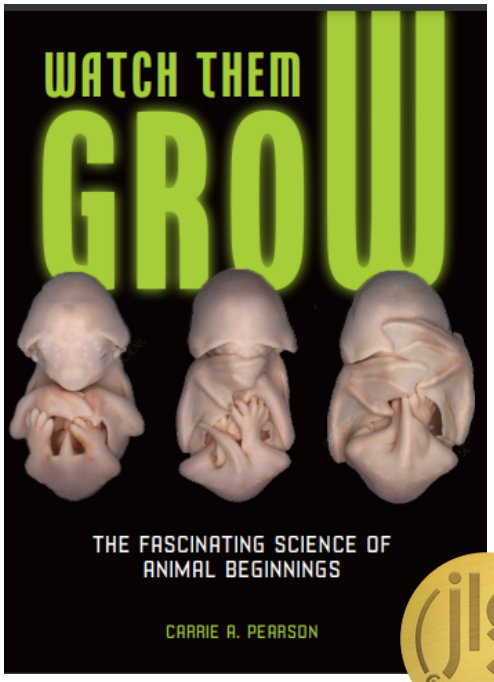

A Common Core State Standards & Next Generation Science Standards-Aligned Discussion & Project Guide for Middle Grade Readers

WATCH THEM GROW: THE FASCINATING SCIENCE OF ANIMAL BEGINNINGS

ISBN-13: 979-8765627464

Written by Carrie A. Pearson
Published by Millbrook Press

Sure, baby animals are cute. But have you ever seen what they look like before they're born?

Have you ever wondered how animals develop the traits they need to survive? Or how they grow from a single cell at conception to complex, unique creatures? The answer is complicated—there are so many ways to grow!

Author Carrie A. Pearson introduces readers to a variety of animals and shows how they develop some of their defining features. See how bats form wings so they can take flight. And how mice make whiskers to sense their surroundings. *Watch Them Grow* explores genetics, gestation, and early development through twelve different animal examples. Discover animal beginnings and watch them grow everything they need to survive.

Guide created by
Debbie Gonzales, MFA

Guides by deb

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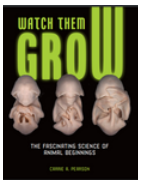
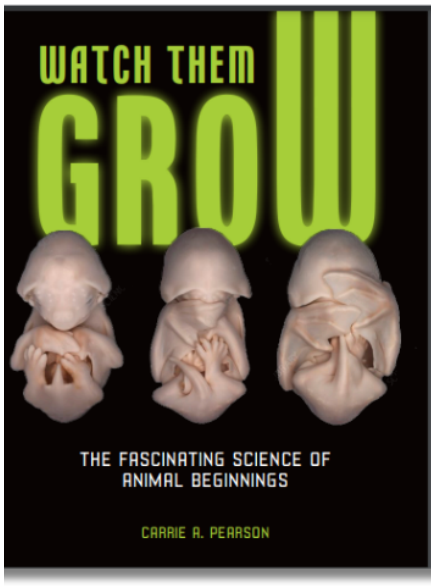


Meet Author Carrie A. Pearson

- Carrie A. Pearson believes that curiosity drives both science and storytelling. A former early childhood educator with a BA from the University of Michigan, she now writes nonfiction picture books that spark wonder and build knowledge. In *Watch Them Grow,* Carrie explores how animals develop the traits they need to survive—encouraging young readers to ask questions, observe closely, and see the natural world in a new way.
- Before becoming a full-time author, Carrie wore many hats—babysitter, teacher, children's hospital fundraiser, and parent. Each experience shaped her understanding of how children learn and how stories help them make sense of their world. Today, she writes with young minds in mind, blending facts with heart to create books that inform and inspire.
- Carrie lives near the sandy shore of Lake Superior in Marquette, Michigan, where she finds daily inspiration in nature. Whether she's skiing through the woods, paddling on the lake, or sharing stories at a school visit, she brings a deep respect for children's curiosity to everything she does—and invites them to grow right alongside the world around them.

Pre-reading Discussion:



- All animals—even the biggest ones like whales—start life super small. They all begin as just one single cell! Can you imagine that? Think about an animal you know—maybe a puppy, a duck, or a lizard. What do you think it looked like before it was born or hatched? How do you think it changed along the way?
- A baby bat needs to fly. A baby mouse needs to sense danger. What do you think these animals are born ready to do? What body parts or "tools" do they grow before they're even born to help them survive after birth? If you were designing a baby animal, what would you make sure it had?
- Imagine you're a baby sea turtle just hatching—how would you know which way to crawl? Do you think animals are born with senses that help them figure out their world? What kind of information do you think a baby animal's brain has to process right away?
- Have you ever seen pictures of a tadpole turning into a frog? Or a caterpillar into a butterfly? Animals grow in all kinds of amazing ways! What stages do you think a baby bird or whale goes through before it's ready to live on its own? What stage might be the most surprising?

Discussion Questions: Chapter 1

Even the biggest animals—like elephants!—start life as just one tiny cell. That little cell holds all the instructions needed to grow bones, skin, eyes, a brain… everything! In Chapter 1: POV: You're a cell. Wait! You're an Elephant!, *we learn how life begins, how cells work like busy cities, and how something super small can become something truly amazing.*

"This playful pachyderm begins as one cell, the smallest unit of life" (pg. 8).

- Wait, you're saying an elephant starts out smaller than a speck of dust?! That's wild. What surprises you most about that? Can you think of anything else that starts tiny and becomes something huge or powerful?

- Cells are compared to cities—with walls, power plants, and even a government. What do you think about that comparison? Can you imagine a cell working like a little town? What kind of "jobs" might be going on inside?

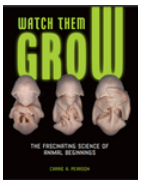
- Every cell has instructions inside called DNA—it's kind of like a recipe for life. Why do you think those instructions are important? What might happen if something in the recipe isn't as expected?

- One cell becomes two, then four, then eight… and eventually turns into an entire animal. How does that make you feel, knowing that all living things start out this way? Does it remind you of anything in your own life—like growing up, learning new things, or becoming who you are?

- Cells start out the same but then become different—like skin cells, heart cells, brain cells. Why do you think it's important for cells to have different jobs? Can you think of ways people in a community do that too?

- If you could peek inside your body with a microscope, what would you want to see? Which part of your body would you be most curious to explore at the cellular level—and why?

- Think about how one tiny cell becomes a baby animal with everything it needs. Does it feel more like science… or a kind of everyday magic? What do you wonder about most after reading this chapter?

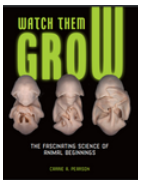


Discussion Questions: Chapter 2

In Chapter 2: Move It! Body Parts Designed for Moving*, we learn that from lion cubs to wildebeests to bat pups, animals grow amazing body parts that help them move in just the right way—even before they're born. Whether it's sprinting, climbing, flying, or swimming, movement is a matter of survival.*

"An animal's ability to move, whether crossing a road or crossing a continent, is essential for survival." (pg. 26)

- Identify some of the animals featured in this chapter. What are three ways they move, even before they're born?
- Consider the wildebeest. It moves in a herd—why might that be safer or smarter than moving alone?
- Explain why movement skills need to develop before birth in some animals. What advantage does that give them?
- Reflect on your own daily routine. What kinds of movement help you survive and thrive at school, at home, or outside?
- Imagine you're a baby bat inside the womb, beginning to stretch your wings. Describe what that might feel like.
- Examine the types of movement different animals use—flying, swimming, climbing, running. Why do you think these motions develop differently across species?
- Evaluate which kind of movement might be the hardest to learn right after birth—and why?
- Discover other animals or machines that, like bats, use gravity to get moving. How do they use it to their advantage?
- Invent a brand-new baby animal. What kind of movement would you design for it—and why?
- Recall a time when you had to learn a movement skill, like swimming or riding a bike. What helped you get the hang of it?

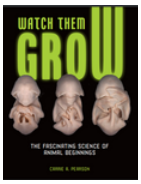


Discussion Questions: Chapter 3

Whether it's whiskers, ears, or the tip of a dog's nose, animals begin developing sensory tools before they're even born—tools that help them explore, adapt, and survive. In Chapter 3: Making Sense — Body Parts Designed for Sensing*, we discover how features like echolocation in bats and scent memories in puppies prepare animals to connect with their world from the very start.*

"Animals use their senses to learn about their surroundings and evaluate their and their offspring's safety." (Page 35)

- Identify which animals in this chapter begin using their senses before they're even born. What sense does each animal start developing in the womb—like a dog's powerful nose, an elephant's sensitive trunk, or a mouse's whiskers?
- Explain how whiskers help newborn mice make sense of their world. What makes whiskers different from regular hair? Why are they so important for a mouse that's born with limited vision?
- Consider how a dog's nose starts working before it's even born. Puppies remember scents from inside the womb—what kinds of smells might help them feel safe or find their way after birth?
- Reflect on your own five senses. How do they help you notice, learn, or stay safe in new places—just like animals do?
- Examine how each animal in the chapter relies on its senses to survive. Why is it helpful for animals to have these sensory tools ready before they enter the world?
- Choose a super sense—like echolocation (bats), heat sensing (snakes), or infrasound (elephants). Which one would you want to have, and how would it help you in your world?
- Recall a skill you've practiced a lot—maybe using your eyes to read, your hands to build, or your ears to play music. How is that kind of practice like what an elephant fetus does when it uses its trunk in the womb?

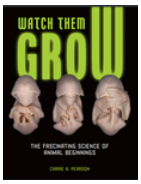


Discussion Questions: Chapter 4

From snakes with fangs to chicks with egg teeth, animals grow what they need to eat and drink from the start. In Chapter 4: Chomp! — Body Parts Designed for Ingesting *we explore how different species develop digestive tools that are ready to go right at birth.*

"Growing the body parts designed to help a creature ingest is essential work. Let's see how three animals accomplish it." (pg. 42)

- Identify three animals featured in this chapter—like the great white shark, the chick, and the snake. What tools does each one develop before birth to help it feed right away?
- Explain the purpose of a chick's egg tooth. Why is it a temporary tool, and what happens to it after the chick hatches?
- Imagine you're a baby animal living in the desert. What kind of mouth, beak, or tongue would help you survive in that environment—and why?
- Examine why some animals, like baby snakes and sharks, need sharp fangs or teeth before they're even born. What survival challenges do they prepare for from the very beginning?
- Consider the pros and cons of being born with your feeding tools (like fangs) versus growing them later (like baby humans). Which approach seems more useful—or more risky?
- Design your own baby animal and imagine the feeding system it would need to thrive in its environment. Would it sip, slurp, chomp, or chew? What body parts would help it do that?

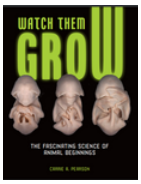


Discussion Questions: Chapter 5

In Chapter 5: Different Is Good — Gestational Outliers*, we explore animals that grow in ways that break the rules. From seahorse dads who carry the babies, to platypuses that lay eggs but are still mammals, to wallaby joeys that finish growing in a pouch, this chapter reveals just how wild—and wonderfully adaptable—baby development can be. These surprising strategies remind us that in nature, there's no single way to be ready for the world.*

"While many animals fit into neat categories of baby development, many others make us wonder." (p. 50)

- List and describe the "rule-breaking" animals featured in this chapter. What makes each one an exception to what we typically expect?
- Explain why it might be helpful for certain animals—like seahorses or wallabies—to grow in ways that are completely different from most mammals. How do their unique life beginnings support survival?
- Compare how a wallaby joey or seahorse baby begins life to how you were born and cared for. What are some key differences and similarities?
- Examine what makes the platypus or seahorse such unusual examples of adaptation. What do their life cycles tell us about how flexible and creative nature can be?
- Consider the value of having "outliers" in nature. Do you think it's important that not all animals follow the same growth path? Why or why not?
- Reflect on your own growth—physically, emotionally, or mentally. What's something about your development that makes your story unique?
- Discuss what these rule-breaking animals teach us about adaptation. What can humans learn from nature's creativity and flexibility?

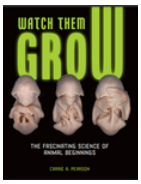


Discussion Questions: Conclusion

In the Conclusion, Watch Them Grow *brings us back to one big idea: every animal must find its own way to survive. There isn't just one right path—there are many. Whether falling into flight, using smell to remember, or growing in a pouch, each animal's growth story is tailored to its needs. This final chapter invites us to step back, connect the dots, and consider what these stories reveal about life, change, and adaptation—including our own.*

"No single way of growing is the right way." (p. 56)

- Recall one animal growth story that stood out to you. What made it especially interesting, surprising, or memorable?
- Explain why it's impossible for all animals to grow in the same way. How do things like environment, size, or survival needs shape their development?
- Reflect on your own growth—physically, emotionally, or mentally. What parts of your journey helped shape the person you are today?
- Identify and compare what all the animal stories in this book have in common. What themes or patterns do you notice—even among animals that grow in wildly different ways?
- Determine the most important lesson this book teaches about life, growth, or survival. What big idea do you think readers should take with them?
- Compose one thoughtful question you're still wondering after reading the book. What would you love to explore next?
- Summarize the message of this book in your own words. Can you capture it in one powerful sentence?



Graph Analysis: How Long Does It Take to Grow?

"No matter how long animals grow inside, or gestate, the most important part of their development is preparing their bodies to live outside." (pg. 23)

Lesson Objectives:

- Research or be provided with gestational periods of a variety of animals.
- Create a bar graph comparing the data.
- Analyze the data through guided mathematical and scientific questions.
- Reflect on how gestation length connects to animal size, survival needs, and life strategy.
- Write an essay synthesizing is learned.

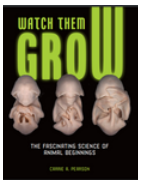
Materials:

- **Watch Them Grow: The Fascinating Science of Animal Beginnings (the book)**
- Printable graph paper or digital graphing tool (Google Sheets, Canva graph templates, etc.)
- Ruler, colored pencils or markers
- Sample Graph (Guide, pg. 11)
- The Animal Gestation Periods (in days) Chart (Guide, pg. 12)
- Writing paper or digital doc for final essay

Procedure:

- **Part 1: Graph It!**
  - Using The Animal Gestation (in days) Chart (pg. 12) and the Sample Graph (pg. 11) as reference, create a bar graph that shows the gestational periods of each animal.
  - Label each axis clearly (Animals / Days).
  - Use color coding to group by types (e.g., mammals, marsupials, monotremes).
  - Make sure your intervals are appropriate for the range (0–700 days).

- **Part 2: Examine the Data**
  Ask students to analyze and interpret the graph using these guiding questions:
  - Compare: Which animal has the longest gestation? The shortest?
  - Identify patterns: Do you notice any relationship between the size of the animal and how long it takes to develop?
  - Classify: Which animals are placental mammals, marsupials, or monotremes? How does gestation differ among these types?
  - Calculate: What is the difference between the gestation of an elephant and a mouse? A wallaby and a human?
  - Interpret: Why do you think some animals need longer gestation times than others?

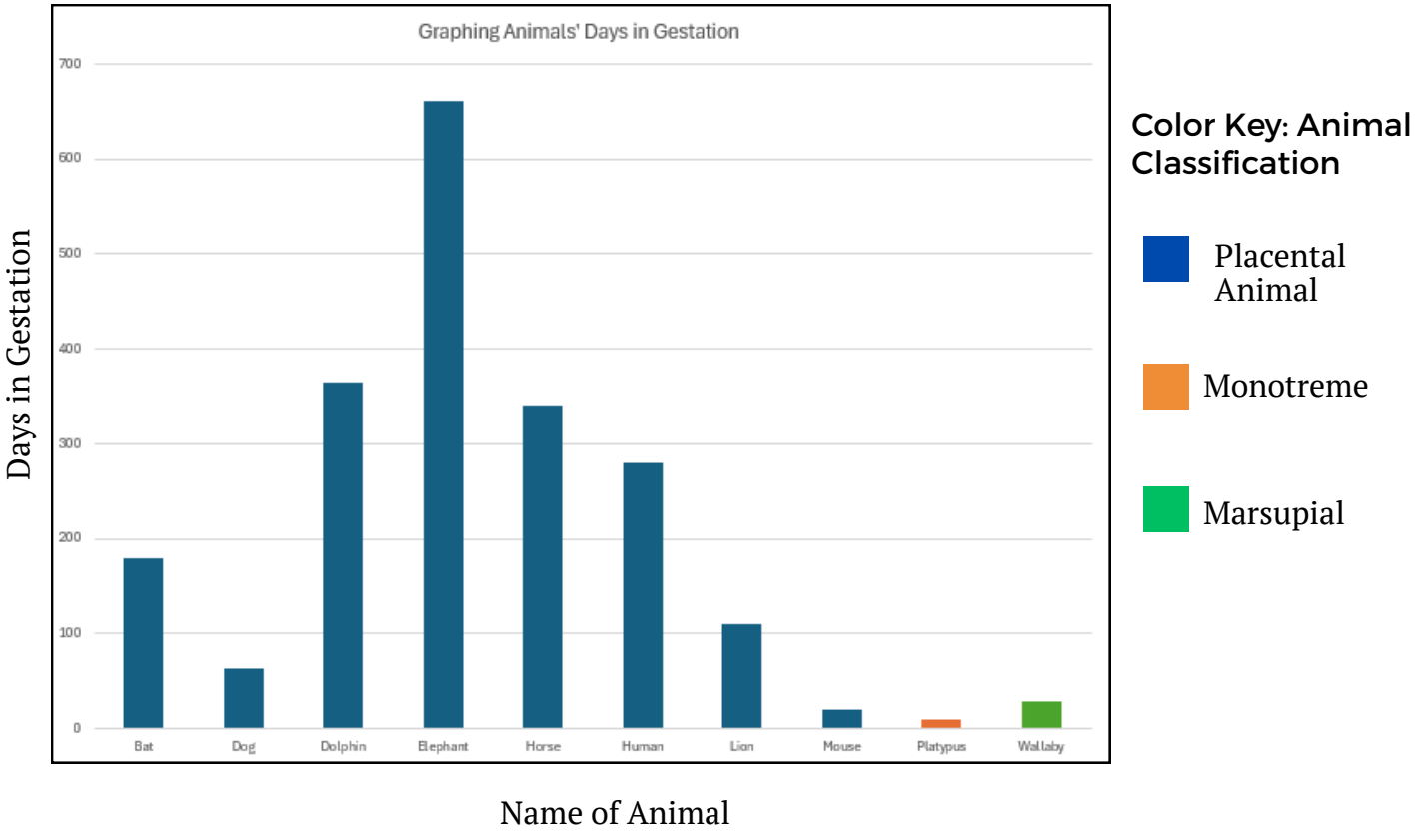


- **Part 3: Write About It – Mini Essay**

Prompt: Now that you've graphed and explored the data, write a short essay that answers the question: "What can gestation lengths tell us about how animals prepare for life outside the womb (or egg)?"

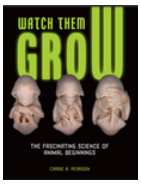
  - Your essay should include:
    - A summary of what you discovered in your graph.
    - At least two examples from the chart.
    - An explanation of how gestation might relate to survival, brain development, or life strategy.
    - A personal reflection: What surprised you most? What would you like to learn more about?
    - An illustration of one of the animals during its gestation phase or at birth.

Sample Graph:



Animal Gestation Periods (in days)

ANIMAL	GESTATION PERIOD (DAYS)	CLASSIFICATION
Bat	180	Placental Mammal
Dog	63	Placental Mammal
Dolphin	365	Placental Mammal
Elephant	660	Placental Mammal
Horse	340	Placental Mammal
Human	280	Placental Mammal
Lion	110	Placental Mammal
Mouse	20	Placental Mammal
Platypus	10 (plus 10 in egg)	Monotreme
Wallaby	28	Marsupial Mammal



The Punnett Square Project: Create an Animal

"Do you see the word gene in generation? Genes are passed from one generation to the next." (pg. 14)

Note: A Punnett square is a simple diagram that helps us predict which traits offspring might inherit from their parents. By combining gene pairs from each parent, we can see the chances of traits like eye color or fur type appearing in the next generation. It's like a peek into nature's blueprint.

Lesson Objectives:

- Apply knowledge of genetics by selecting traits inherited from imagined parent species.
- Use understanding of gestation, anatomy, and environmental adaptation to design a biologically plausible baby animal.
- Create a labeled illustration and/or model of the designed animal highlighting inherited and adaptive features.
- Present the animal's development story using accurate scientific vocabulary (e.g., gestation, traits, environment, adaptation).
- Reflect on how genetic inheritance and environmental factors shape animal survival through a short narrative or oral presentation.

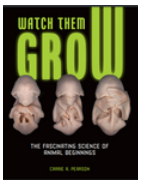
Materials:

- *Watch Them Grow: The Fascinating Science of Animal Beginnings* (the book)
- Punnett Square Worksheet - Sample (Guide, pg. 16)
- Parent Profile Animal Trait List (Guide, pg. 17)
- Foldable Trait Dice (Guide, pg. 18)
- Punnett Square Worksheet (Guide, pg. 19)
- Drawing paper and art supplies – for students to illustrate their baby animal based on the genetic outcomes
- Writing paper or digital document

Procedure:

Part 1: Fold the Trait Dice (Tip: Use cardstock if possible — it makes sturdier dice.)

- Have students cut out along the solid lines.
- Fold along all the dotted lines.
- Use a glue stick or tape to assemble the dice into cube shapes.
- Each die represents one parent and the possible gene (allele) they might pass on for a specific trait.



Each die represents one trait (like tail length or fur type), which is controlled by a pair of alleles — one from each parent. The roll of the die simulates which allele the parent passes to the baby animal. This helps us explore how traits are inherited.

What the Letters Mean:

- Each trait is represented by a single letter.
- Use the same letter for both versions of the trait (alleles).
- Use a capital letter for the dominant allele (stronger trait).
- Use a lowercase letter for the recessive allele (weaker trait).

For example:

- T = long tail (dominant), t = short tail (recessive)
- F = fluffy fur, f = smooth fur

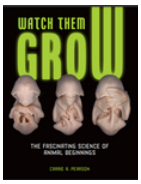
You will assign new letter pairs for each trait you study. The letters printed on the dice are generic — they just help to randomly choose alleles from each parent.

How to Use:

- Choose a trait you want to study (e.g., eye color, fur type).
- Pick a letter to represent that trait.
- Capitalize the dominant version, and lowercase the recessive one.
- Roll two dice — one for each parent — to see which allele each gives.
- Fill in your Punnett square and discover what the baby animal's traits might be.

Part 2: Build and Analyze the Punnett Square

- Complete the grid of the Punnett Square Worksheet. Write the alleles from the dice on the top and side of the grid. Fill in the boxes by combining the alleles from both parents. Each box contains two letters—representing a genotype.
- Note: If you roll a lowercase letter first, write the dominant letter first in your square. For example, if you roll a and A, write it as Aa in the appropriate space on the Punnett square.
- Understand the genotypes and phenotypes. Look at the letter combinations in each square (like GG, Gg, or gg). These are called *genotypes*. If both letters are the same (GG or gg), it's called *homozygous*. If the letters are different (Gg), it's called *heterozygous*. Then, figure out what the offspring would look like (the phenotype) for each genotype, based on which allele is dominant.
- Wrap-Up: Think about what your Punnett square shows. What are the chances that certain traits will appear in the baby animal? Are some combinations more likely than others? Use what you see in the square to explain which traits are common, rare, or unlikely.



Part 3: Create Your Animal

- Draw an illustration of your animal, showing the features that match the traits you discovered in your Punnett Square. Be sure to include details like fur color, tail length, or any special patterns.

Extension Activity: Design a Wild New Species

- Print three copies of this worksheet. For each one:
  - Choose a different trait (like eye color, fur texture, or camouflage pattern).
  - Roll the Trait Dice to complete each Punnett Square.
  - Record the genotype and identify the phenotype (what the animal looks like).

After all three squares are complete:

- Combine the dominant traits from each chart.
- Use them to design a new wild creature with three unique inherited traits!
- Give your creature a name and describe where it lives and how it survives in its ecosystem.

Assignment - Genetics Reflection Report:

Write a one-page report that explains your baby animal's inherited traits. Using vocabulary from the lesson, such as: gene, allele, genotype, phenotype, dominant, and recessive, write a report, including:

- A description of your baby animal and its traits (using the results from your Punnett square).
- An explanation of how you used alleles and Punnett squares to figure out which traits it has.
- A reflection on what surprised you or what you learned about how traits are passed down.
- Optional: Include your drawing or a labeled diagram of your animal.

Punnett Square Worksheet - Sample

Instructions:

- *Select one trait from the Parent Profile (like fur color, ear shape, or tail length).*
- *Roll the Trait Dice to determine the genetic combinations passed down from each parent.*
- *Use the Punnett Square to record all possible genotypes.*
- *Interpret the results to figure out the phenotype — what the trait actually looks like.*

Remember:

- *Genotype = the genetic code (like Aa or bb)*
- *Phenotype = how the trait appears (like short tail or green eyes)*

Extension: Want to design a whole new species? Print additional copies of this worksheet and repeat the process for two more traits. Then, combine all the results to create a wild and wonderful creature with three unique inherited features.

Trait Category: Fur Color

Dominant Trait: Brown (B)

Recessive Trait: White (b)

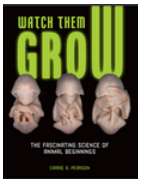
Parent 1 Alleles

Parent 2 Alleles	B	b
B	B B	B b
b	B b	b b

Genotypes: BB, Bb, Bb, bb

Phenotypes: Brown Fur: 3 out of 4 (BB, Bb, Bb), White Fur: 1 out of 4 (bb)

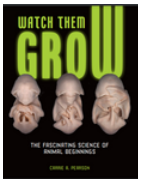
Description: This creature most likely has brown fur, but there's a chance for white fur if it inherits two recessive alleles.



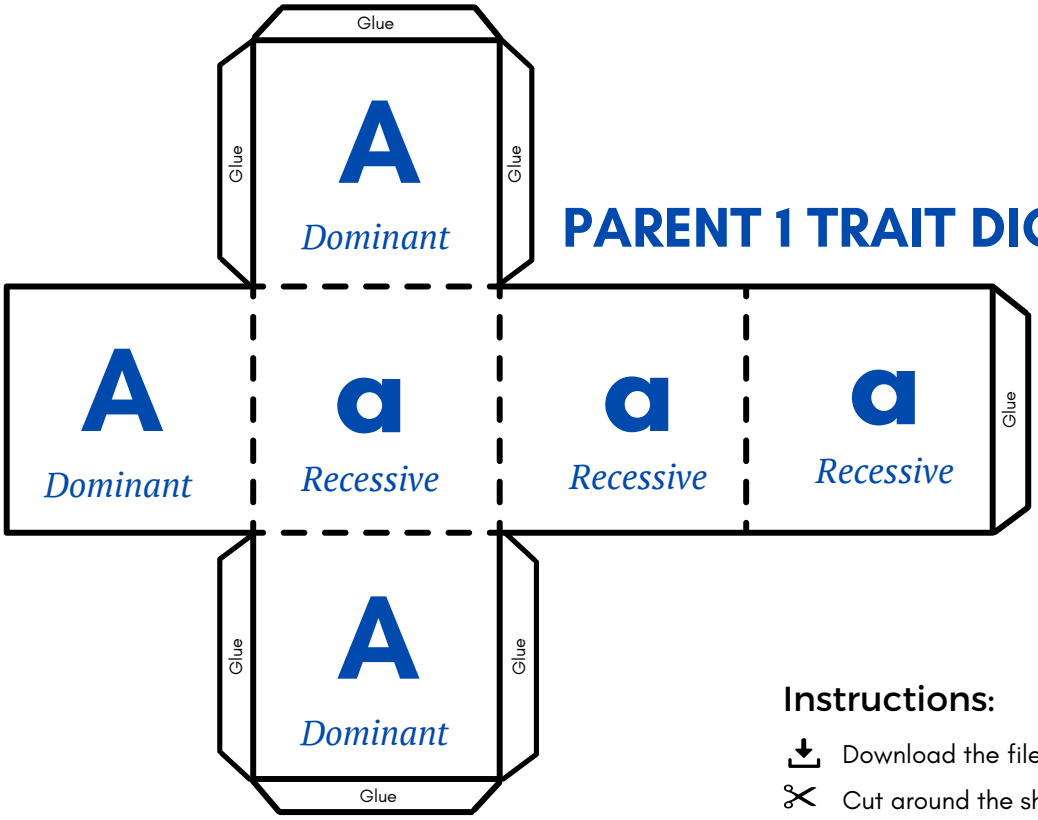
Parent Profile Animal Trait List

	TRAIT CATEGORY	DOMINANT TRAIT (UPPERCASE)	RECESSIVE TRAIT (LOWERCASE)
1	Fur color	Brown (B)	White (b)
2	Ear shape	Pointy (E)	Rounded (e)
3	Tail length	Long (T)	Short (t)
4	Eye color	Green (G)	Amber (g)
5	Leg length	Long (L)	Short (l)
6	Fur texture	Curly (C)	Straight (c)
7	Nose type	Broad (N)	Narrow (n)
8	Camouflage pattern	Spotted (S)	Solid (s)

Feel free to customize these to align with the wild animals featured in Watch Them Grow!

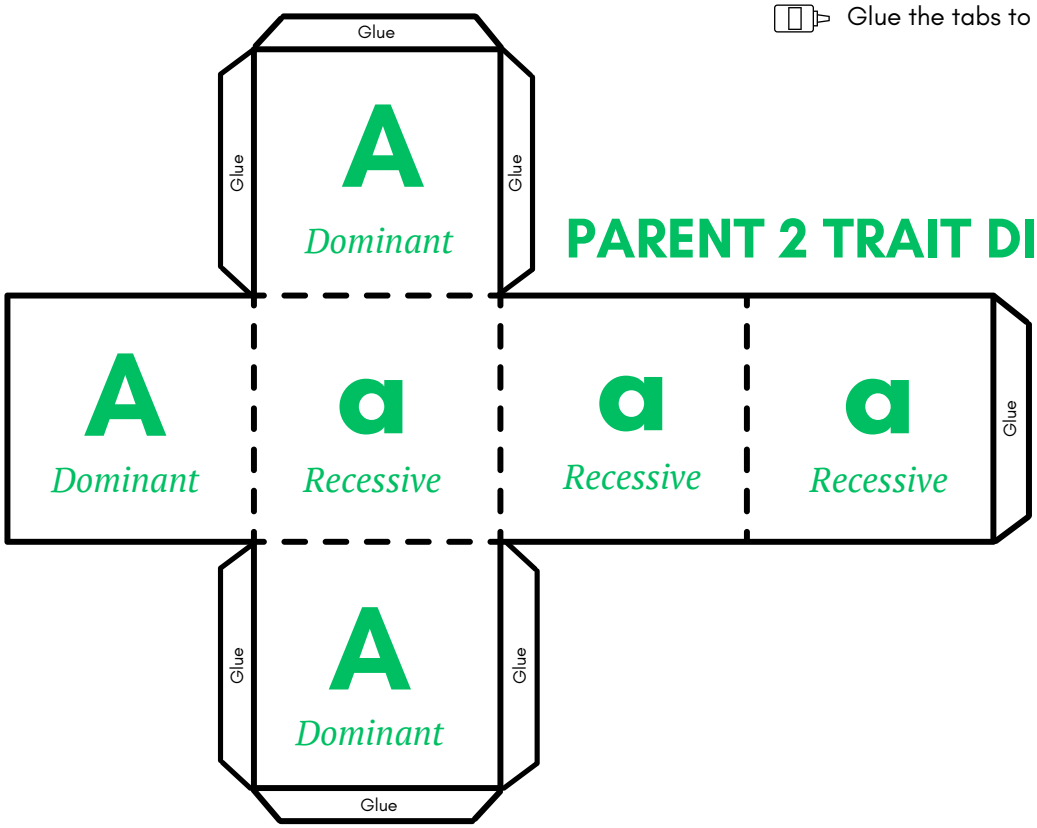


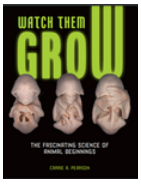
Foldable Trait Dice



Instructions:

- Download the file
- Cut around the shape
- Fold along the lines
- Glue the tabs to create a cube





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Punnett Square Worksheet

Instructions:

- *Select one trait from the Parent Profile (like fur color, ear shape, or tail length).*
- *Roll the Trait Dice to determine the genetic combinations passed down from each parent.*
- *Use the Punnett Square to record all possible genotypes.*
- *Interpret the results to figure out the phenotype — what the trait actually looks like!*

Remember:

- *Genotype = the genetic code (like Aa or bb)*
- *Phenotype = how the trait appears (like short tail or green eyes)*

Extension: Want to design a whole new species? Print additional copies of this worksheet and repeat the process for two more traits. Then, combine all the results to create a wild and wonderful creature with three unique inherited features!

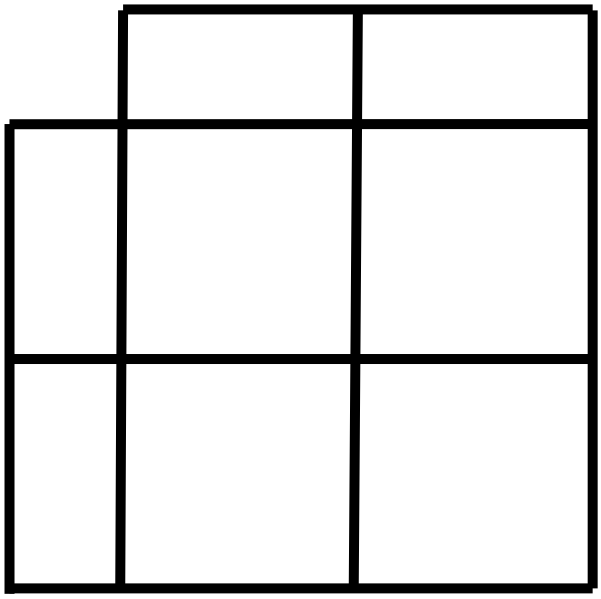
Trait Category: _____

Dominant Trait: _____

Recessive Trait: _____

Parent 1 Alleles

Parent 2 Alleles

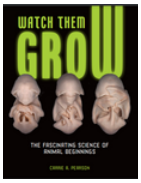


Genotypes: _____

Phenotypes: _____

Description: _____

_____



Which One Doesn't Belong? Vocabulary Sets

Mark through the word that does not belong in the set, then explain your reasoning.

Set 1:

- Genotype
- Chromosome
- Photosynthesis
- Allele

Explanation:

_____

_____

Set 2:

- Adaptation
- Trait
- Habitat
- Mitosis

Explanation:

_____

_____

Set 3:

- Zygote
- Fertilization
- Germination
- Embryo

Explanation:

_____

_____

Set 4:

- Phenotype
- Environment
- Dominant
- Recessive

Explanation:

_____

_____

Set 5:

- DNA
- RNA
- Leaf
- Chromosome

Explanation:

_____

_____

Set 6:

- Zygote
- Fertilization
- Germination
- Embryo

Explanation:

_____

_____

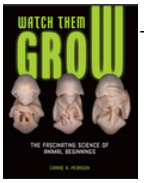
Set 7:

- Offspring
- Parent
- Stem
- Generation

Explanation:

_____

_____



Set 8:

- Recessive
- Dominant
- Inherited
- Metamorphosis

Explanation:

_____

_____

Set 9:

- Forest
- Animal cell
- Egg
- Sperm

Explanation:

_____

_____

Set 10:

- Nucleus
- Allele
- Trait
- Migration

Explanation:

_____

_____

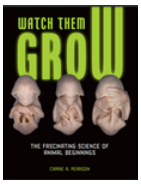
BONUS - Make you own!:

-
-
-
-

Explanation:

_____

_____



Which One Doesn't Belong? Vocabulary Sets: ANSWERS

Set 1:

- Genotype
- Chromosome
- ~~Photosynthesis~~
- Allele

Explanation:

Photosynthesis → It's a plant energy process, not a genetics concept.

Set 2:

- Adaptation
- Trait
- Habitat
- ~~Mitosis~~

Explanation:

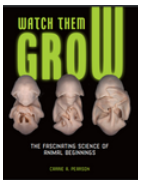
Mitosis → It's about cell division, not physical or behavioral traits.

Set 3:

- Zygote
- Fertilization
- ~~Germination~~
- Embryo

Explanation:

Germination → It's about seed sprouting, not animal development.



Set 4:

- Phenotype
- ~~Environment~~
- Dominant
- Recessive

Explanation:
Environment → It's an external factor, not a genetic descriptor.

Set 5:

- DNA
- RNA
- ~~Leaf~~
- Chromosome

Explanation:
Leaf → Not part of genetic material.

Set 6:

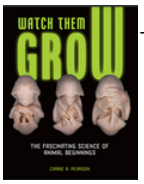
- Offspring
- Parent
- ~~Stem~~
- Generation

Explanation:
Stem → Part of a plant, not related to ancestry.

Set 7:

- Camouflage
- Fur color
- Adaptation
- ~~Mitosis~~

Explanation:
Mitosis → It's a process, not a survival trait.



Set 8:

- Recessive
- Dominant
- Inherited
- ~~Metamorphosis~~

Explanation:
Metamorphosis → It's a lifecycle stage, not a genetic quality.

Set 9:

- ~~Forest~~
- Animal cell
- Egg
- Sperm

Explanation:
Forest → It's an environment, not a biological structure.

Set 10:

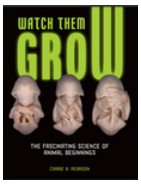
- Nucleus
- Allele
- Trait
- ~~Migration~~

Explanation:
Migration → It's a behavior, not a cell or genetic part.

BONUS - Make your own!:

-
-
-
-

Explanation:



Discussion Questions & Lessons: CCSS + NGSS Standards Alignment

CHAPTER 1: POV: You're a Cell. Wait! You're an Elephant? (Guide, pg. 4)
Themes: Cell structure, growth from one cell, DNA

- NGSS:
  - MS-LS1-1: Structure and function of cells
  - 3-LS1-1: Life cycles of organisms
  - LS3.A: Inheritance of Traits
  - LS1.A: Structure and Function
- CCSS:
  - RI.4.1, RI.5.1: Refer to details and explain what the text says explicitly and inferentially
  - SL.4.1: Engage effectively in collaborative discussions
  - W.4.2: Write informative/explanatory texts to examine a topic

CHAPTER 2: Move It! Body Parts Designed for Moving (Guide, pg. 5)
Themes: Movement adaptations, body systems, physical traits for survival

- NGSS:
  - 4-LS1-1: Structure and function in animals (movement-related traits)
  - LS1.B: Growth and Development of Organisms
- CCSS:
  - RI.4.3: Explain relationships between concepts (e.g., anatomical adaptations and function)
  - SL.5.4: Report on a topic with appropriate facts
  - W.4.1: Support opinions with evidence (when evaluating movement skills)

CHAPTER 3: Making Sense — Body Parts Designed for Sensing (Guide, pg. 6)
Themes: Sensory development, animal perception, survival traits

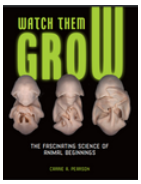
- NGSS:
  - 4-LS1-2: Use of structures for processing information
  - LS1.D: Information Processing
- CCSS:
  - RI.5.3: Explain relationships among ideas/events
  - SL.4.3: Identify reasons and evidence a speaker provides
  - W.5.2: Write explanatory texts about biological systems

CHAPTER 4: Chomp! Body Parts Designed for Ingesting (Guide, pg. 7)
Themes: Digestive adaptations, survival systems from birth

- NGSS:
  - 3-LS1-1: Developmental stages
  - LS1.A: Structure and Function
- CCSS:
  - RI.4.2: Determine main ideas and summarize
  - W.5.2: Develop the topic with facts and definitions
  - SL.4.4: Present information clearly

CHAPTER 5: Different is Good — Gestational Outliers (Guide, pg. 8)
Themes: Reproductive adaptations, variation in growth strategies

- NGSS:
  - LS1.B: Growth and Development of Organisms
  - LS3.B: Variation of Traits
- CCSS:
  - RI.5.3: Explain how ideas are elaborated in informational texts
  - SL.5.1: Collaborative discussions
- W.4.3: Write narratives using real or imagined experiences



Conclusion: One Question, Many Answers (Guide, pg. 9)
Themes: Synthesis of animal life strategies, personal reflection

- NGSS:
  - LS3.A: Inheritance of Traits
  - LS4.C: Adaptation
- CCSS:
  - RI.4.9: Integrate information from two texts
  - W.5.2 & W.5.8: Write and support conclusions with evidence
  - SL.5.1c: Pose and respond to specific questions with elaboration

Graphing & Data Activity: "How Long Does It Take to Grow?" (Guide, pgs. 10-12)
Subjects: Math, science, writing

- NGSS:
  - 3-LS1-1: Life cycles and development
  - 4-LS1-1: Internal and external structures and survival
  - 5-PS3-1: Energy in animals (related to gestation and readiness)
- CCSS – Math:
  - 4.MD.B.4: Represent and interpret data
  - 5.MD.B.2: Make a line plot to display a data set
  - MP.2, MP.4: Reason abstractly and model with math
- CCSS – ELA:
  - W.5.2: Informative writing
  - W.4.9: Draw evidence from informational texts
  - RI.4.7: Interpret information presented visually

Punnett Square Genetics Project: Create an Animal (Guide, pgs. 13-18)
Subjects: Science, writing, speaking

- NGSS:
  - MS-LS3-1: Genetic inheritance patterns
  - LS3.A/B: Inheritance and variation of traits
  - LS4.C: Adaptation
- CCSS:
  - W.5.2 & W.5.7: Explanatory writing and short research projects
  - SL.4.5: Add visual displays to clarify ideas
  - L.5.6: Use academic vocabulary in context

Which One Doesn't Belong? Vocabulary Activity (Guide, pgs. 20-22)
Subjects: Vocabulary, categorization, science comprehension

- NGSS Cross-Cutting Concepts:
  - Patterns
  - Structure and function
  - Cause and effect
- CCSS:
  - L.4.4 & L.5.4: Determine meaning of academic/science words
  - RI.4.4: Determine meaning of domain-specific vocabulary
  - W.4.9: Draw evidence from text for written responses

Across all chapters and activities: Speaking & Listening + SEL Integration

- CCSS SL.3–5.1: Engage in collaborative discussions
- CCSS SL.4.4: Report on a topic clearly
- CCSS W.4–5.8: Recall and gather information from sources