Every Child Can Learn, Every Child Must
### SCIENCE: SAMPLE ITEM #1

This item has the following characteristics:

<table>
<thead>
<tr>
<th>Strand:</th>
<th>Energy, Forces and Matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectives:</td>
<td>Explore specific properties of everyday materials (rough, smooth, hard, ductile, malleable, colour)</td>
</tr>
</tbody>
</table>
| Science Practice:            | ScP4. Analyzing and interpreting data  
ScP7. Engaging in argument from evidence  
ScP8. Obtaining, evaluating, and communicating information |
| Item Type:                   | Order Match |
| About this Item Type:        | This item type asks students to fill in some blanks with some choices. All blanks must be filled in, but some of the choices may not be used, and no choice can be used more than once. |
In 1812, Fredrich Mohs, a scientist, invented a method to compare materials according to the hardness. This method is based on the idea that a harder material only scratches a softer material.

Carol wants to determine how hard three minerals, Mineral A, Mineral B and Mineral C, are. The results of Carol’s experiment are shown in the table below.

<table>
<thead>
<tr>
<th>Mineral X</th>
<th>Mineral Y</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral A scratches</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Mineral B scratches</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Mineral C scratches</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Place the three minerals, Mineral A, Mineral B and Mineral C, in order according to how hard they are, from most hard to least hard. Write the name of the minerals in the empty boxes.
Best Answer:
Mineral C, Mineral B, Mineral A

What information can this item give us about a student’s Science competence?

This item is assessing how well students can:

1. use simple test cases of empirical data—that is, compare their outcomes with what is known about the real world.
2. make observations from physical models.
3. use tables, charts, graphs to explore relationships between variables.
SCIENCE: SAMPLE ITEM #2

This item has the following characteristics:

<table>
<thead>
<tr>
<th>Strand:</th>
<th>Living Things, Life Processes and the Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectives:</td>
<td>Carry out fair tests</td>
</tr>
<tr>
<td>Science Practice:</td>
<td>ScP3. Planning and carrying out Investigations</td>
</tr>
<tr>
<td></td>
<td>ScP4. Analyzing and interpreting data</td>
</tr>
<tr>
<td></td>
<td>ScP6. Constructing explanations and designing solutions</td>
</tr>
<tr>
<td>Item Type:</td>
<td>Table Grid</td>
</tr>
<tr>
<td>About this Item Type:</td>
<td>This item type presents a partially completed table for the student to complete. The student indicates by a tick (✓) his/her answer in each of the empty cells in the table.</td>
</tr>
</tbody>
</table>
Latoya carried out an investigation, involving three plants (Plant A, Plant B and Plant C), to determine the effect of water on plant growth. Indicate whether each of the following activities is correct or not correct to determine the effect of water on plant growth.

<table>
<thead>
<tr>
<th>Investigation Activity</th>
<th>Correct</th>
<th>Not Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latoya planted the three plants in identical soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latoya exposed Plant A to 0.5 hours of sunlight, Plant B to 1 hour of sunlight and Plant C to 1.5 hours of sunlight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latoya gave Plant A 0.5 litre of water every day, Plant B 1 litre of water every day, and Plant C 1.5 litre of water every day</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What information can this item give us about a student’s Science competence?

This item is assessing how well students can:

1. use tables to explore relationships between variables
2. identify relevant independent and dependent variables and, when appropriate, the need for controls
This item has the following characteristics:

<table>
<thead>
<tr>
<th>Strand:</th>
<th>Living Things, Life Processes and the Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectives:</td>
<td>Investigate the importance of light energy to plants.</td>
</tr>
<tr>
<td>Science Practice:</td>
<td>ScP8. Obtaining, evaluating, and communicating information</td>
</tr>
<tr>
<td>Item Type:</td>
<td>Table Grid</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
The table shows the result of an investigation in which a student tried to determine the effects of light on plant growth.

The student placed each of 5 pea plant seedlings in sunlight for fixed times each day. The student measured and recorded the height reached by each pea plant at the end of 5 weeks.

<table>
<thead>
<tr>
<th>Pea Plant Name</th>
<th>Time Exposed to Sunlight each Day (hr.)</th>
<th>Plant Height (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant A</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Plant B</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>Plant C</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Plant D</td>
<td>9</td>
<td>29.8</td>
</tr>
<tr>
<td>Plant E</td>
<td>11</td>
<td>29</td>
</tr>
</tbody>
</table>

Based on the results, indicate using a tick (✓) whether the following statements are supported or not supported by the results of the investigation?

<table>
<thead>
<tr>
<th>Statements</th>
<th>Supported</th>
<th>Not Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 4 hours of sunlight per day will minimize plant growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The amount of sunlight a plant is exposed to each day will NOT affect its growth.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A plant exposed to 12 hours of sunlight per day for 5 weeks should likely reach a height above 31cm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What information can this item give us about a student's Science competence?

This item is assessing how well students can:
Demonstrate their understanding that a system can be described in terms of its components and their interactions.
SCIENCE: SAMPLE ITEM #4

This item has the following characteristics:

<table>
<thead>
<tr>
<th>Strand:</th>
<th>Energy, Forces and Matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectives:</td>
<td>Communicate scientific information.</td>
</tr>
<tr>
<td></td>
<td>Investigate the effects of friction and how these may be reduced</td>
</tr>
<tr>
<td>Science Practice:</td>
<td>ScP4. Analyzing and interpreting data</td>
</tr>
<tr>
<td></td>
<td>ScP6. Constructing explanations and designing solutions</td>
</tr>
<tr>
<td></td>
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In the picture above, a bicycle’s brake-pads squeeze both the sides of the wheel. When the brake-pads tightly squeeze both sides of the wheel, the bicycle will have a change in motion.

Place two of the following five choices in the blank spaces below so that the resulting sentence is correct.

**Choices:** speeds slows friction heat turns

The bicycle _____ due to the increase of ______ between the brake-pad and the wheel.
What information can this item give us about a student’s Science competence?

This item is assessing how well students can: use cause and effect for explaining causal relationships for prediction and explain events in contexts.