

Case 11, Challenge 1: Lava Mama

Use this sheet to keep track of the drakes you breed and the offspring that result from each mating. Some of these will serve as evidence to support your claim about how color is inherited.

Advice for Journeymen

- Remember that you're only concerned with the color trait; ignore the other traits.
- Try saving offspring in the stable and using them to breed.

Breed #1

Use the given parents for this breed

Parent	Color	Where it came from
Female		Mother Pool
Male		Father Pool

(a) What can this breed tell me about how color is inherited?

Offspring	Total #	# Females	#Males
Lava			
Charcoal			

(b) What offspring will you save for future breeding and why? *(For example, "I will save a lava female because _____.)*

Breed #2

Parents used in this breed

Parent	Color	Where it came from
Female		Mother Pool
Male		Father Pool

(a) What can this breed tell me about how color is inherited?

Offspring	Total #	# Females	#Males
Lava			
Charcoal			

(b) What offspring will you save for future breeding and why? *(For example, "I will save a lava female because _____.)*

Case 11.1_Student_Organizer

Breed #3

Parents used in this breed

Parent	Color	Where it came from
Female		Mother Pool
Male		Father Pool

(a) What can this breed tell me about how color is inherited?

Offspring	Total #	# Females	#Males
Lava			
Charcoal			

(b) What offspring will you save for future breeding and why? (For example, "I will save a lava female because _____.")

Breed #4

Parents used in this breed

Parent	Color	Where it came from
Female		Mother Pool
Male		Father Pool

(a) What can this breed tell me about how color is inherited?

Offspring	Total #	# Females	#Males
Lava			
Charcoal			

(b) What offspring will you save for future breeding and why? (For example, "I will save a lava female because _____.")

****Use more paper to track additional breeds as you have been doing.***

Case 11. I-Think-We-Think

Take 3 minutes to silently answer the following question in the “I Think” column. Then wait for further instructions from your teacher.

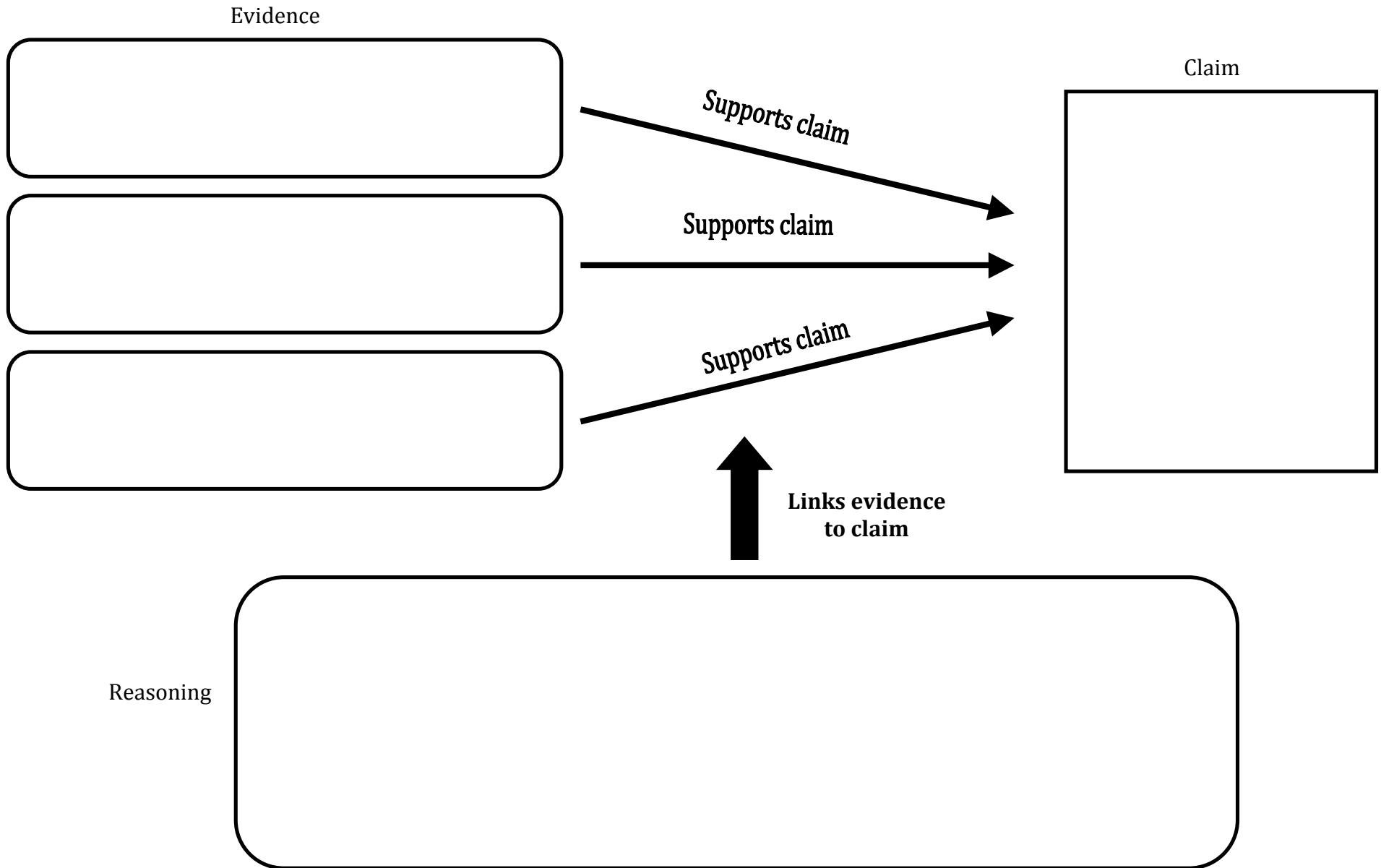
How is color inherited?

I Think

We Think

Case 11.1_Argument_Organizer

The question being answered is: _____



Case 11, Challenge 2: Shine On, Copper Drake!

You may be noticing that the Journeyman Challenges are a little more difficult and require more planning and organization. You can do this!

Advice for Journeymen

- The following data tables are only meant to give you guidance and get you started solving this challenge. You will need to continue your work on additional paper.
- You may find it useful to modify these data tables to better suit your needs.
- As always, some of your data will serve as evidence to support your claim about how color is inherited.

Breed the drakes to find patterns in their clutches to explain how each of the four colors is inherited.

Breed #1

Parents used in this breed

Parent	Color	Where it came from
Female		Mother Pool
Male		Father Pool

(a) What can this breed tell me about how color is inherited?

Offspring	Total #	# Females	#Males
Lava			
Copper			
Charcoal			
Steel			

(b) What offspring will you save for future breeding and why? (*For example, "I will save a lava female because _____."*)

Breed #2

Parents used in this breed

Parent	Color	Where it came from
Female		Mother Pool
Male		Father Pool

(a) What can this breed tell me about how color is inherited?

Case 11.2_Student_Organizer

Offspring	Total #	# Females	#Males
Lava			
Copper			
Charcoal			
Steel			

(b) What offspring will you save for future breeding and why? (For example, "I will save a lava female because _____.")

Breed #3

Parents used in this breed

Parent	Color	Where it came from
Female		
Male		

(a) What can this breed tell me about how color is inherited?

Offspring	Total #	# Females	#Males
Lava			
Copper			
Charcoal			
Steel			

(b) What offspring will you save for future breeding and why? (For example, "I will save a lava female because _____.")

Breed #4

Parents used in this breed

Parent	Color	Where it came from
Female		
Male		

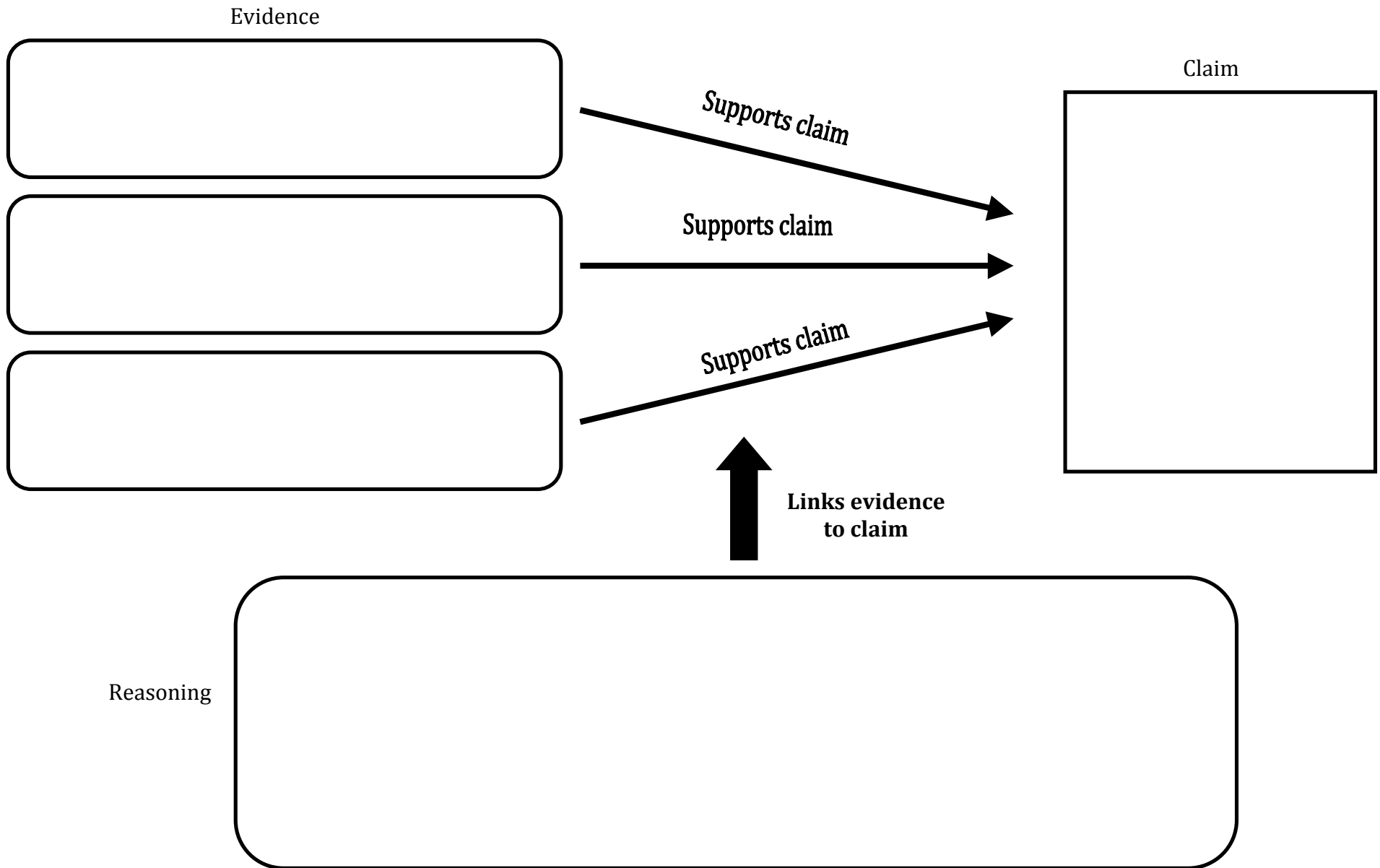
(a) What can this breed tell me about how color is inherited?

Offspring	Total #	# Females	#Males
Lava			
Copper			
Charcoal			
Steel			

(b) What offspring will you save for future breeding and why? (For example, "I will save a lava female because _____.")

Case 11.2_Argument_Organizer

The question being answered is: _____



Sample Argumentation Framework

The definitions below are adapted from *Science as Inquiry in the Secondary Setting* (Luft, Julie, Randy L. Bell, and Julie Gess-Newsome, editors. 2007. NSTA Press.). The rubric is modified from McNeil et. al. (2007).

- **Claim:** This is an assertion or conclusion addressing the original question or problem.
- **Evidence:** This is data or facts that support the claim. Data may come from student-completed investigations, observations, archived data or other data sets, or reading material. Data must be appropriate and relevant to the problem and sufficient to convince another of the claim. This often requires multiple pieces of data.
- **Reasoning:** Includes statements that link the evidence to the claim, showing why the data counts as evidence to support the claim. Reasoning often includes appropriate scientific principles.

	Level			
	0	1	2	3
Claim: An assertion that answers the original question.	Does not make a claim.	Makes an inaccurate or inappropriate claim.	Makes an appropriate but incomplete claim.	Makes an accurate and complete claim.
Evidence: Scientific data that supports the claim. Data need to be appropriate and sufficient.	Does not provide evidence.	Provides inappropriate evidence.	Provides appropriate but insufficient evidence.	Provides appropriate and sufficient evidence to support the claim.
Reasoning: A justification that links the claim and evidence, using appropriate and sufficient scientific principles.	Does not provide reasoning.	Reasoning does not link evidence to claim. Scientific principles are missing, vague, or inaccurate. May rely on informal / non-scientific principles.	Reasoning links some of the evidence to the claim. Includes some, but insufficient scientific principles.	Reasoning links multiple forms of evidence to claim. Includes appropriate and sufficient scientific principles.

Discourse is an important part of students developing argumentation skills. This rubric is meant to assist teachers in assessing the progress of their classes along a discourse continuum. Geniverse provides opportunities for students to share and evaluate their drake breeding strategies and to argue their claims using evidence from the software.

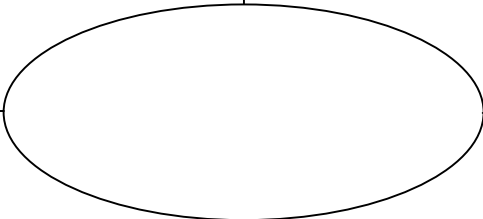
	Level			
	0	1	2	3
Discourse: Involves engaging students in talk about explanations.	Does not engage in discourse about explanations.	Explanations are shared or presented to others without evaluation of evidence or reasoning.	Occasional, teacher-led discourse that involves the evaluation of multiple competing explanations.	Frequent, student-initiated discourse that involves the evaluation and rebuttal of competing claims.

Essential Characteristics

Non-Essential Characteristics

Examples

Non-Examples



Concept Definition Map

