Formative Assessment Worksheet  
Specification #9

Teacher ID:   
School ID:

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| **Target competency:**  special arrow.wmf Student can explain the difference between theories and laws. | | |
| 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:

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| 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:

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| 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:

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| 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:

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| 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:

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| 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:**

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| --- |
| Student can explain the difference between theories and laws. |

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| 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 #9 when developing this formative assessment. |

**Student Instructions**

Some students are talking after their science class. Some of what they say is incorrect. Read each conversation below. Then, follow the instructions.

**Conversation 1**

These students have a misconception about the *definition* of a scientific *[theory/law]*.

Student 1: *“[Insert 1st student’s statement.]”*

Student 2: *“[Insert 2nd student’s statement.]*”

Help the students understand why scientific *[theories/laws] [insert correction of students’ misconception]* by answering the following:

1. Describe two characteristics of scientific *[theories/laws]*.
2. Give an example of a scientific *[theory/law]* and explain how it has two characteristics of scientific *[theories/laws]*.
3. Use your example *[theory/law]* to explain why scientific *[theories/laws] [insert correction of students’ misconception]*.

**Conversation 2**

These students have a misconception about the *similarities and differences* between scientific theories and scientific laws.

Student 1: *“[Insert 1st student’s statement.]”*

Student 2: *“[Insert 2nd student’s statement.]”*

Help the students understand why *[insert correction of students’ misconception]* by answering the following:

1. Describe two ways in which scientific theories and scientific laws are **similar**.
2. Describe two ways in which scientific theories and scientific laws are **different**.
3. Give an example of a scientific theory and scientific law. Use your examples to explain why *[insert correction of students’ misconception]*.

**Conversation 3**

These students share a misconception about the *application* of scientific *[theories/laws]*.

Student 1: *“[Insert 1st student’s statement.]”*

Student 2: *“[Insert 2nd student’s statement.]”*

Help the students understand why scientific *[theories/laws] [insert correction of students’ misconception]* by answering the following:

1. Describe two ways in which scientific *[theories/laws]* are applied in general.
2. Give a specific example of how a scientific *[theory/law]* has been or could be applied. Use your example to explain why scientific *[theories/laws] [insert correction of students’ misconception]*.

**Conversation 4**

These students share a misconception about the *development* of scientific *[theories/laws]*.

Student 1: *“[Insert 1st student’s statement.]”*

Student 2: *“[Insert 2nd student’s statement.]*”

Help the students understand why scientific *[theories/laws] [insert correction of students’ misconception]* by answering the following:

1. Describe two things scientists do, or might do, to develop a scientific *[theory/law]*.
2. Describe two things scientists did, or might have done, to develop a particular scientific *[theory/law]*.
3. Explain why scientific *[theories/laws] [insert correction of students’ misconception]*.

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.

**Conversation 1: Definition**

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| **Definition Characteristics** | |
| I described at least one characteristic of a scientific *[theory/law]*. | 🞎 |
| I described more than one characteristic of a scientific *[theory/law]*. | 🞎 |
| **Illustration of Definition** | |
| I gave an example of a scientific *[theory/law]* and explained how it had a characteristic of a scientific *[theory/law]*. | 🞎 |
| I gave an example of a scientific *[theory/law]* and explained how it had another characteristic of a scientific *[theory/law]*. | 🞎 |
| **Misconception Rectification** | |
| I corrected the misconception that *[insert misconception]* by providing details related to a specific *[theory/law]*. | 🞎 |

**Conversation 2: Relationships between Theories and Laws**

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| --- | --- |
| **Similarities between Theories and Laws** | |
| I described at least one similarity between theories and laws. | 🞎 |
| I described more than one similarity between theories and laws. | 🞎 |
| **Differences between Theories and Laws** | |
| I described at least one difference between theories and laws. | 🞎 |
| I described more than one difference between theories and laws. | 🞎 |
| **Misconception Rectification** | |
| I corrected the misconception that *[insert misconception]* by providing details related to a specific scientific theory or law. | 🞎 |

**Conversation 3: Application**

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| **Scientific Application** | |
| I described at least one way that all scientific *[theories/laws]* can be applied. | 🞎 |
| I described more than one way that all scientific *[theories/laws]* can be applied. | 🞎 |
| **Misconception Rectification** | |
| I corrected the misconception that *[insert misconception]* by providing details related to a specific scientific *[theory/law]* being applied. | 🞎 |

**Conversation 4: Development**

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| **Developmental Stages** | |
| I described at least one stage of development that scientific *[theories/laws]* go through. | 🞎 |
| I described more than one stage of development that scientific *[theories/laws]* go through. | 🞎 |
| **Illustration of Developmental Stages** | |
| I provided at least one example of a stage of development that a specific scientific *[theory/law]* went through. | 🞎 |
| I provided more than one example of a stage of development that a specific scientific *[theory/law]* went through. | 🞎 |
| **Misconception Rectification** | |
| I explained why scientific *[theories/laws]* *[insert correction of misconception]*. | 🞎 |