



Name (s) _____

Hour _____

What Did *T. rex* Taste Like? (An Introduction to How Life is Related)

Folders 1, 2 and 3 – Answer these questions as you go through the first 3 folders

**Please read all information on all the web pages to *prepare yourselves* to do the
Special Assignment (Folder 5) after you have completed folder 4!!**

Folder 1: Life is *diverse* (varied, different, assorted) but all living things are related.

1. How many folders are in the web activity *What Did T. rex Taste Like?* _____
2. What do branching diagrams show? _____
3. If you know a synonym for “variety of life”, write it here: _____
4. What 3 MAJOR groups of organisms exist and what are major characteristics for each group?

Group

Major Characteristics of the Group

5. Examine the diagram with the yellow circle indicating “common ancestor”. What do you think this diagram is showing? _____
6. What is the portion of the file about the people and family generations showing us?
(Summarize your understanding of the pages on family genealogy and common ancestors of all life)

7. What are the 2 BIG IDEAS that are important to keep in mind through the rest of the activity?

8. What’s the best definition for *lineage*? _____
9. What are some things that a single family and all of life have in common?

Folder 2: Lineages can be traced back in time to find a point of common ancestry.

10. From your own experience what does a caiman resemble? _____
11. The diagrams are showing how present day animals are related to each other. The dotted line at the bottom transitioning to a solid line portion of the diagram represents longer ago. The top of the diagram where the pictures are represents _____.
12. So if we were to explain the passage of time on this diagram, we would say that as time goes by we move from the bottom of the page to the _____.
13. Draw a quick picture below to show where on a branching diagram the **common ancestor** of a tuna and parrot would be. Circle the point in time when the common ancestor lived. Darken the part of your diagram that shows the tuna’s and parrot distinct (separate) histories. Make a dashed line on your diagram where they share histories. Just write “tuna” and “parrot”, no need to draw pictures.

14. Draw a branching diagram (cladogram) of animal X, Y, and Z that shows their lineage in this way: Animals X and Y are more closely related to each other than they are to Z. Circle the point on the diagram that shows X's and Y's most recent common ancestor and "square" the point on the diagram that shows all 3 animals' common ancestor. Circle the lined portion of your diagram that shows the common lineage among all three animals and label that circle "1". Now circle the lined portion of your diagram that show the unique or distinct separate history of Z and label it "2".

Folder 3: Cladograms illustrate evolutionary relationships based upon shared inherited features.

15. Which animal is more closely related to a caiman: (circle one) parrot or hare?
16. What is the short red bar on the cladograms showing us? _____
17. Identify and BRIEFLY explain what each letter represents in the series of pages showing the inherited features of vertebrate animals:
- A. _____
- B. _____
- C. _____
- D. _____
- E. _____
- F. _____
18. What feature do ALL vertebrates share? _____
19. What do frogs, humans, hares, parrots, and caimans all share? _____
20. Which feature do human, hares, caimans, and parrots share that the other vertebrate lineages do not?

21. What is the difference between skulls of the common ancestors of humans/hares and those of caimans/parrots? (Don't use pronouns like "it" and "they" in your answer!) _____

22. Which vertebrates have an opening IN FRONT of the eye? _____ and _____
23. In Folder 3 you've learned how **shared features** are used to determine _____
and _____ among animals.
24. **Cladograms** are used to visually show these _____.
25. Which feature of hares and humans was inherited from a common ancestor? _____
26. Make two more observations from the vertebrate cladogram using what you've learned in so far.

When asked to do so, "zoom" in to this section of the table:

	caiman	parrot	T. rex
vertebrae	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
bony skeleton	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
four limbs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
amniotic egg	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
hair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
opening in front of eye	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
heel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
bipedal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 th and 5 th finger lost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Now that you've finished the tables answer the remaining questions for Folder 4.

11. Within this folder we examined the importance of looking at shared _____ features to determine _____.
12. What evidence did you use to determine what *T Rex* might have tasted like? (write the answers, not just the letters) _____ and _____.
13. Because *T. rex* was _____ and had a reduced number of fingers, we can figure out from the data that *T Rex* (write the answers, not just the letter!) _____

14. Now it's time for your Special Assignment... found in Folder 5. Use what you've learned in Folders 1-4!!

Folder 5 – Special Assignment



Use this handout to complete the special assignment given you in Folder 5.

Purpose:

Use the cladogram and data on inherited features to make hypotheses about what T. Rex was like and what features it might have shared with other vertebrates.

Materials Needed:

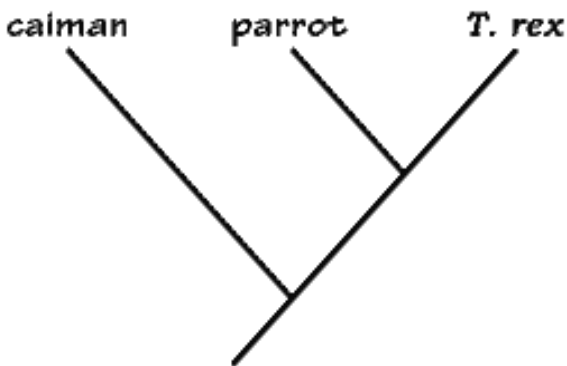
You will need the cladogram and additional table below and your completed Features Table from the previous folders.

Folder 5: We can use cladograms to make inferences about past life, including T Rex.

- First, just read and examine Questions 1-6 below.
 - Now, choose to work with (at least) 2 of these questions to do the following.
1. On the back of this page, create an organized way to show that you have done these things with your 2 questions:
 - a. Decide if it is **possible** to answer each of your 2 chosen questions using the data and information you have.
 - b. If it is **NOT possible** to answer a particular question, then explain what information is needed to be able to answer the question.
 2. If it **IS possible** to answer a particular question:
 - a. Make a reasonable guess to answer the question and include evidence you used.
 - b. Include information about common ancestors and shared inherited features.

Questions 1-6:

1. Did *T. Rex* have had an amniotic egg?
2. Was *T. Rex* warm-blooded or cold-blooded?
3. Could *T. Rex* have had feathers?
4. Did *T. Rex* have color vision?
5. How many chambers were there in *T. Rex*'s heart?
6. Did *T. Rex* sing to its offspring?



	calman	parrot	T. rex
color vision	+	+	
warm blooded	0	+	
feathere	0	+	
sing to young	+	+	
scaly skin	+	+	
melanin pigment in skin	+	+	
amniotic egg	+	+	
few glands in skin	+	+	
hole in hip socket	0	+	
3-chambered heart	+	0	
4-chambered heart	0	+	

How to answer the special assignment...

Example:

Question: 3 ***Could T. Rex have had feathers?***

- Possible or NOT Possible (Circle one)
- We think that T. Rex could have had feathers ***because*** of this evidence from the cladogram: Common ancestors of _____ and _____ very likely had _____ as shared features.

List the two questions you have chosen to work with...

Question _____

- Can you answer the question? POSSIBLE NOT POSSIBLE
- If NO, what information do you need? If YES, What is your guess and what evidence are you using to get your answer?

Question _____

- Can you answer the question? POSSIBLE NOT POSSIBLE
- If NO, what information do you need? If YES, What is your guess and what evidence are you using to get your answer?

This is EXTRA CREDIT, but only if you have completed ALL of the previous work!!!!

Example of Evolution: Survival of the Sneakiest

Answer the following questions.

1. When it comes to crickets, what does fitness mean?
2. Is calling good or bad for a cricket's fitness? Why or why not?
3. Give some examples of selection at work in this cricket story.
4. How does selection favor calling? How does selection favor not calling?