Color and Chance

How inherited traits affect survival in different habitats

L.8.4B.2 "Construct written and verbal explanations to describe how genetic variations of traits in a population increase some organisms' probability of surviving and reproducing in a specific environment."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the inherited fur-color differences, circle details about the ground, and number the steps that connect being harder to see with surviving and producing offspring.

Mice on Lava and Sand

1. At the edge of a desert lava field, rock pocket mice live among black rocks and pale sand. Some mice inherit dark fur, while others inherit light fur. These color differences come from variations in genes passed from parents to offspring. A mouse does not choose its fur color to match the ground. When the ground changes from dark rock to light sand, the same fur color may have a different effect. The two habitats give these inherited traits different advantages.

2. On black lava, a dark mouse is harder for a hunting owl to spot than a light mouse. An owl can catch a mouse it sees, so dark mice on the lava may be more likely to survive long enough to have offspring. If dark fur is inherited, some of their offspring may also have dark fur. Over many generations, dark fur can become more common among mice on the lava. This change does not mean every light mouse is caught or every dark mouse survives.

3. On nearby pale sand, the advantage can reverse. Light mice are less visible against the sand, so an owl may catch fewer of them than dark mice living there. Light mice that survive can reproduce and pass on genes linked to light fur. Over generations, light fur may become more common in this sandy population. A trait helps only in relation to an environment and a challenge, such as being seen by a predator. Fur color changes the chance of survival, not the fate of each mouse.

2 ANSWER WITH EVIDENCE

Use the passage

1. On black lava, how does inherited fur-color variation affect a mouse's chance of surviving long enough to reproduce?

2. How could dark fur become more common among mice living on the lava over many generations?

3. Compare a light mouse on black lava with a light mouse on pale sand. How might each habitat affect its chance of surviving and reproducing?

4. A student says, "Every dark mouse on the lava will survive." Explain why the passage does not support that claim.

3 YOUR TURN

Your own words

In a field, grasshoppers inherit either green or brown body color. During a dry season, the grass turns brown and birds hunt by sight. Write 4 to 5 sentences explaining which color could increase survival and reproduction, how it could become more common over generations, and why the outcome is not certain for every grasshopper.

ANSWER KEY

Color and Chance

GRADE 8 · L.8.4B.2

PART 1 · READ AND MARK

Underline the inherited fur-color differences, circle details about the ground, and number the steps that connect being harder to see with surviving and producing offspring. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	On black lava, how does inherited fur-color variation affect a mouse's chance of surviving long enough to reproduce?	**Dark fur makes a mouse harder for an owl to spot on black lava, so a dark mouse may be more likely than a light mouse to survive and reproduce.**
2	How could dark fur become more common among mice living on the lava over many generations?	**Dark mice may survive to reproduce more often, and some offspring inherit their dark fur. Over generations, that trait can become more common.**
3	Compare a light mouse on black lava with a light mouse on pale sand. How might each habitat affect its chance of surviving and reproducing?	**A light mouse is easier for an owl to see on black lava, which may lower its chance of surviving to reproduce. It is harder to see on pale sand, which may raise that chance.**
4	A student says, "Every dark mouse on the lava will survive." Explain why the passage does not support that claim.	**Dark fur improves a mouse's chance of avoiding an owl on lava, but it does not guarantee survival. The passage says not every dark mouse survives.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Brown grasshoppers may blend into the dry grass better than green grasshoppers. Birds that hunt by sight may catch fewer brown grasshoppers, giving them a better chance to survive and reproduce. If their offspring inherit brown color, brown grasshoppers could become more common over generations. Some green grasshoppers may still survive, and some brown grasshoppers may still be eaten.

Accept explanations that link an inherited color to visibility in the stated habitat, a changed chance of surviving and reproducing, and the possible spread of that color over generations. Do not require students to claim that camouflage guarantees survival.