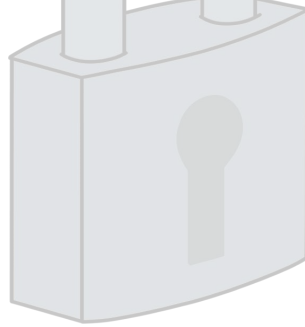


The Amoeba Sisters™

Handout Answer Keys



Thank you for purchasing our answer key! For less than the price of a typical specialty coffee drink, you are helping fund our passion in creating science videos, GIFs, comics, handouts, and more!

We thank you for your support and for watching our videos!

We try our best to screen for all typos, but we are amoebas (er, human). If you ever find a typo or problem with our key, please let us know! We want to fix it and then give you a new replacement copy.

Terms and Conditions of Use for Amoeba Sisters Answer Keys:

This answer key is intended for educator use. Answer keys may not be distributed, reproduced, or sold by any individual or outside entity.

No form of this answer key copyrighted text can be made available publicly online or distributed publicly in print. Public availability of Amoeba Sisters answer keys is a violation of copyright, and it is also a disservice to other educators who wish to use our activities. Modification of this document is prohibited.



Amoeba Sisters | Video Recap

NAME: AMOEBA SISTERS ANSWER KEY

Amoeba Sisters Video Select Recap: Speciation ANSWER KEY

1. How would you define the term **species** in your own words? Based on this definition, why is the domesticated cat below considered a different species from a domesticated dog?

Organisms that are in the same species can interbreed AND their offspring are fertile. This separates domesticated cats and domesticated dogs.

Answer Key Note: Unlike a lot of fun cartoons from our childhood, there is no dog-cat hybrid. Also, even if mating were to be able to occur between a dog and cat, these organisms have very different chromosome numbers. The video does mention that hybrids (such as the “zonkey”) between some different species can occur such as the donkey and zebra. However, these hybrid offspring are typically not fertile (still falling under species definition).



2. Based on this species definition, are the different dog breeds shown below different **species**? Why or why not?

Organisms that are the same species can interbreed AND their offspring are fertile. Even with the huge variety in dog breeds, they are all the same species despite looking very different!

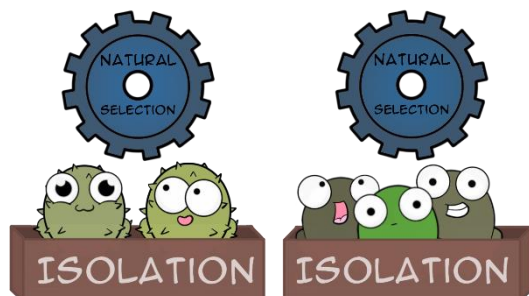
Answer Key Note: This is a great time to point out that variety does exist in populations of the same species. There is a lot of variety in domesticated dogs due to artificial selection.



3. The video mentions that **genetic drift and natural selection** are examples of mechanisms that can result in speciation. Explain how **natural selection** can be involved in speciation and the role that **isolation** can have in this.

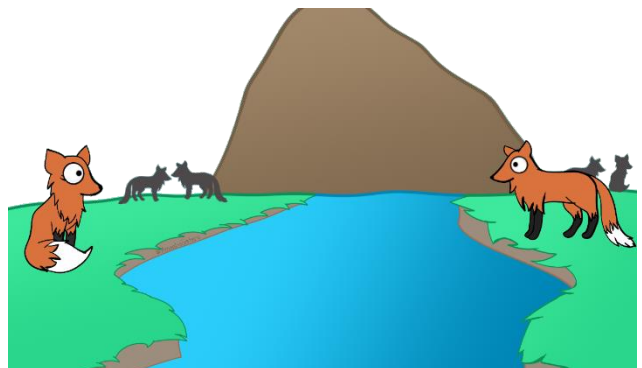
[Answer Key Note: Best explanation is towards the end of the video where this image is found]

Variety exists in populations. Genes in a gene pool that result in high biological fitness (meaning more offspring) can increase in frequency in the population. Due to increasing frequency of these genes in the population, the population can change over time. While isolation does not cause the actual changes in the gene frequencies of the population, isolation is what separates the gene pools of species where natural selection may act upon them separately.



4. The following comic shows **geographic isolation**. If speciation occurred among the two different populations, would this be an example of **sympatric** or **allopatric** speciation? How do you know?

Allopatric speciation. In allopatric speciation, there is a geographic barrier that separates the populations. In sympatric speciation, the speciation happens in the same area, but there is something else isolating them (such as behavioral or temporal isolation).



Amoeba Sisters LLC

© This Amoeba Sisters answer key may not be posted online publicly as this is a violation of copyright.



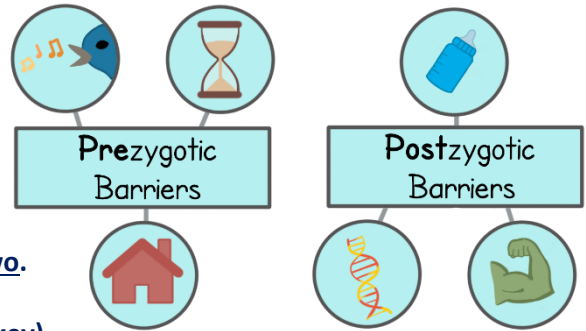
Amoeba Sisters | Video Recap

NAME: AMOEBASISTERS ANSWER KEY

Amoeba Sisters Video Select Recap: Speciation ANSWER KEY

5. The video provides examples of different isolation types and classifies them as prezygotic or postzygotic barriers. What is the difference between a **prezygotic barrier** and a **postzygotic barrier**?

Prezygotic barriers are barriers that occur before a zygote can even be formed. A zygote is a fertilized egg so a prezygotic barrier is not even allowing fertilization to happen. **Postzygotic barriers** are barriers that separate the species if mating and fertilization actually occur.



6. What are two examples of a **postzygotic barrier**?

The video mentions three examples, so students can select any two. **First**, a barrier may be that the offspring may not be fertile. This barrier separates donkeys and zebras as the hybrid offspring (zonkey) cannot reproduce.

Second, a barrier may be that the offspring produced between two different species may be very weak and may not survive long.

Third, the offspring may not develop in early embryonic stages because there is a genetic incompatibility.

The following are just a few examples of speciation that do not involve geographic isolation. These examples used in the video are **prezygotic barriers**. For the following, define each in your own words and sketch a way to help you remember.

	Defined in Your Own Words	Sketch It!
Behavioral Isolation	7. Species can have different behaviors, even very slight differences, that can isolate them from breeding.	8. Sketches may vary! Here's ours:
Temporal Isolation	9. Isolation occurs due to different breeding times. Species could breed at different seasons, years, or even different times of the day.	10. Sketches may vary! Here's ours:
Habitat Isolation	11. Even if organisms are in the same area, they may have different habitats that isolate them from breeding.	12. Sketches may vary! Here's ours:



Amoeba Sisters LLC

© This Amoeba Sisters answer key may not be posted online publicly as this is a violation of copyright.