**Performance Tasks:**

*Directions: Choose ONE of the following performance tasks to complete for the Evolution Unit. This will count as 30% of the Unit Assessment. Write in complete sentences and* ***no handwritten submissions allowed****. You may reference examples from class but your evidence must be new content. Include all website url’s you used in the completion of this task.*

**Option 1:** Choose a population of an organism that has experienced change in their environment. Pretend there are 100 individuals in the population. Use Hardy-Weinberg and natural selection mechanisms to show how the population has changed over multiple generations as a result of a change in their environment.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Task** | **Met** | **Not Met** | **Points Earned** | **Points Possible** |
| Identify a population. |  |  |  | 1 |
| Describe the population and the traits that exist within that population. |  |  |  | 2 |
| Describe the population’s ecosystem currently and how it is changing. |  |  |  | 3 |
| Analyze how a specific trait causes a population to be successful in a changing environment. Use the Hardy-Weinberg principle and other evidence to support your claim. |  |  |  | 4 |
| **Total:** |  |  |  | 10 |

**Hardy Weinberg:** Either plug in your own numbers to show how one specific trait is increasing in a population or use examples given in class. Remember, **p + q = 1.** Once you have your numbers, write a concluding paragraph comparing how the population has changed toward the recessive trait over time.

Generation 0:

\_\_\_\_\_recessive trait in a population / 100 = q2

 q2 = √\_\_\_\_\_ recessive trait = **q**

\_\_\_\_\_dominant trait in a population / 100 = 1 - **q** = **p**

Generation 10:

\_\_\_\_\_recessive trait in a population / 100 = q2

 q2 = √\_\_\_\_\_ recessive trait = **q**

\_\_\_\_\_dominant trait in a population / 100 = 1 - **q** = **p**

**Option 2:** Create an image (do not cut and paste if digital) that shows evidence for common ancestry between 4 organisms (keep the same 4 organisms throughout). Be as creative as possible but some options may include a comparison chart of homologous structures, map of geographical distribution, DNA analysis, fossil record, and/or embryo comparison.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Task** | **Met** | **Not Met** | **Points Earned** | **Points Possible** |
| Makes a claim about organisms (at least 4) that share common ancestry. Ex: “These 4 organisms are related because \_\_\_\_\_\_.” |  |  |  | 2 |
| Uses at least **3** lines of evidence to compare the 4 organisms. Use this list: embryology, DNA analysis, fossils, comparative anatomy, geographic distribution. Include a sentence or two describing **how** the evidence works. |  |  |  | 6 |
| Using the evidence, construct a cladogram that shows common ancestry between the organisms and which organisms are more closely related. Remember to include the physical characteristics that tie them together. |  |  |  | 2 |
| **Total:** |  |  |  | 10 |

Example of a cladogram:

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**Option 3:** Choose an example of either sympatric or allopatric speciation and make a video (2 min max) that models the emergence of a new species. Make sure to include the mechanisms for the speciation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Task** | **Met** | **Not Met** | **Points Earned** | **Points Possible** |
| Video is under 2 minutes. |  |  |  | 1 |
| Describe/Show the speciation event including how the population/environment changed (gene mutations or geographic isolation). |  |  |  | 4 |
| Describe/Show the mechanisms that caused the change in the new populations based on their new environment once they separated from the original population. |  |  |  | 4 |
| What would happen if the two distinct populations were to come back together? |  |  |  | 1 |
| **Total:** |  |  |  | 10 |