teacher.
D. None of the above

Explain how/why you picked your answer:

2. According to the timeline, when did Mendel become a monk?
A. 1833
B. 1840
C. 1843
D. 1850

Explain how/why you picked your answer:

3. Which sentence(s) supports the idea that Gregor Mendel was a dedicated scientist?
A. He graduated with honors in 1840, then went to college to study math and science.
B. So, for eight years, Mendel bred thousands of pea plants.
C. Gregor's eyesight began to fail as he got older, causing him to stop his research.
D. Answers A and B

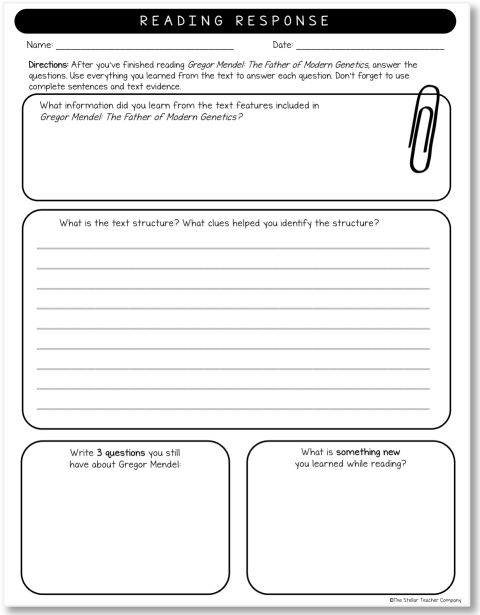
Explain how/why you picked your answer:

4. What type of text feature did the author include in the text to help you better understand Gregor's life events?
A. Photograph and caption
B. Chart
C. Diagram
D. Timeline

Explain how/why you picked your answer:

Comprehension Check

Each passage also has a short four-question, multiple-choice comprehension check. You can use this to asses their understanding of the science topic or their reading comprehension.



READING RESPONSE

Name: _____ Date: _____

Directions: After you've finished reading *Gregor Mendel: The Father of Modern Genetics*, answer the questions. Use everything you learned from the text to answer each question. Don't forget to use complete sentences and text evidence.

What information did you learn from the text features included in *Gregor Mendel: The Father of Modern Genetics?*

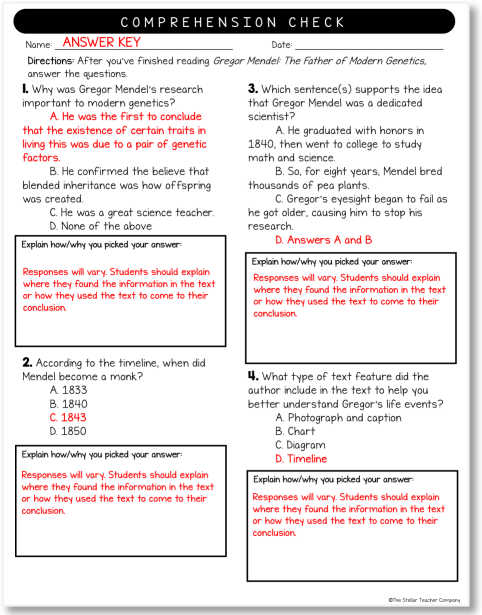
What is the text structure? What clues helped you identify the structure?

Write **3 questions** you still have about Gregor Mendel:

What is **something new** you learned while reading?

Reading Response

The reading response sheets following each passage will help your students build confidence when writing about a text. The questions cover a variety of reading skills.



COMPREHENSION CHECK

Name: ANSWER KEY Date: _____

Directions: After you've finished reading *Gregor Mendel: The Father of Modern Genetics*, answer the questions.

1. Why was Gregor Mendel's research important to modern genetics?
A. He was the first to conclude that the existence of certain traits in living this was due to a pair of genetic factors.
B. He confirmed the believe that blended inheritance was how offspring was created.
C. He was a great science teacher.
D. None of the above

Explain how/why you picked your answer:

Responses will vary. Students should explain where they found the information in the text or how they used the text to come to their conclusion.

2. According to the timeline, when did Mendel become a monk?
A. 1833
B. 1840
C. 1843
D. 1850

Explain how/why you picked your answer:

Responses will vary. Students should explain where they found the information in the text or how they used the text to come to their conclusion.

3. Which sentence(s) supports the idea that Gregor Mendel was a dedicated scientist?
A. He graduated with honors in 1840, then went to college to study math and science.
B. So, for eight years, Mendel bred thousands of pea plants.
C. Gregor's eyesight began to fail as he got older, causing him to stop his research.
D. Answers A and B

Explain how/why you picked your answer:

Responses will vary. Students should explain where they found the information in the text or how they used the text to come to their conclusion.

4. What type of text feature did the author include in the text to help you better understand Gregor's life events?
A. Photograph and caption
B. Chart
C. Diagram
D. Timeline

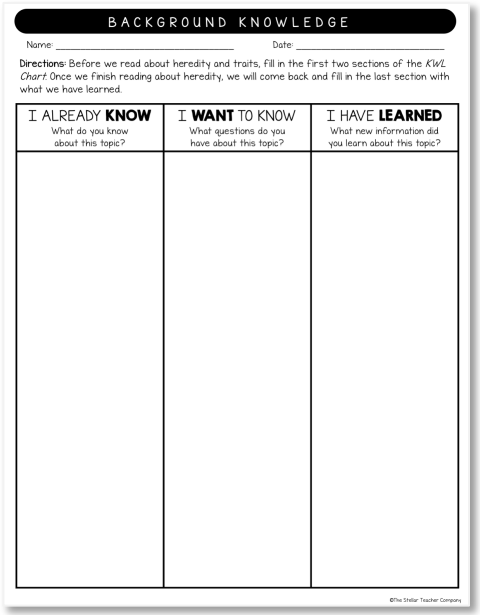
Explain how/why you picked your answer:

Responses will vary. Students should explain where they found the information in the text or how they used the text to come to their conclusion.

Answer Keys

We've included answer keys for all the student response pages. This will make it easy for you to check student work or to assign a grade.

ADDITIONAL ACTIVITIES


BACKGROUND KNOWLEDGE

Name: _____ Date: _____

Directions: Before we read about heredity and traits, fill in the first two sections of the *KWL Chart*. Once we finish reading about heredity, we will come back and fill in the last section with what we have learned.

I ALREADY **KNOW** What do you know about this topic?	I **WANT** TO KNOW What questions do you have about this topic?	I HAVE **LEARNED** What new information did you learn about this topic?

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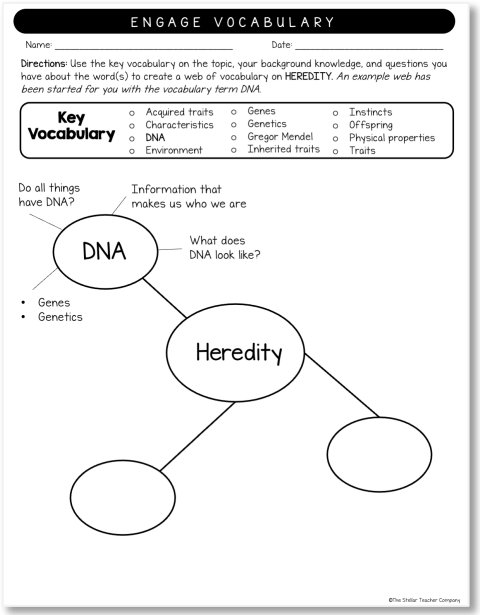
Background Knowledge

The background knowledge worksheets will help your students activate their prior knowledge of the topic. We include a variety of background knowledge activities.


ENGAGE VOCABULARY

Name: _____ Date: _____

Directions: Use the key vocabulary on the topic, your background knowledge, and questions you have about the word(s) to create a web of vocabulary on **HEREDITY**. *An example web has been started for you with the vocabulary term DNA.*

Key Vocabulary

- Acquired traits
- Characteristics
- DNA
- Environment
- Genes
- Genetics
- Gregor Mendel
- Inherited traits
- Instincts
- Offspring
- Physical properties
- Traits

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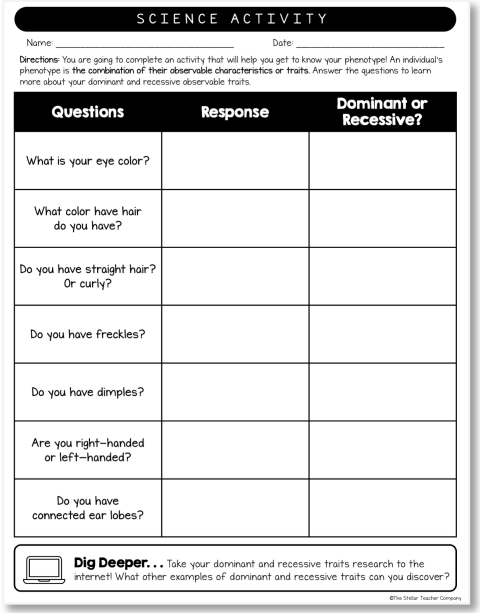
Vocabulary Activities

Vocabulary and word study are essential in helping our students improve their reading, writing, and speaking skills. We include several vocabulary activities you can use with this resource.


SCIENCE ACTIVITY

Name: _____ Date: _____

Directions: You are going to complete an activity that will help you get to know your phenotype! An individual's phenotype is **the combination of their observable characteristics or traits**. Answer the questions to learn more about your dominant and recessive observable traits.

Questions	Response	Dominant or Recessive?
What is your eye color?		
What color have hair do you have?		
Do you have straight hair? Or curly?		
Do you have freckles?		
Do you have dimples?		
Are you right-handed or left-handed?		
Do you have connected ear lobes?		

Dig Deeper... Take your dominant and recessive traits research to the internet! What other examples of dominant and recessive traits can you discover?

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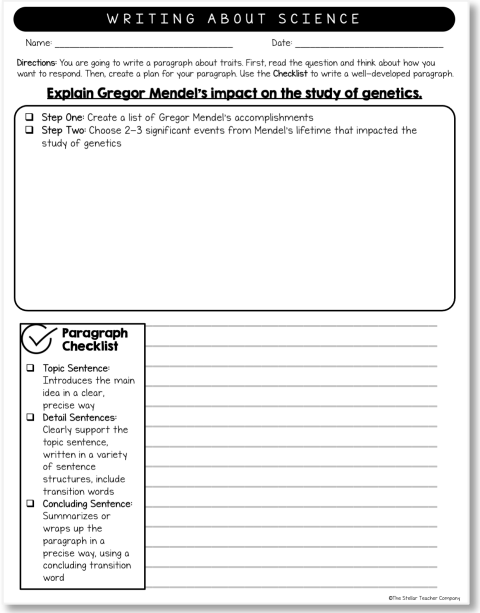
Science Activities

Whether it be performing steps of the scientific method, creating a picture glossary, or conducting an experiment, you'll get a handful of activities to support this science topic.


WRITING ABOUT SCIENCE

Name: _____ Date: _____

Directions: You are going to write a paragraph about traits. First, read the question and think about how you want to respond. Then, create a plan for your paragraph. Use the **Checklist** to write a well-developed paragraph.

Explain Gregor Mendel's impact on the study of genetics.

- ❑ **Step One:** Create a list of Gregor Mendel's accomplishments
- ❑ **Step Two:** Choose 2–3 significant events from Mendel's lifetime that impacted the study of genetics

Paragraph Checklist

- ❑ **Topic Sentence:** Introduces the main idea in a clear, precise way
- ❑ **Detail Sentences:** Clearly support the topic sentence, written in a variety of sentence structures, include transition words
- ❑ **Concluding Sentence:** Summarizes or wraps up the paragraph in a precise way, using a concluding transition word

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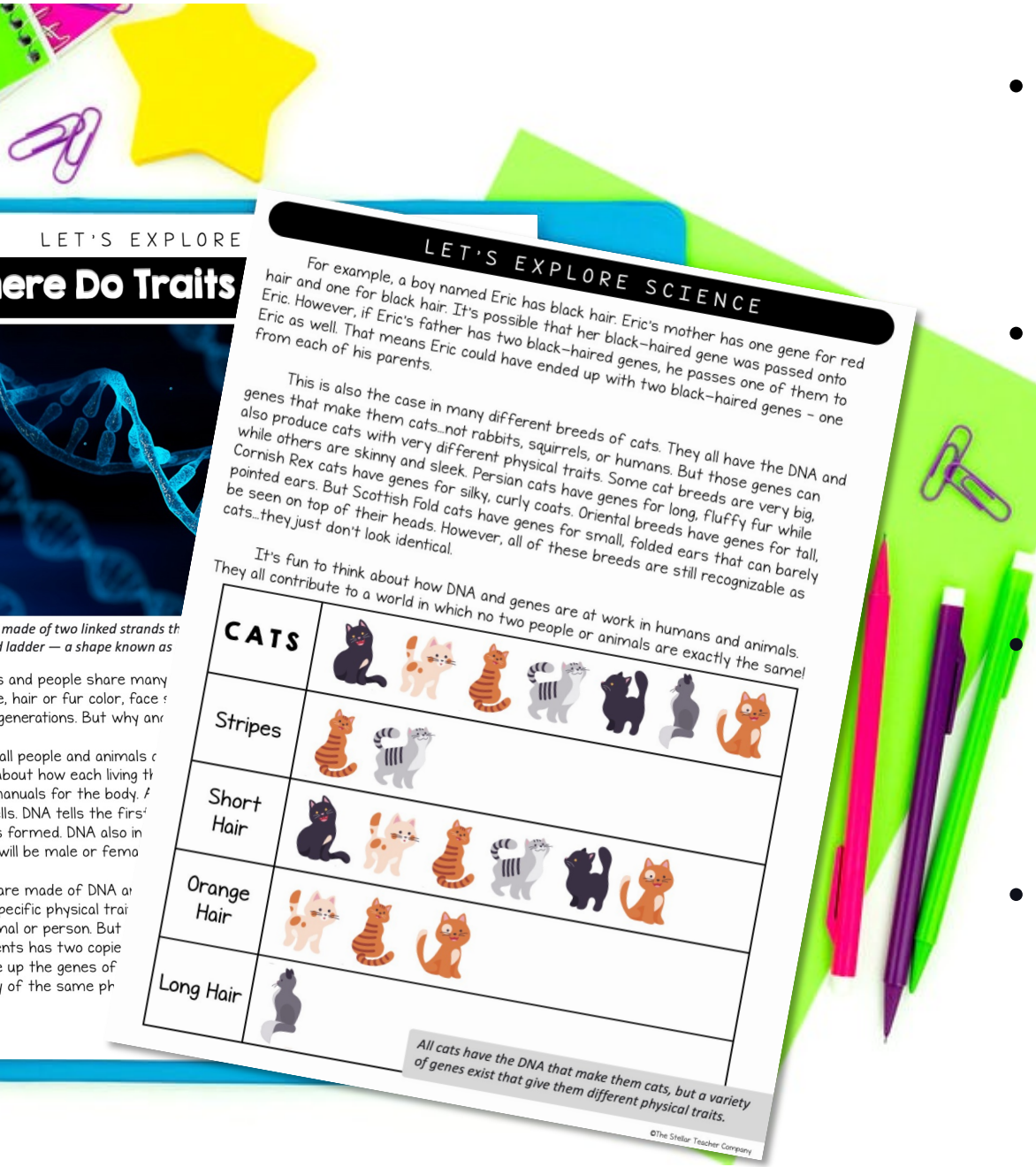
Writing About Science

You will find two options for writing about science in this resource. The Paragraph Checklist will help your students write a well-developed paragraph about the topic with a topic sentence, details, and a conclusion.

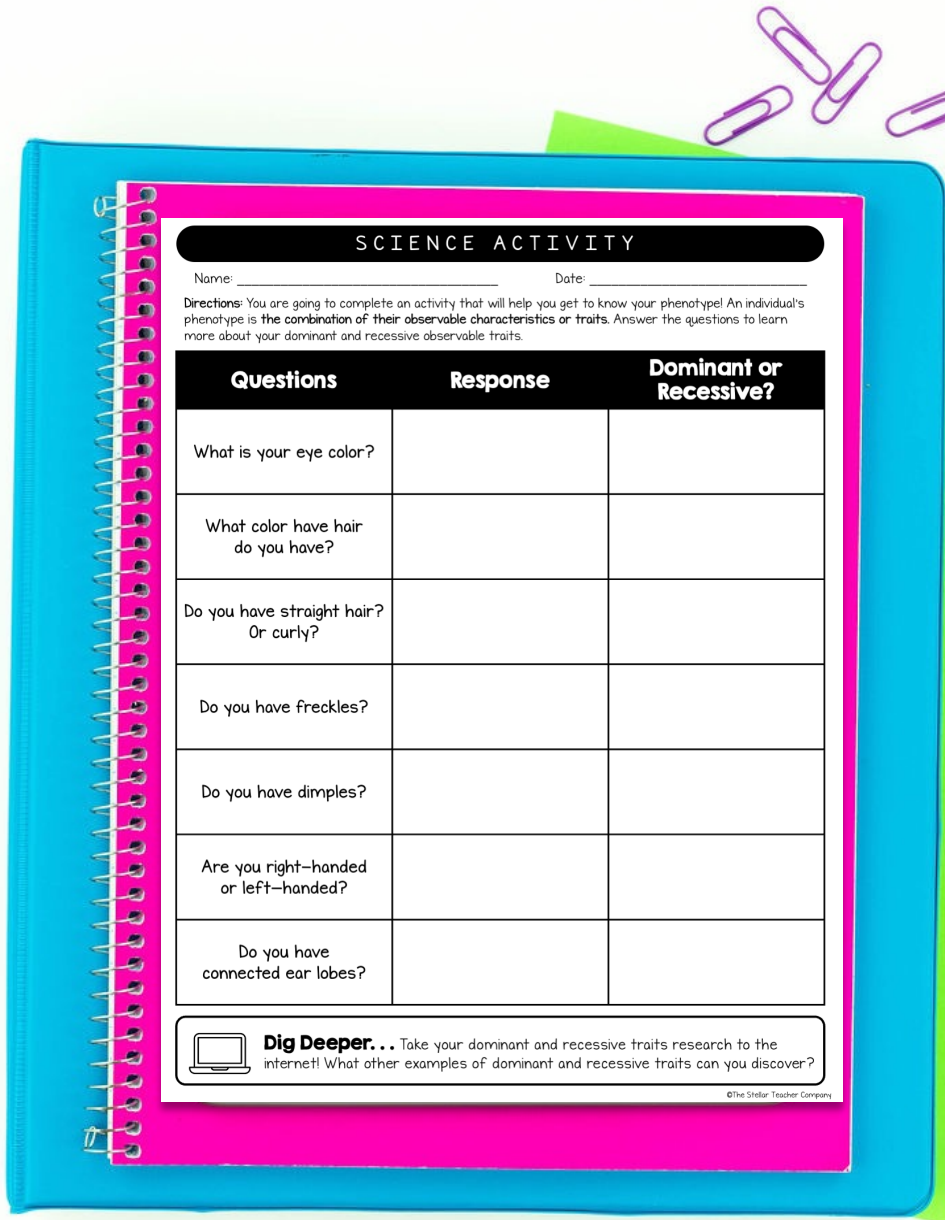
HOW CAN I USE THIS RESOURCE?



- Use these resources in your reading block, science block, or both!
- Don't forget to utilize the *digital version* of this resource to help your students master digital literacy skills.
- Use the entire resource or pick and choose which activities work best for you and your students.
- These resources are the perfect addition to your science or reading block as you prepare for standardized testing.

HOW CAN I USE THIS RESOURCE?

- You can use the passages and student response sheets as extra guided practice and do them as a whole group.
- You can use the passages and comprehension checks during small groups with students who need extra support.
- You can use the **Writing About Science** activities as a pre-assessment of a unit and then as a summative assessment to gauge learning.
- Partner students up for the **Science Activity** to add a layer of collaboration.



TAKE A CLOSER LOOK...

PASSAGE 1: WHAT ARE THE TRAITS OF TRAITS?

LET'S EXPLORE SCIENCE

What Are the Traits of Traits?

Have you ever thought about why some people have red hair while others have black? What about why some people have green eyes while others have brown? What how about why some people seem to be naturally good at sports, or singing, or math?

The characteristics that make up each individual person on Earth are called **traits**. But it's not just people who have traits – all living things do. And while many traits are passed down to each individual from their family or species, others are learned over time. Here is a breakdown of the two types of traits.

Freckles, hair color, and eye color are physical inherited traits.

Traits that are passed down from an individual's family are called **inherited traits**. These traits include physical characteristics, like eye and hair color, height, freckles, and dimples. When a baby is formed, they acquire some traits from both their father and mother. These traits combine to make a unique person!

Siblings with the same parents may have different physical traits.

That's why, even though siblings share the same parents, they don't look exactly alike. That's because each baby gets a mix of traits from each parent. Plus, some traits can skip generations. That's why a baby might get the curly hair of his grandfather when his parents have straight hair.

Inherited traits are noticeable in animals and plants too. For example, puppies born in the same litter never look exactly alike. There are differences in their markings, sizes, and even snout shapes. Plus, plants of the same species can have different leaf lengths, shapes, and colorings.

What physical traits do you have?

What is your eye color? Hair color? How tall are you? Do you have freckles? Take a minute to think about your own observable traits.

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LET'S EXPLORE SCIENCE

...s are learned over time. Traits that are not passed down ...are called **acquired traits**. These are traits that an individual ...the course of his or her lifetime, like playing an instrument, ...or baking a great apple pie.

...l traits can help a person develop acquired traits. For example, a ...n inherited trait) may find it easy to develop skills in playing ...all (acquired traits). However, many acquired traits simply come ...mal life experience, environment, or exposure to certain

...portant? Well, it's interesting to look at how people develop ...their lifetimes. But inherited traits are important in the study ...anch of science that looks at how traits are passed down from ...e next. This is important to help us understand how living things ...heir lives. Genetics can even help scientists understand why ...tain diseases. This makes traits pretty terrific!

GLOSSARY

	traits that are not passed down through a family line, traits an individual learns over a lifetime like playing an instrument or becoming an artist
	a feature or quality belonging typically to a person, place, or thing and serving to identify it
	the branch of science that looks at how traits are passed down from one generation to the next
	traits passed down from an individual's family, physical characteristics like eye and hair color, height, freckles, dimples
	The characteristics that make up each individual person on Earth, all living things have traits

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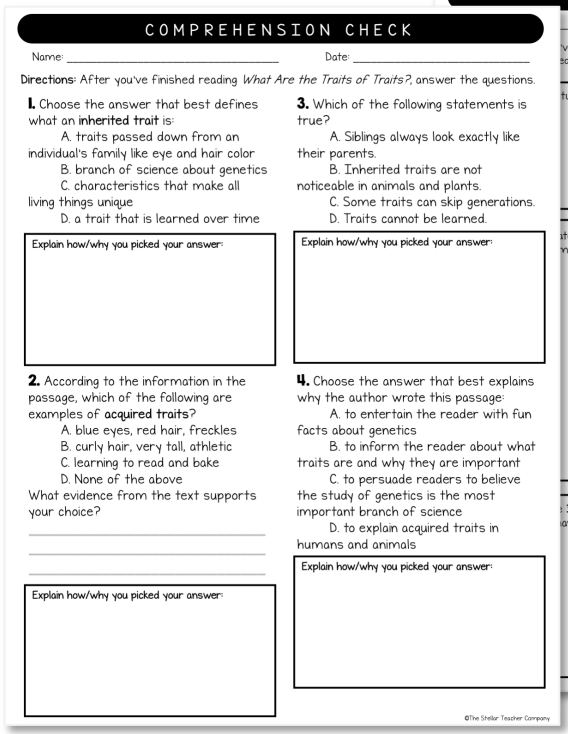


COMPREHENSION CHECK

Name: _____ Date: _____

Directions: After you've finished reading *What Are the Traits of Traits?*, answer the questions.

1. Choose the answer that best defines what an **inherited trait** is:
A. traits passed down from an individual's family like eye and hair color
B. branch of science about genetics
C. characteristics that make all living things unique
D. a trait that is learned over time

Explain how/why you picked your answer:

2. According to the information in the passage, which of the following are examples of **acquired traits**?
A. blue eyes, red hair, freckles
B. curly hair, very tall, athletic
C. learning to read and bake
D. None of the above

What evidence from the text supports your choice?

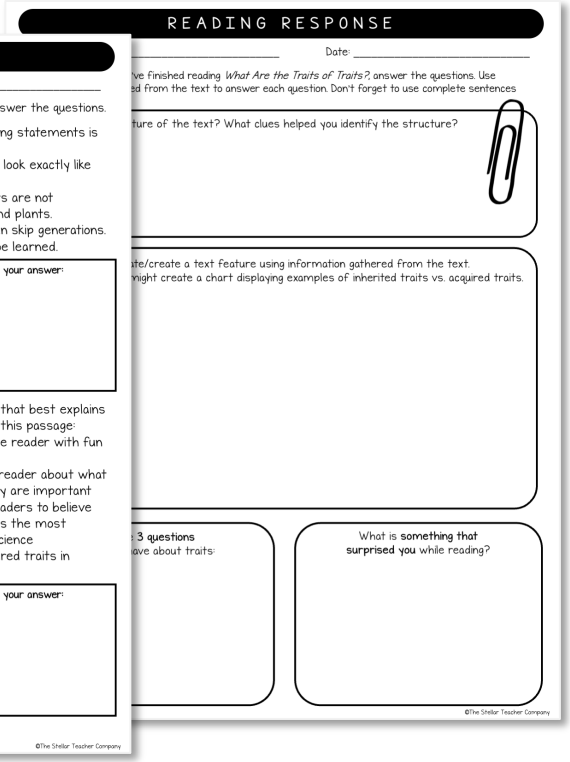
Explain how/why you picked your answer:

3. Which of the following statements is true?
A. Siblings always look exactly like their parents.
B. Inherited traits are not noticeable in animals and plants.
C. Some traits can skip generations.
D. Traits cannot be learned.

Explain how/why you picked your answer:

4. Choose the answer that best explains why the author wrote this passage:
A. to entertain the reader with fun facts about genetics
B. to inform the reader about what traits are and why they are important
C. to persuade readers to believe the study of genetics is the most important branch of science
D. to explain acquired traits in humans and animals

Explain how/why you picked your answer:



READING RESPONSE

Date: _____

...ve finished reading *What Are the Traits of Traits?*, answer the questions. Use ...d from the text to answer each question. Don't forget to use complete sentences

...ture of the text? What clues helped you identify the structure?

...te/create a text feature using information gathered from the text. ...might create a chart displaying examples of inherited traits vs. acquired traits.

...3 questions ...ave about traits:

What is **something that surprised you** while reading?

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Passage Details:

- **General Topic**: Different Types of Traits
- **Text Structure**: Description
- **Text Features**: Photographs and Captions, Glossary
- **Reading Skills**: Evaluate Details & Key Ides, Text Structure, Text Features, Asking Questions

TAKE A CLOSER LOOK...

PASSAGE 2: WHERE DO TRAITS COME FROM?

LET'S EXPLORE SCIENCE

Where Do Traits Come From?

DNA is made of two linked strands that wind around each other to resemble a twisted ladder — a shape known as a ***double helix.***

Animals and people share many physical traits with their parents. Characteristics like body type, hair or fur color, face shape, eye color and more are passed down through the generations. But why and how? It's because of DNA and genes.

Inside all people and animals are strings of **DNA** – molecules that carry information about how each living thing will look and function. DNA strings are like instruction manuals for the body. All living things start out as a single cell and grow into trillions of cells. DNA tells the first cell to divide into more and more cells – until a whole body is formed. DNA also influences many individual traits, for example, whether a living thing will be male or female.

Genes are made of DNA and carry information that makes people and animals have more specific physical traits. In short, genes tell cells how to make up each individual animal or person. But genes come in a specific manner: pairs. Each person or animal's parents has two copies of each of their genes. A parent passes along just one copy to make up the genes of their offspring. That's how people and animals end up sharing many of the same physical traits with their parents.

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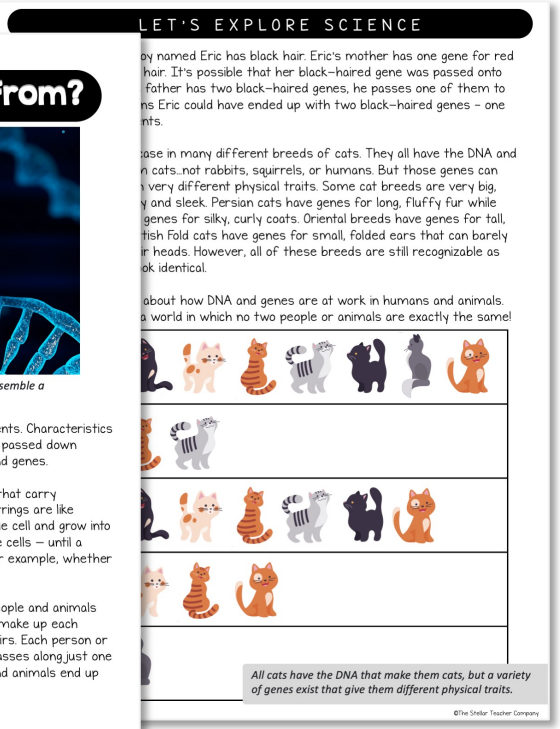

LET'S EXPLORE SCIENCE

…oy named Eric has black hair. Eric's mother has one gene for red …hair. It's possible that her black-haired gene was passed onto …father has two black-haired genes, he passes one of them to …ns Eric could have ended up with two black-haired genes – one …nts.

…ase in many different breeds of cats. They all have the DNA and …n cats…not rabbits, squirrels, or humans. But those genes can … very different physical traits. Some cat breeds are very big, …y and sleek. Persian cats have genes for long, fluffy fur while … genes for silky, curly coats. Oriental breeds have genes for tall, …tish Fold cats have genes for small, folded ears that can barely …r heads. However, all of these breeds are still recognizable as …ok identical.

…about how DNA and genes are at work in humans and animals. …a world in which no two people or animals are exactly the same!

All cats have the DNA that make them cats, but a variety of genes exist that give them different physical traits.

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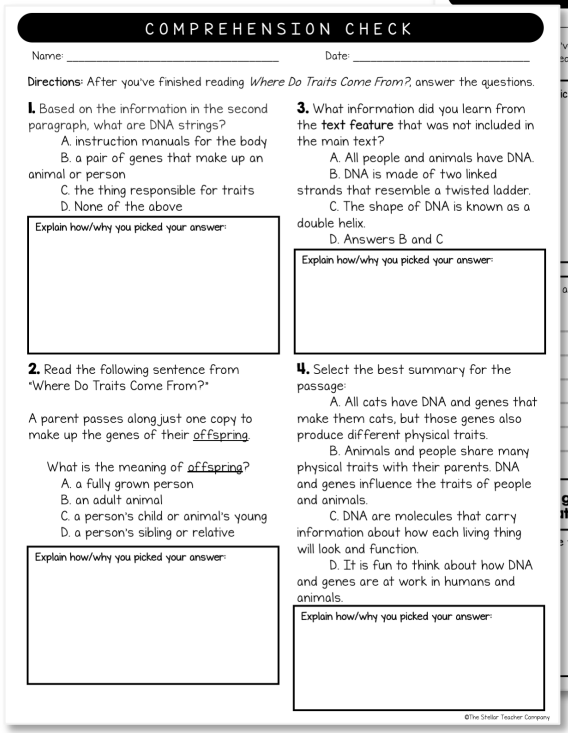

COMPREHENSION CHECK

Name: _____ Date: _____

Directions: After you've finished reading *Where Do Traits Come From?*, answer the questions.

1. Based on the information in the second paragraph, what are DNA strings?
A. instruction manuals for the body
B. a pair of genes that make up an animal or person
C. the thing responsible for traits
D. None of the above

Explain how/why you picked your answer:

2. Read the following sentence from "Where Do Traits Come From?"

A parent passes along just one copy to make up the genes of their offspring.

What is the meaning of offspring?
A. a fully grown person
B. an adult animal
C. a person's child or animal's young
D. a person's sibling or relative

Explain how/why you picked your answer:

3. What information did you learn from the **text feature** that was not included in the main text?
A. All people and animals have DNA.
B. DNA is made of two linked strands that resemble a twisted ladder.
C. The shape of DNA is known as a double helix.
D. Answers B and C

Explain how/why you picked your answer:

4. Select the best summary for the passage:
A. All cats have DNA and genes that make them cats, but those genes also produce different physical traits.
B. Animals and people share many physical traits with their parents. DNA and genes influence the traits of people and animals.
C. DNA are molecules that carry information about how each living thing will look and function.
D. It is fun to think about how DNA and genes are at work in humans and animals.

Explain how/why you picked your answer:

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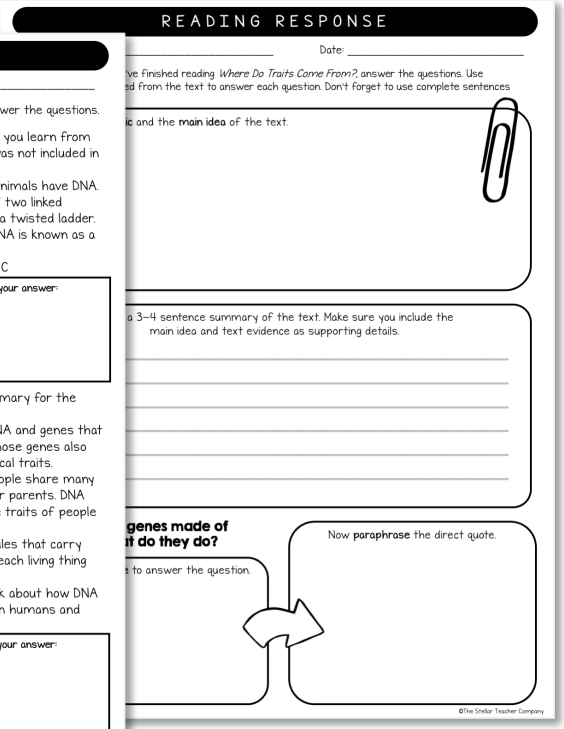

READING RESPONSE

Date: _____

…ve finished reading *Where Do Traits Come From?*, answer the questions. Use …d from the text to answer each question. Don't forget to use complete sentences.

…ic and the **main idea** of the text.

…a 3–4 sentence summary of the text. Make sure you include the main idea and text evidence as supporting details.

…genes made of …t do they do?

…e to answer the question.

Now **paraphrase** the direct quote.

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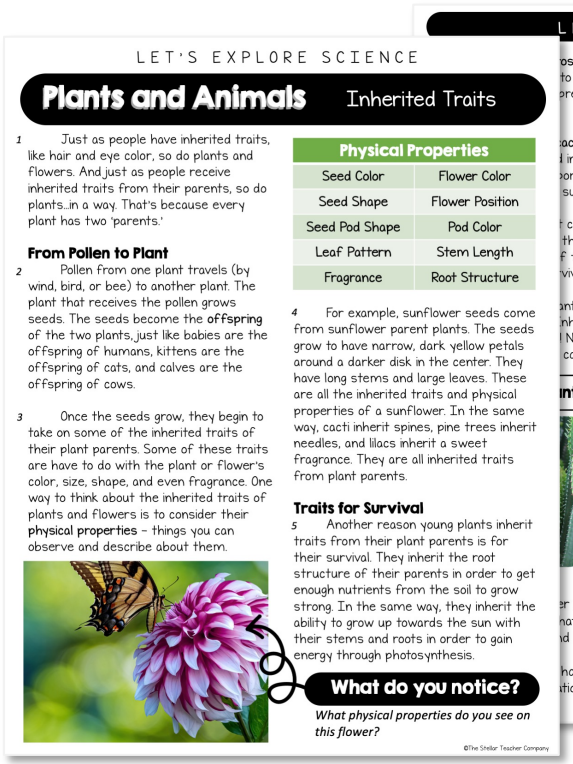
Passage Details:

- **General Topic:** Animals and Plants Share Traits With Parents
- **Text Structure:** Description
- **Text Features:** Photographs, Illustrations, Bold Words
- **Reading Skills:** Main Idea, Evaluate Details & Key Ideas, Text Features, Context Clues, Summarize, Direct Quote/Paraphrase

TAKE A CLOSER LOOK...

PASSAGE 3: Plants and Animals: Inherited Traits



LET'S EXPLORE SCIENCE

Plants and Animals Inherited Traits

1 Just as people have inherited traits, like hair and eye color, so do plants and flowers. And just as people receive inherited traits from their parents, so do plants...in a way. That's because every plant has two 'parents.'

From Pollen to Plant

2 Pollen from one plant travels (by wind, bird, or bee) to another plant. The plant that receives the pollen grows seeds. The seeds become the **offspring** of the two plants, just like babies are the offspring of humans, kittens are the offspring of cats, and calves are the offspring of cows.

3 Once the seeds grow, they begin to take on some of the inherited traits of their plant parents. Some of these traits are have to do with the plant or flower's color, size, shape, and even fragrance. One way to think about the inherited traits of plants and flowers is to consider their **physical properties** – things you can observe and describe about them.

Physical Properties	
Seed Color	Flower Color
Seed Shape	Flower Position
Seed Pod Shape	Pod Color
Leaf Pattern	Stem Length
Fragrance	Root Structure

4 For example, sunflower seeds come from sunflower parent plants. The seeds grow to have narrow, dark yellow petals around a darker disk in the center. They have long stems and large leaves. These are all the inherited traits and physical properties of a sunflower. In the same way, cacti inherit spines, pine trees inherit needles, and lilacs inherit a sweet fragrance. They are all inherited traits from plant parents.

Traits for Survival

5 Another reason young plants inherit traits from their plant parents is for their survival. They inherit the root structure of their parents in order to get enough nutrients from the soil to grow strong. In the same way, they inherit the ability to grow up towards the sun with their stems and roots in order to gain energy through photosynthesis.

What do you notice?

What physical properties do you see on this flower?

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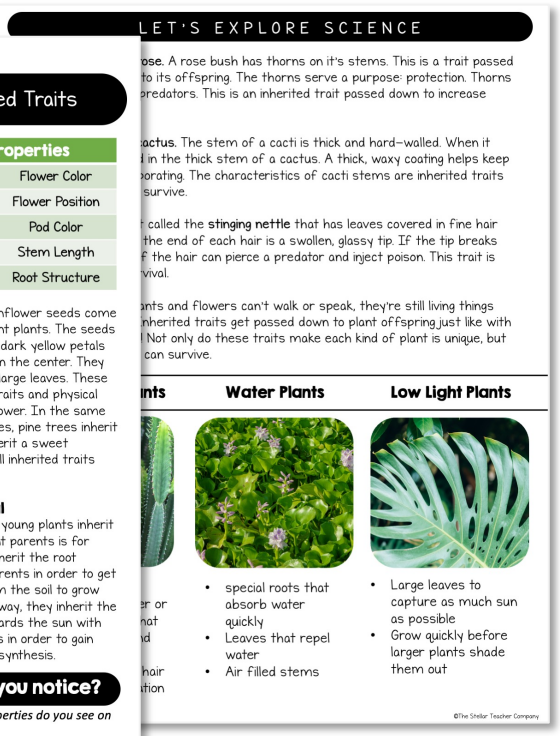

LET'S EXPLORE SCIENCE

...ose. A rose bush has thorns on it's stems. This is a trait passed ...to its offspring. The thorns serve a purpose: protection. Thorns ...predators. This is an inherited trait passed down to increase ...

...**actus**. The stem of a cacti is thick and hard-walled. When it ...in the thick stem of a cactus. A thick, waxy coating helps keep ...porating. The characteristics of cacti stems are inherited traits ...survive.

...called the **stinging nettle** that has leaves covered in fine hair ...the end of each hair is a swollen, glassy tip. If the tip breaks ...f the hair can pierce a predator and inject poison. This trait is ...vival.

...nts and flowers can't walk or speak, they're still living things ...nherited traits get passed down to plant offspring just like with ... Not only do these traits make each kind of plant is unique, but ...can survive.

...nts	Water Plants	Low Light Plants
...er or ...nat ...d ...hair ...ition	• special roots that absorb water quickly • Leaves that repel water • Air filled stems	• Large leaves to capture as much sun as possible • Grow quickly before larger plants shade them out

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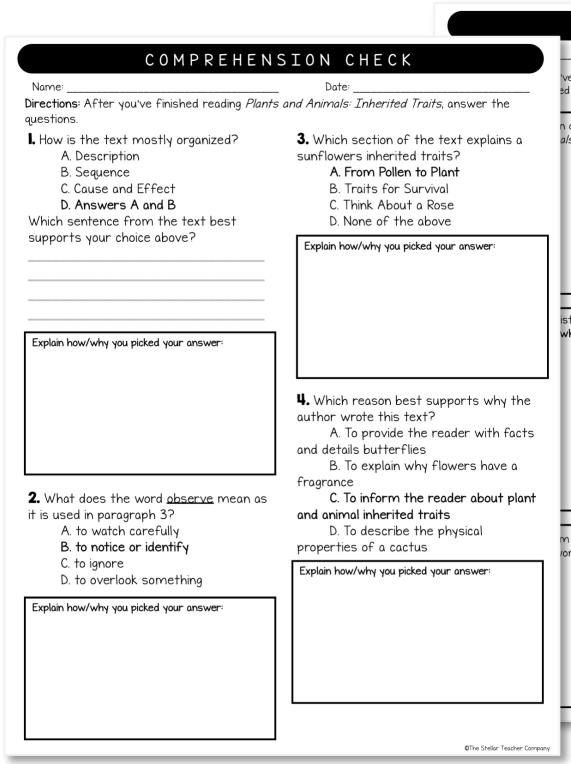


COMPREHENSION CHECK

Name: _____ Date: _____

Directions: After you've finished reading *Plants and Animals: Inherited Traits*, answer the questions.

1. How is the text mostly organized?
A. Description
B. Sequence
C. Cause and Effect
D. Answers A and B

Which sentence from the text best supports your choice above?

Explain how/why you picked your answer:

2. What does the word observe mean as it is used in paragraph 3?
A. to watch carefully
B. to notice or identify
C. to ignore
D. to overlook something

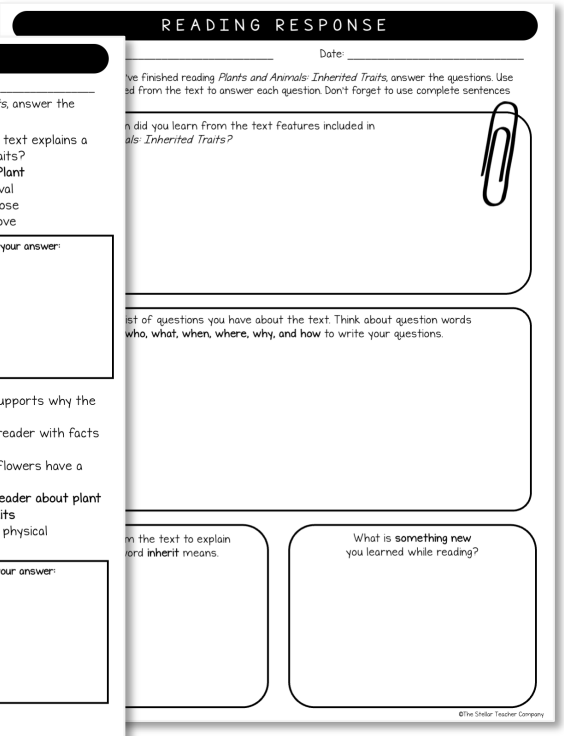
Explain how/why you picked your answer:

3. Which section of the text explains a sunflowers inherited traits?
A. From Pollen to Plant
B. Traits for Survival
C. Think About a Rose
D. None of the above

Explain how/why you picked your answer:

4. Which reason best supports why the author wrote this text?
A. To provide the reader with facts and details butterflies
B. To explain why flowers have a fragrance
C. To inform the reader about plant and animal inherited traits
D. To describe the physical properties of a cactus

Explain how/why you picked your answer:



READING RESPONSE

Date: _____

...ve finished reading *Plants and Animals: Inherited Traits*, answer the questions. Use ...ed from the text to answer each question. Don't forget to use complete sentences.

...n did you learn from the text features included in ...als: *Inherited Traits?*

...ist of questions you have about the text. Think about question words **who, what, when, where, why, and how** to write your questions.

...m the text to explain ...ord **inherit** means.

What is **something new** you learned while reading?

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Passage Details:

- **General Topic:** Plants and Animals Have Inherited Traits
- **Text Structure:** Description
- **Text Features:** Photographs and Captions, Glossary, Infographic
- **Reading Skills:** Key Details & Ideas, Text Evidence, Text Features, Text Structure, Asking Questions

TAKE A CLOSER LOOK...

PASSAGE 4: Dominant and Recessive Traits

LET'S EXPLORE SCIENCE

Dominant and Recessive Traits

The factors that are passed on from parents to their offspring are called **genes**. Every living thing is a combination of two sets of genes from their parents. Genes show up as different traits in humans. **Traits** are the characteristics that make each person distinctive, like eye or hair color.

Every person on Earth has a unique genetic makeup. In fact, only identical twins have the capability of sharing the same genetic code. Otherwise, people are one of a kind, down to their cells. They have a unique **phenotype** – a set of observable characteristics. But why?

Each gene has two parts called **alleles**. One is from the mother and the other is from the father. While genes make up each person, alleles create each person's individual characteristics and phenotype. They mix together and create an 'instruction manual' for new offspring. But some parts of alleles are stronger than others.

Imagine alleles as actual instruction manuals: picture one that is typed in a large, bold font and another typed in a small, faint font.

Identical twins have the capability of sharing the same genetic code.

The instructions with the larger font are easier to read, right? These large instructions 'win out' because they are easier to understand. These types of alleles are called **dominant**, while the ones with the smaller instructions are called **recessive**.

Which set of instructions is easier to read?

Write your name on the top of the page.

Write your name on the top of the page.

*Imagine alleles as actual instruction manuals: picture one that is typed in a **large, bold** font and another typed in a **small, faint** font.*

*The large instructions represent **dominant alleles,** while the smaller instructions represent recessive traits.*

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LET'S EXPLORE SCIENCE

...nt traits are stronger ...they will always take ...nt. For example, brown ...rait. Blue eyes are a ...

...eives a brown-eyed ...and a blue-eyed gene ...most likely she will ...is simply because ...ant; they have a larger- ...inual. Other examples of ...mmonly cleft chins, ...d freckles. If one ...se genes, it is likely ...

...traits are weaker than ...would need to receive ...nes of both parents in ...p in their phenotype. For ...lobes are considered a ...both a mother and a ...for attached earlobes, ...ir child. Additional ...e traits that require ...them down include ...color, blue eyes, and ...

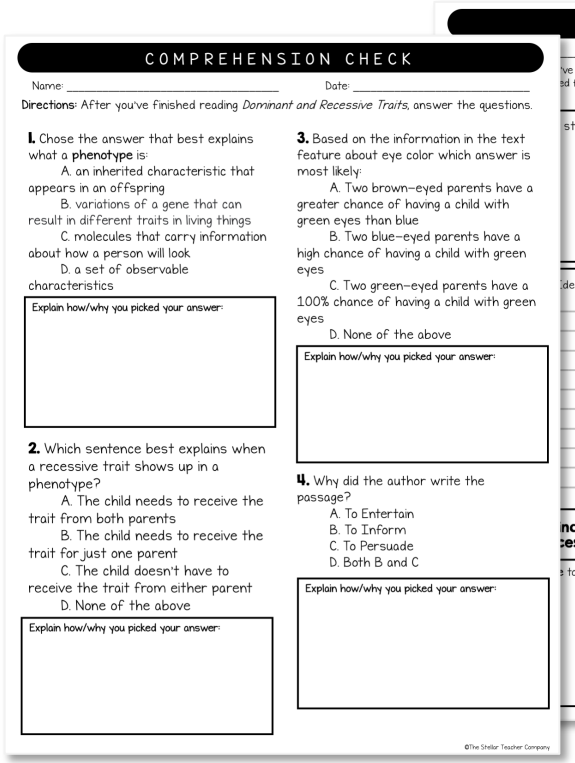
PARENTS	BABY'S EYE COLOR		
+ =	75%	18,75%	6,25%
+ =	50%	37,5%	12,5%
+ =	50%	50%	0%
+ =	75%	25%	<1%
+ =	50%	50%	0%
+ =	99%	1%	0%

The chart above shows the likelihood of a child receiving a specific eye color based on the eye color of their parents.

...ut It...

...ut your ...e, what ...ecessive ...ecognize ...?

DOMINANT	RECESSIVE
brown eyes	blue eyes
right-handedness	left-handedness
dark hair	red hair
dimples	attached earlobe



COMPREHENSION CHECK

Name: _____ Date: _____

Directions: After you've finished reading *Dominant and Recessive Traits*, answer the questions.

1. Chose the answer that best explains what a **phenotype** is:
A. an inherited characteristic that appears in an offspring
B. variations of a gene that can result in different traits in living things
C. molecules that carry information about how a person will look
D. a set of observable characteristics

Explain how/why you picked your answer:

2. Which sentence best explains when a recessive trait shows up in a phenotype?
A. The child needs to receive the trait from both parents
B. The child needs to receive the trait for just one parent
C. The child doesn't have to receive the trait from either parent
D. None of the above

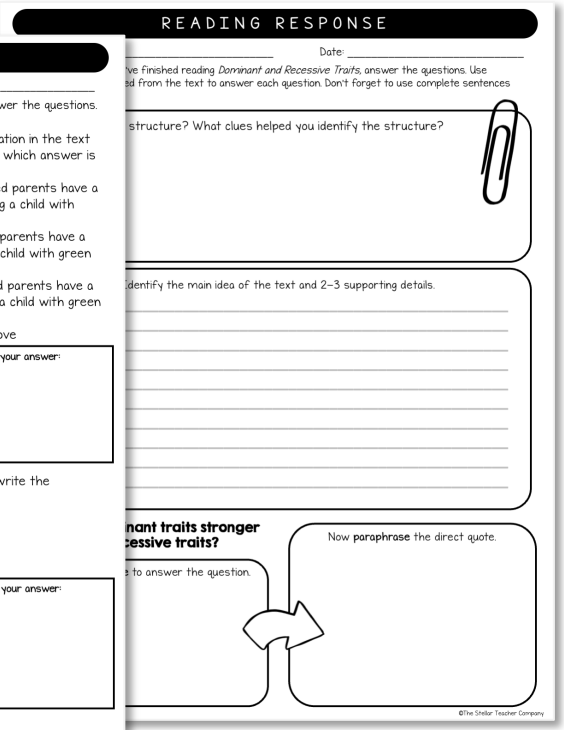
Explain how/why you picked your answer:

3. Based on the information in the text feature about eye color which answer is most likely:
A. Two brown-eyed parents have a greater chance of having a child with green eyes than blue
B. Two blue-eyed parents have a high chance of having a child with green eyes
C. Two green-eyed parents have a 100% chance of having a child with green eyes
D. None of the above

Explain how/why you picked your answer:

4. Why did the author write the passage?
A. To Entertain
B. To Inform
C. To Persuade
D. Both B and C

Explain how/why you picked your answer:



READING RESPONSE

Date: _____

...ve finished reading *Dominant and Recessive Traits*, answer the questions. Use ...ed from the text to answer each question. Don't forget to use complete sentences

...structure? What clues helped you identify the structure?

...dentify the main idea of the text and 2-3 supporting details.

...nant traits stronger ...cessive traits?

...e to answer the question.

Now **paraphrase** the direct quote.

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Passage Details:

- **General Topic:** Examples of Dominant and Recessive Traits
- **Text Structure:** Compare and Contrast
- **Text Features:** Photographs and Captions, Chart, Infographic
- **Reading Skills:** Key Details & Ideas, Main Idea, Text Evidence, Text Structure, Author's Purpose, Direct Quotes/Paraphrase

TAKE A CLOSER LOOK...

PASSAGE 5: How Environment Impacts Animal Traits

LET'S EXPLORE SCIENCE

Animal Traits — How Environment Impacts Animal Traits

All living things, including animals, have **inherited traits**. These are the traits that are passed down through a family line and include physical characteristics. For animals, some common inherited traits include their overall size, weight, and color. But sometimes, an animal's environment can impact its inherited traits. Factors like an animal's access to food and temperature can affect how it looks and behaves.

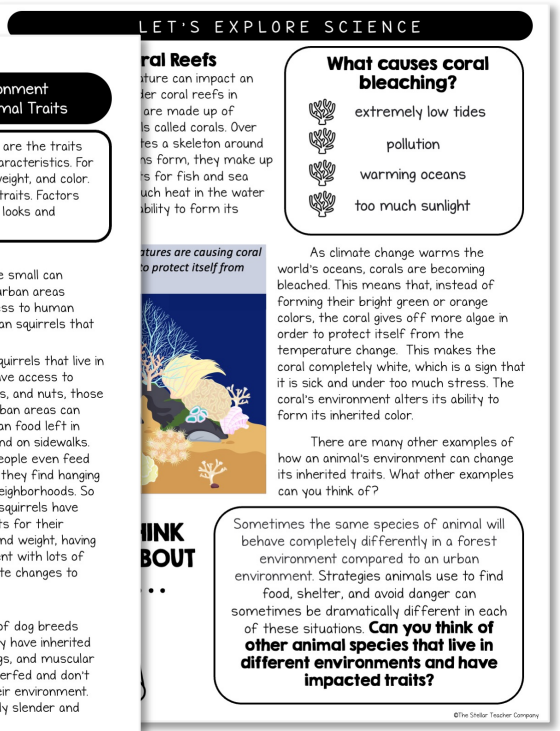
Environmental Impacts

In areas where food is plentiful, an animal that is usually quite small can actually be large and oversized. Consider squirrels who live in busy urban areas versus squirrels that live in the woods. Because there is more access to human food, urban squirrels will often be quite a bit plumper and larger than squirrels that live in the wild.

A squirrel that lives in the city has access to human foods left in dumpsters and on sidewalks.

While squirrels that live in the woods have access to plants, berries, and nuts, those that live in urban areas can feed on human food left in dumpsters and on sidewalks. Plus, some people even feed the squirrels they find hanging out in their neighborhoods. So even though squirrels have inherited traits for their certain size and weight, having an environment with lots of food will create changes to these traits.

Another example can be seen in many household pets. Lots of dog breeds have inherited traits to be a certain size. Consider greyhounds, they have inherited traits to be racing dogs. They are sleek with narrow heads, long legs, and muscular backs. But if greyhounds are in an environment where they are overfed and don't get enough exercise, their inherited traits may be overruled by their environment. This can lead to muscle loss and weight gain in dogs that are usually slender and strong.



LET'S EXPLORE SCIENCE

ral Reefs

…iture can impact an …der coral reefs in …are made up of …ls called corals. Over …tes a skeleton around …ns form, they make up …s for fish and sea …uch heat in the water …bility to form its

What causes coral bleaching?

- extremely low tides
- pollution
- warming oceans
- too much sunlight

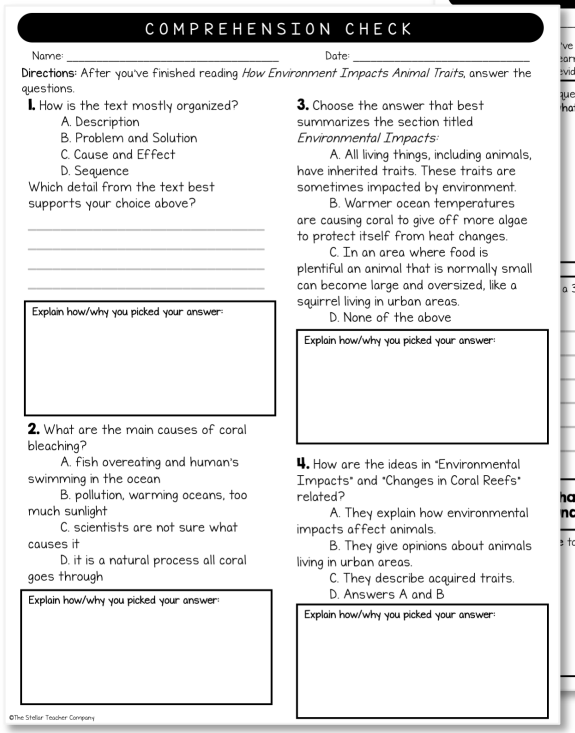
…tures are causing coral …o protect itself from

As climate change warms the world's oceans, corals are becoming bleached. This means that, instead of forming their bright green or orange colors, the coral gives off more algae in order to protect itself from the temperature change. This makes the coral completely white, which is a sign that it is sick and under too much stress. The coral's environment alters its ability to form its inherited color.

There are many other examples of how an animal's environment can change its inherited traits. What other examples can you think of?

…INK …BOUT …

Sometimes the same species of animal will behave completely differently in a forest environment compared to an urban environment. Strategies animals use to find food, shelter, and avoid danger can sometimes be dramatically different in each of these situations. **Can you think of other animal species that live in different environments and have impacted traits?**



COMPREHENSION CHECK

Name: _____ Date: _____

Directions: After you've finished reading *How Environment Impacts Animal Traits*, answer the questions.

1. How is the text mostly organized?
A. Description
B. Problem and Solution
C. Cause and Effect
D. Sequence
Which detail from the text best supports your choice above?

Explain how/why you picked your answer:

2. What are the main causes of coral bleaching?
A. fish overeating and human's swimming in the ocean
B. pollution, warming oceans, too much sunlight
C. scientists are not sure what causes it
D. it is a natural process all coral goes through

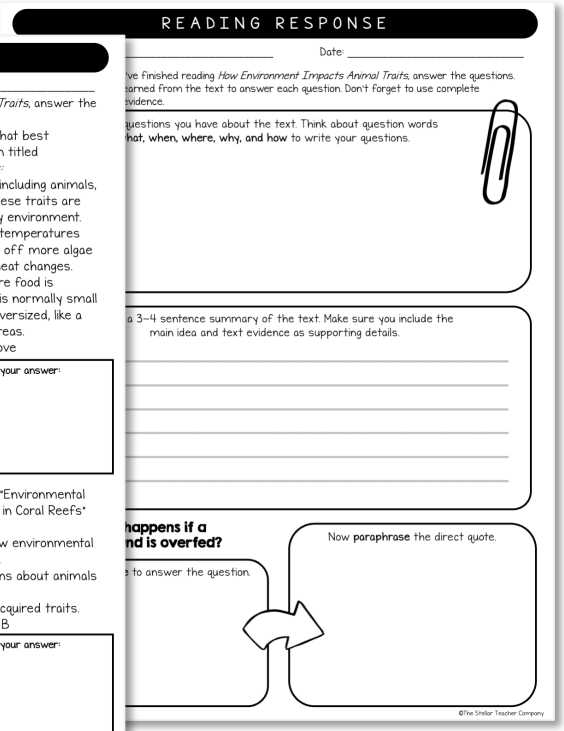
Explain how/why you picked your answer:

3. Choose the answer that best summarizes the section titled *Environmental Impacts:*
A. All living things, including animals, have inherited traits. These traits are sometimes impacted by environment.
B. Warmer ocean temperatures are causing coral to give off more algae to protect itself from heat changes.
C. In an area where food is plentiful an animal that is normally small can become large and oversized, like a squirrel living in urban areas.
D. None of the above

Explain how/why you picked your answer:

4. How are the ideas in "Environmental Impacts" and "Changes in Coral Reefs" related?
A. They explain how environmental impacts affect animals.
B. They give opinions about animals living in urban areas.
C. They describe acquired traits.
D. Answers A and B

Explain how/why you picked your answer:



READING RESPONSE

Date: _____

…ve finished reading *How Environment Impacts Animal Traits*, answer the questions. …arned from the text to answer each question. Don't forget to use complete …vidence.

…questions you have about the text. Think about question words …**hat, when, where, why, and how** to write your questions.

…a 3-4 sentence summary of the text. Make sure you include the main idea and text evidence as supporting details.

…happens if a …nd is overfed?

…e to answer the question.

Now **paraphrase** the direct quote.

Passage Details:

- **General Topic:** How an Animal's Environment Impacts Inherited Traits
- **Text Structure:** Cause and Effect
- **Text Features:** Photographs and Captions, Text Boxes, Headings
- **Reading Skills:** Evaluate Details & Key Ideas, Text Structure, Asking Questions, Summarize, Direct Quote/Paraphrase

TAKE A CLOSER LOOK...

PASSAGE 6: Gregor Mendel

LET'S EXPLORE SCIENCE

Gregor Mendel

THE FATHER OF MODERN GENETICS

In our modern world, much science is based on genes, traits, DNA, and heredity. But did you know that without a 19th century monk and a humble pea plant, we probably wouldn't know as much about it today? Here's why.

Johann Mendel was born in 1822 in Austria. When he was 11, one of his schoolteachers realized he was very bright. Since he lived in a small town, the teacher suggested Johann attend school in a larger city with more resources. Even though Mendel's family was poor, they made sacrifices so Johann could receive an education. He graduated with honors in 1840, then went to college to study math and science.

After college, Mendel's father hoped he would come home to work on the family farm. But Johann chose a very different path. He decided to become a monk. **Monks** are men who dedicate their lives to religion. But many 19th century **monasteries** (where the monks lived and worked) were also hubs for learning and culture. Monks were encouraged to study and create, which was a great fit for a smart man like Mendel. After becoming a monk, Johann changed his name to Gregor.

Gregor's life at the monastery meant he could continue with his education.

Gregor Mendel conducted his experiments on pea plants at St. Thomas Augustinian from 1856 to 1863.

He learned from university scientists and became a great science teacher himself. Plus, Gregor had access to a large research library at the monastery. And after he was put in charge of upkeep for the monastery's garden, Gregor started conducting experiments with plants.

At the time, most people believed in "blended inheritance." This was the idea that the traits of parents blended together to create offspring. However, as Mendel observed the pea plants in the garden, he saw that they were not following these 'blended' rules. So, for eight years, Mendel bred thousands of pea plants. He cross-pollinated ones with different features (like color, length, and seed texture) to observe how their traits were passed down.

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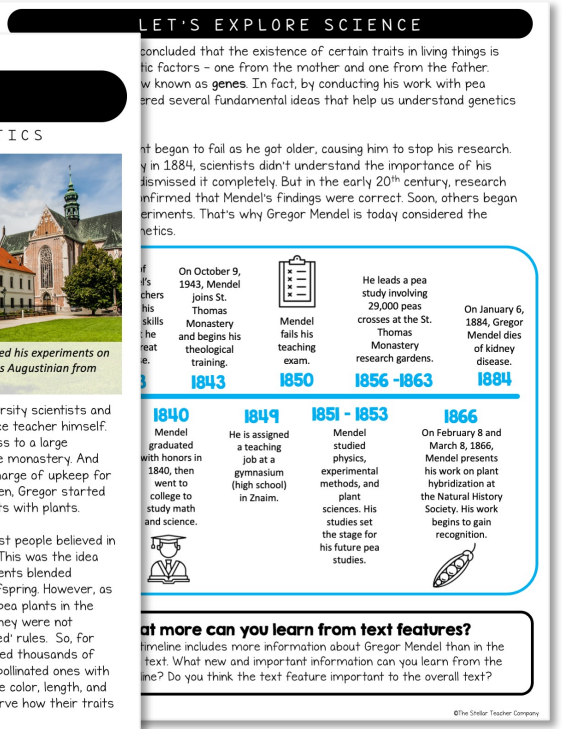

LET'S EXPLORE SCIENCE

...concluded that the existence of certain traits in living things is ...tic factors – one from the mother and one from the father. ...w known as **genes**. In fact, by conducting his work with pea ...ered several fundamental ideas that help us understand genetics

...nt began to fail as he got older, causing him to stop his research. ...y in 1884, scientists didn't understand the importance of his ...dismissed it completely. But in the early 20th century, research ...nfirmed that Mendel's findings were correct. Soon, others began ...eriments. That's why Gregor Mendel is today considered the ...netics.

On October 9, 1943, Mendel joins St. Thomas Monastery and begins his theological training. **1843**

Mendel fails his teaching exam. **1850**

He leads a pea study involving 29,000 peas crosses at the St. Thomas Monastery research gardens. **1856 -1863**

On January 6, 1884, Gregor Mendel dies of kidney disease. **1884**

1840 Mendel graduated with honors in 1840, then went to college to study math and science.

1849 He is assigned a teaching job at a gymnasium (high school) in Znaim.

1851 - 1853 Mendel studied physics, experimental methods, and plant sciences. His studies set the stage for his future pea studies.

1866 On February 8 and March 8, 1866, Mendel presents his work on plant hybridization at the Natural History Society. His work begins to gain recognition.

...at more can you learn from text features?

...timeline includes more information about Gregor Mendel than in the ...text. What new and important information can you learn from the ...ine? Do you think the text feature important to the overall text?

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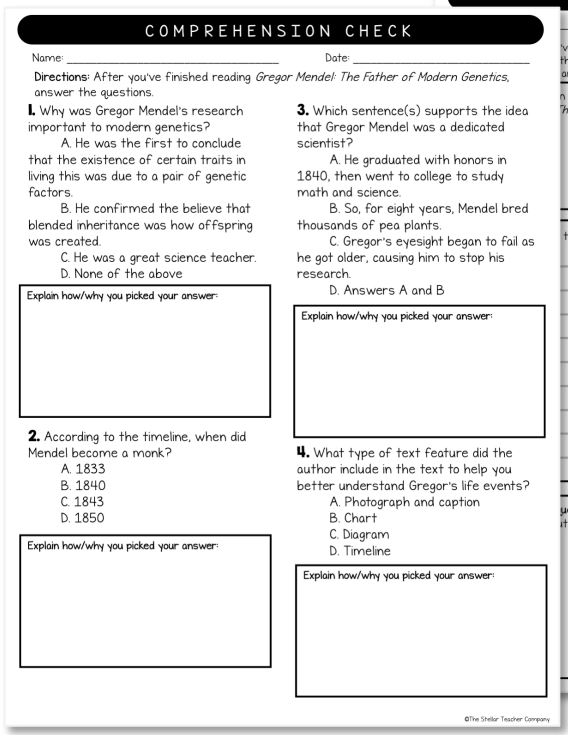


COMPREHENSION CHECK

Name: _____ Date: _____

Directions: After you've finished reading *Gregor Mendel: The Father of Modern Genetics*, answer the questions.

1. Why was Gregor Mendel's research important to modern genetics?
A. He was the first to conclude that the existence of certain traits in living this was due to a pair of genetic factors.
B. He confirmed the believe that blended inheritance was how offspring was created.
C. He was a great science teacher.
D. None of the above

Explain how/why you picked your answer:

2. According to the timeline, when did Mendel become a monk?
A. 1833
B. 1840
C. 1843
D. 1850

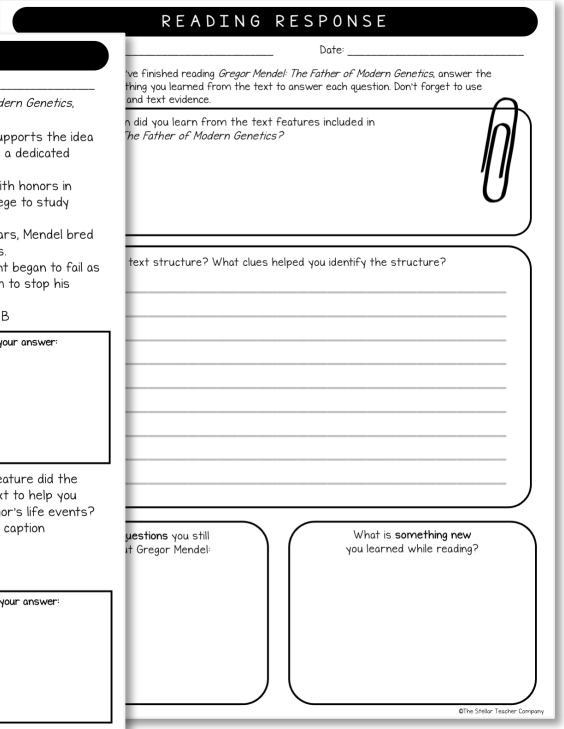
Explain how/why you picked your answer:

3. Which sentence(s) supports the idea that Gregor Mendel was a dedicated scientist?
A. He graduated with honors in 1840, then went to college to study math and science.
B. So, for eight years, Mendel bred thousands of pea plants.
C. Gregor's eyesight began to fail as he got older, causing him to stop his research.
D. Answers A and B

Explain how/why you picked your answer:

4. What type of text feature did the author include in the text to help you better understand Gregor's life events?
A. Photograph and caption
B. Chart
C. Diagram
D. Timeline

Explain how/why you picked your answer:



READING RESPONSE

Date: _____

...ve finished reading *Gregor Mendel: The Father of Modern Genetics*, answer the ...thing you learned from the text to answer each question. Don't forget to use ...and text evidence.

...n did you learn from the text features included in ...*The Father of Modern Genetics?*

...text structure? What clues helped you identify the structure?

...uestions you still ...t Gregor Mendel:

What is **something new** you learned while reading?

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Passage Details:

- **General Topic:** Significant Events in the Life of Gregor Mendel
- **Text Structure:** Sequence
- **Text Features:** Photograph and Caption, Timeline, Bold Words
- **Reading Skills:** Evaluate Details & Key Ideas, Text Features, Summarize, Text Structure, Text Evidence, Direct Quote/Paraphrase

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