

Exploring Patterns

5.ESS1.4 Explain the cause and effect relationship between the positions of the sun, earth, and moon and resulting eclipses, position of constellations, and appearance of the moon.
5.OA.B.3a Identify relationships between corresponding terms in two numerical patterns. *For example, observe that the terms in one sequence are twice the corresponding terms in the other sequence.*

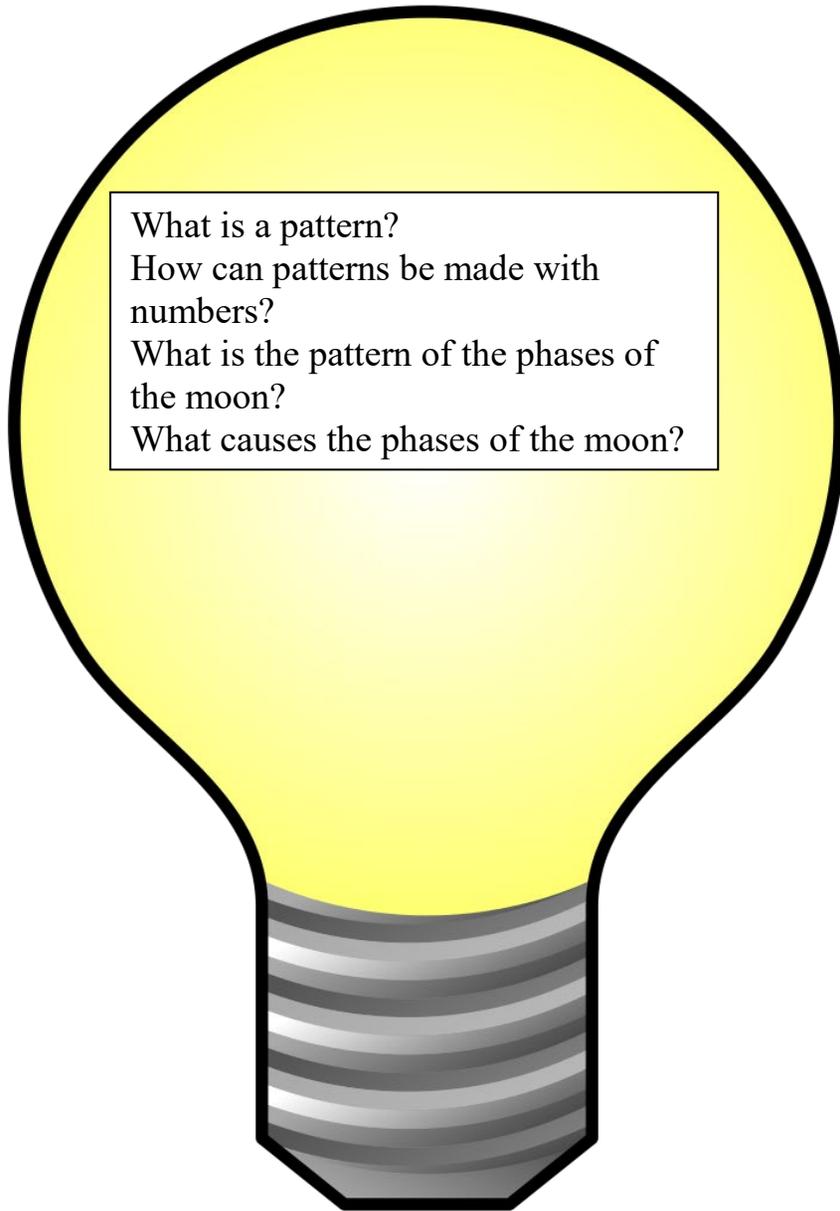
By: Class Example

Overarching Question: What contributes to how an animal responds and how can we apply them to a given real life situation?

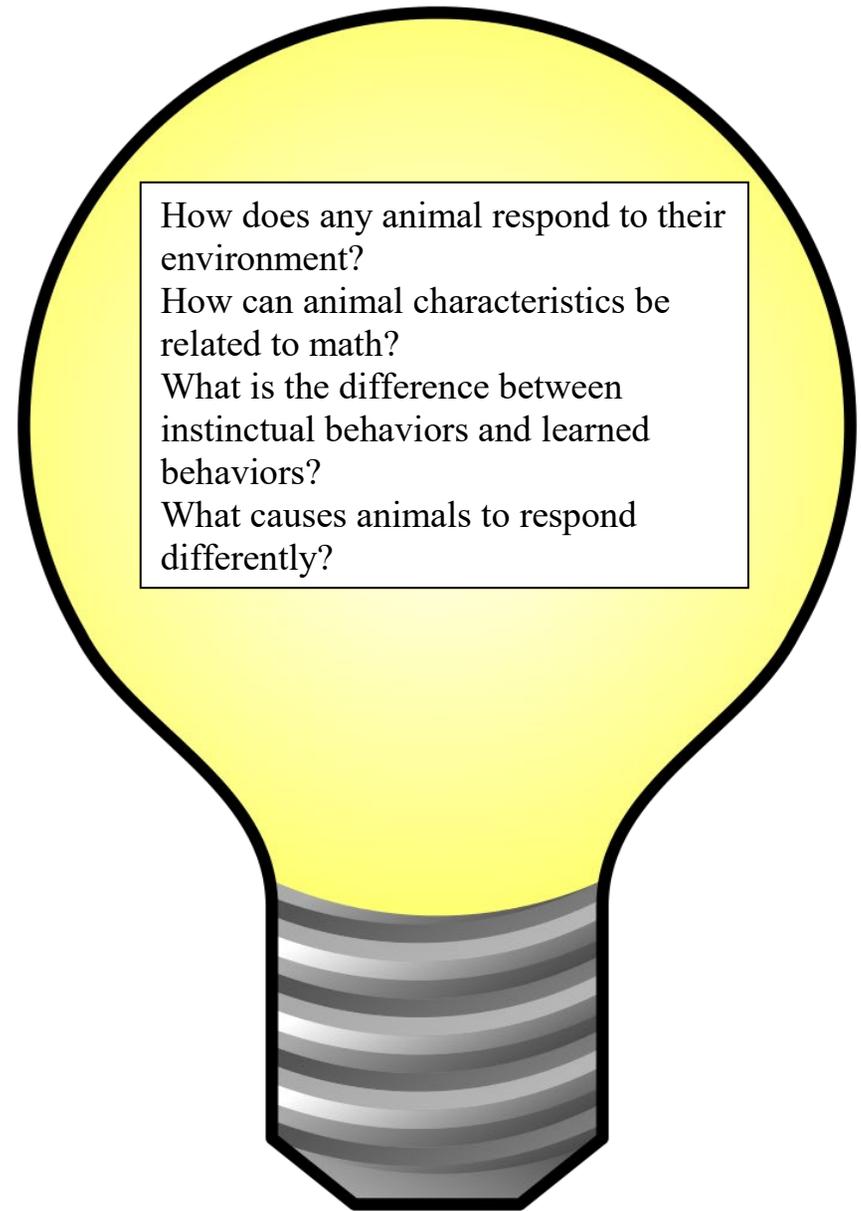
Exploring Animals

5.LS.1 Compare and contrast animals responses that are instinctual versus those that are gathered through the senses, processed, and stored as memories to guide their actions.
5.G.A.2 Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.

By: Class Example



What is a pattern?
How can patterns be made with numbers?
What is the pattern of the phases of the moon?
What causes the phases of the moon?



How does any animal respond to their environment?
How can animal characteristics be related to math?
What is the difference between instinctual behaviors and learned behaviors?
What causes animals to respond differently?

Overarching Question: What contributes to how an animal responds and how can we apply them to a given real life situation?

Line of Evidence – Animal Behavior Log

We used the animal behavior log to see how certain animals respond/interact with different things. Such as sleep, eating, drinking, play, exploring, interacting with other animals, and other.

Line of Evidence – Plotting Points

The plotting points worksheet helped us plot given points in the first quadrant.

Line of Evidence – Animal Behavior Videos

The videos showed us different examples of inherited and learned behaviors. It helped show us the difference between the two types of behaviors.

Line of Evidence – Science Informational Text

The text tells us how animals adapt to certain behaviors along with telling us how they develop their inherited behaviors.

Line of Evidence – Math Website

This helps show us how we can apply animal behavior scenarios to math problems.

Line of Evidence – Animal Behaviors Lab

Animals behave in certain ways according to their environment. They are either inherited or learned. All animals can have both types of behaviors.

Big Aha Thesis Statement

Animals acquire different behaviors depending on several different things, but one of the main ones is the

environment in which they live. Their environment helps change them.

ANIMAL BEHAVIOR LOG

Sleep

Eating

Drinking

Play

Exploring

Interactions with others

Other

Describe Your Animal

What Do You Expect Will Happen?

What Surprised You?

Explore – Animal Behavior Videos & Plotting Points

A Skateboard Riding Dog! - Exploring the Difference Between Learned and Inherited Animal Behaviors. (n.d.). Retrieved from <http://www.cpalms.org/Public/PreviewResourceLesson/Preview/29845>

Plotting points. (n.d.). Retrieved from <https://www.k5learning.com/free-math-worksheets/fourth-grade-4/geometry/geometry-plotting-points-coordinate-grid-1Q>

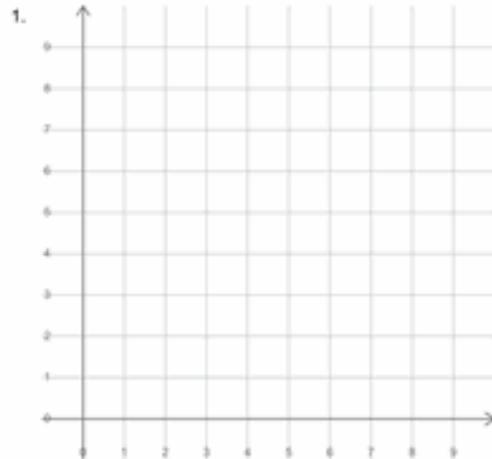
Explore – Plotting Points



Plotting points on a coordinate grid (1st quadrant only)

Grade 4 Geometry Worksheet

Plot the points shown on the grid.



A = (7, 5)

B = (3, 9)

C = (3, 6)

D = (2, 4)

E = (2, 2)

F = (1, 2)

G = (9, 6)

H = (8, 3)

I = (0, 4)

J = (1, 1)

Animal Videos CER

Claim (Write a sentence or two that compares and contrasts instinctual and learned behaviors.)

Evidence (Write a sentence or two providing examples of instinctual and learned behaviors from two or three videos that you watched.)

Reasoning (Write a sentence or two explaining how your evidence supports your claim.)

ANSWER KEY Oreo Moon Phases CER

Claim (Write a sentence stating the pattern of the moon phases.)

The moon goes through a repeating pattern of eight phases.

Evidence (Provide names and descriptions of the phases of the moon to support your claim. Describe how to tell the difference between waxing and waning phases.)

The eight phases of the moon are new moon, waxing crescent, first quarter, waxing gibbous, full moon, waning gibbous, third quarter, and waning crescent. The amount of the moon that appears bright slowly increase from 0, 1/6, 1/2, 5/6, 1 and then decrease to 5/6, 1/2, 1/6, and 0.

Reasoning (Explain how your evidence supports your claim. Describe how the phases of the moon repeat.)

The moon phases repeat each month and they always go in the same order.

ANSWER KEY Animal Videos CER

Claim (Write a sentence or two that compares and contrasts instinctual and learned behaviors.)

Both are ways that an animal acts in an environment to stay alive, but learned behaviors are ones that have to be taught and instinctual behaviors are those that an animal is born with.

Evidence (Write a sentence or two providing examples of instinctual and learned behaviors from two or three videos that you watched.)

Dolphins have to be taught how to perform tricks, but they already know how to catch fish to eat.

Reasoning (Write a sentence or two explaining how your evidence supports your claim.)

Instinctual behaviors are those that an animal is born with. Instinctual behaviors are gathered through senses, processed, and stored as memories to guide their actions.

Explain – Science Informational Text

Intro to animal behavior. (n.d.). Retrieved from <https://www.khanacademy.org/science/biology/behavioral-biology/animal-behavior/a/intro-to-animal-behavior>

Explain – Math Website

(n.d.). Retrieved from <https://study.com/academy/lesson/graph-quadrants-examples-definition-quiz.html>

Science Informational Texts Reading Questions

1. Causation—What causes the behavior? What triggers the behavior, and what body parts, functions, and molecules are involved in carrying it out?
2. Development—How does the behavior develop? Is the behavior present early in life? Does it change over the course of the organism's lifetime? What experiences are necessary for its development?
3. Function/adaptive value—How does the behavior affect fitness? How does the behavior affect an organism's chances of survival and reproduction?
4. Phylogeny—How did the behavior evolve? How does the behavior compare to those of related species? Why might it have evolved as it did?

Math Informational Texts Reading Questions

1. Draw a coordinate plane labeling the x and y axis.
2. What is the x-coordinate and y-coordinate in the following points: $(4,5)$, $(2,3)$, and $(5,1)$.
3. Plot the above points on a graph.
4. Create your own points and graph them in the first quadrant.

ANSWER KEY Science Informational Texts Questions

1. Causation—What causes the behavior? What triggers the behavior, and what body parts, functions, and molecules are involved in carrying it out?

Singing is triggered in zebra finches by social cues, such as the proximity of a potential mate, as well as the appropriate hormonal state. The ability to produce songs is influenced by male hormones and occurs mainly in male birds. Songs are produced when air flows from air sacs in the bronchii through an organ called the syrinx. Certain parts of the brain control song production and are well-developed in male zebra finches

2. Development—How does the behavior develop? Is the behavior present early in life? Does it change over the course of the organism's lifetime? What experiences are necessary for its development?

Young male zebra finches first listen to the songs of nearby males of their species, particularly their fathers. Then, they start to practice singing. By adulthood, male zebra finches have learned to produce their own songs, which are unique but often have similarities to those of their fathers. Once a finch has perfected its song, the song remains fixed for life.

3. Function/adaptive value—How does the behavior affect fitness? How does the behavior affect an organism's chances of survival and reproduction?

Singing helps male zebra finches attract mates, increasing the chances that they will reproduce. Singing is part of an elaborate courtship ritual that entices the female to choose the male.

4. Phylogeny—How did the behavior evolve? How does the behavior compare to those of related species? Why might it have evolved as it did?
Almost all species of birds can make vocal sounds, but only those in the suborder Passeri are songbirds. Relative to the zebra finch, other songbird species differ in the timing of their listening and practicing phases, the plasticity of song over their lifetimes, the extent to which the song is similar among individuals of the species, and the way that singing is used—for example, for defense of territory vs. courtship of mates.

ANSWER KEY Math Informational Texts Questions

1. Draw a coordinate plane labeling the x and y axis.
2. What is the x-coordinate and y-coordinate in the following points: (4,5), (2,3), and (5,1).
3. Plot the above points on a graph.
4. Create your own points and graph them in the first quadrant.

Elaborate – Animal Behavior Lab

Inherited traits and Learned Behavior Lab. (n.d.). Retrieved from

<https://www.teacherspayteachers.com/Product/Inherited-traits-and-Learned-Behavior-Lab-4485287>

Animal Behavior CER

Claim (Write a sentence describing what can affect an animal's behavior.)

Evidence (Provide evidence from the lab to support your claim. Describe the differences between the behaviors.)

Reasoning (Explain how your evidence supports your claim.)