Formative Assessment Worksheet  
Specification #10

Teacher ID:   
School ID:

|  |  |  |
| --- | --- | --- |
| **Target competency:**  special arrow.wmf Student can provide examples of evidence that support a scientific theory. | | |
| Anticipated student misconceptions relevant to this target competency: | | |
|  | **Learning Progression Leading to the Target Competency** (List Building Blocks in Reverse Chronological Order) | **Type of Knowledge** |
| 5. |  |  |
| 4. |  |  |
| 3. |  |  |
| 2. |  |  |
| 1. |  |  |

Copy/paste **Building Block 1** into this box:

|  |
| --- |
|  |

|  |
| --- |
| In two to four sentences, describe what you will do with your students to help them achieve this building block.  →  State how you will assess this building block. In other words, what will you ask your students to do to establish whether they have achieved this building block? Identify the assessment format you will use.  → |

Copy/paste **Building Block 2** into this box:

|  |
| --- |
|  |

|  |
| --- |
| In two to four sentences, describe what you will do with your students to help them achieve this building block.  →  State how you will assess this building block. In other words, what will you ask your students to do to establish whether they have achieved this building block? Identify the assessment format you will use.  → |

Copy/paste **Building Block 3** into this box:

|  |
| --- |
|  |

|  |
| --- |
| In two to four sentences, describe what you will do with your students to help them achieve this building block.  →  State how you will assess this building block. In other words, what will you ask your students to do to establish whether they have achieved this building block? Identify the assessment format you will use.  → |

Copy/paste **Building Block 4** into this box:

|  |
| --- |
|  |

|  |
| --- |
| In two to four sentences, describe what you will do with your students to help them achieve this building block.  →  State how you will assess this building block. In other words, what will you ask your students to do to establish whether they have achieved this building block? Identify the assessment format you will use.  → |

Copy/paste **Building Block 5** into this box:

|  |
| --- |
|  |

|  |
| --- |
| In two to four sentences, describe what you will do with your students to help them achieve this building block.  →  State how you will assess this building block. In other words, what will you ask your students to do to establish whether they have achieved this building block? Identify the assessment format you will use.  → |

**Target Competency:**

|  |
| --- |
| Student can provide examples of evidence that support a scientific theory. |

|  |
| --- |
| In two to four sentences, describe what you will do with your students to help them achieve this target competency, assuming they have achieved the above building blocks.  →  NOTE: **Do not state how you will assess this target competency in this box.** The design of the assessment is established by the specification. Use the following pages of the worksheet to describe what you will do to assess this target competency. Refer to the guidelines in the “**Procedure for Creating Parallel Tasks**” section in Specification #10 when developing this formative assessment. |

**Student Instructions**

**Part 1**

The *[insert homologous structure of the two animals]* of a *[insert name of 1st animal]* and a *[insert name of 2nd animal]* are shown in the figure below. Use the figure to answer the following question.

|  |  |
| --- | --- |
| *[Insert image of 1st animal.]* | *[Insert image of 2nd animal.]* |
| *[Insert label for 1st image.]* | *[Insert label for 2nd image.]* |

The scientific theory of evolution claims that **different species are related**. Explain how each animal having *[insert homologous structure]* could be used as evidence to support this claim. Provide enough detail so that someone who is unfamiliar with the scientific theory of evolution would understand your explanation. Use appropriate scientific terms in your response.

Choose two animals from the list below. Then, provide five examples of these animals’ physical structures that could be used as evidence that they are evolutionarily related.

|  |  |  |
| --- | --- | --- |
| *[Insert name of mammal.]* | *[Insert name of bird.]* | *[Insert name of reptile.]* |
| *[Insert name of insect.]* | *[Insert name of amphibian.]* | *[Insert name of fish.]* |

Which two animals do you choose?

|  |
| --- |
| 1st animal: |
| 2nd animal: |

Below, describe five examples of physical structures that could be used as evidence that the two animals are evolutionarily related:

1st physical structure:

2nd physical structure:

3rd physical structure:

4th physical structure:

5th physical structure:

**Part 2**

Fossil evidence exists for the three different species shown in the figure below. Use the figure to answer the questions on the following page.

|  |  |
| --- | --- |
| *[Insert image of 1st species.]* | **Species A**  Fossil evidence is *[insert fossil age]* years old.  *[Insert description of species A’s variation in the homologous structure common to each of the three species]*. |
| *[Insert image of 2nd species.]* | **Species B**  Fossil evidence is *[insert fossil age]* years old.  *[Insert description of species B’s variation in the homologous structure common to each of the three species]*. |
| *[Insert image of 3rd species.]* | **Species C**  Fossil evidence is *[insert fossil age]* years old.  *[Insert description of species C’s variation in the homologous structure common to each of the three species]*. |

The scientific theory of evolution claims that **traits can change within populations over time**. Explain how the information in the figure could be used as evidence to support this claim. Provide enough detail so that someone who is unfamiliar with the scientific theory of evolution would understand your explanation. Use appropriate scientific terms in your response.

Describe the evolutionary processes that cause traits to change over time. Use the species’ *[insert homologous structure common to each of the three species]* as an example. Provide enough detail so that someone who is unfamiliar with the scientific theory of evolution would understand your explanation. Use appropriate scientific terms in your response.

Student Formative Assessment Checklist

This checklist can be used by students for self-assessment or by you to provide feedback. The checklist is based on the specification and reworded to suit seventh-grade reading level. Please feel free to reword for your students.

**Directions:** Use this checklist to evaluate your work. Read each section below and put a check in the box (🗹) next to each statement that accurately describes your work.

**Part 1: Homology**

|  |  |
| --- | --- |
| Common Ancestry | |
| I said that the two animals could have evolved from a common ancestor. | 🞎 |
| I described why homology supports the theory of evolution. | 🞎 |
| Homologous Structures | |
| I described a similar physical structure that the two animals share. | 🞎 |
| I described a difference in a physical structure that the two animals share. | 🞎 |
| Terminology | |
| I used the term *common ancestor* (or a scientific term that means the same thing) in my answer. | 🞎 |
| I used the term *homology* (or a scientific term that means the same thing) in my answer. | 🞎 |

|  |  |
| --- | --- |
| Examples of Homologous Structures | |
| I listed a physical structure that the two animals I chose could have inherited from a common ancestor.   * Note: Size, coloration, behavior, lack of physical structure, or a nonspecific characteristic do not count. For instance, ‘muscles,’ ‘organs,’ ‘skin,’ etc. do not count. | 🞎 |
| I listed a 2nd physical structure that the two animals I chose could have inherited from a common ancestor. | 🞎 |
| I listed a 3rd physical structure that the two animals I chose could have inherited from a common ancestor. | 🞎 |
| I listed a 4th physical structure that the two animals I chose could have inherited from a common ancestor. | 🞎 |
| I listed a 5th physical structure that the two animals I chose could have inherited from a common ancestor. | 🞎 |

**Part 2: Fossil Evidence**

|  |  |
| --- | --- |
| Physical Structure | |
| I described how a specific physical characteristic seen in the fossils changed over time. | 🞎 |
| I described why the physical characteristic I described might have changed over time. | 🞎 |
| Chronology | |
| I explained how the ages of the three fossils are consistent with the idea that the younger species evolved from the older species. | 🞎 |
| I used the specific fossil ages or time periods to support my explanation. | 🞎 |
| Terminology | |
| I used the term *adaptation* (or a scientific term that means the same thing) in my answer. | 🞎 |

|  |  |
| --- | --- |
| Variation | |
| I said that individuals within a population may have different traits. | 🞎 |
| I used the term *variation* (or a scientific term that means the same thing) in my answer. | 🞎 |
| I provided an example of how individuals in a population have different traits. | 🞎 |
| Selection | |
| I said that the differences between individuals might have allowed some individuals to survive or reproduce more successfully. | 🞎 |
| I used the term *selection* (or a scientific term that means the same thing) in my answer. | 🞎 |
| I gave an example of why a specific physical characteristic might have allowed some individuals to survive or reproduce more successfully. | 🞎 |
| Inheritance | |
| I said that *[insert homologous structure common to each of the three species]* could have been passed on to an organism’s offspring. | 🞎 |
| I used the term *inheritance* (or a scientific term that means the same thing) in my answer. | 🞎 |
| I said that physical characteristics are passed on to offspring through genes. | 🞎 |