Sample 1

Two circuits with identical light bulbs are connected to the same DC power source.

Part A

How does the current flowing through each bulb in Circuit B compare to the current flowing through the bulb in Circuit A? Explain your answer.

Part B

In which circuit (A or B) will the lights be brighter? Justify your answer.

Exemplar

<table>
<thead>
<tr>
<th>Part A</th>
</tr>
</thead>
<tbody>
<tr>
<td>The current in Circuit B is 4 times lower, or the current in Circuit B is ( \frac{1}{4} ) of the current in Circuit A. The voltage supplied by the power source is divided by the sum of the 4 resistances (bulbs) in Circuit B, resulting in less current flow in the circuit as a whole. The current flow is the same everywhere in the circuit.</td>
</tr>
</tbody>
</table>

AND

<table>
<thead>
<tr>
<th>Part B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The bulb in circuit A will be brighter because all of the voltage drop from the power source occurs across only one bulb. In circuit B, the total voltage drop occurs across four bulbs. In a series circuit, the total voltage drop is equal to the sum of the individual voltage drops in the circuit.</td>
</tr>
<tr>
<td></td>
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<tr>
<td>---------------</td>
</tr>
<tr>
<td><strong>Response</strong></td>
</tr>
<tr>
<td><strong>Student earns</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Sample 2

The following chart gives the scientific name and some characteristics of four different organisms.

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Cells with a Nucleus</th>
<th>Unicellular</th>
<th>Cell Wall Composition</th>
<th>Type of Nutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinus pinaster</td>
<td>Yes</td>
<td>No</td>
<td>Cellulose</td>
<td>Autotroph</td>
</tr>
<tr>
<td>Saccharomyces cerevisiae</td>
<td>Yes</td>
<td>Yes</td>
<td>Chitin</td>
<td>Heterotroph</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>No</td>
<td>Yes</td>
<td>Peptidoglycan</td>
<td>Autotroph</td>
</tr>
<tr>
<td>Microcystis aeruginosa</td>
<td>No</td>
<td>Yes</td>
<td>S-layer of proteins but no peptidoglycan</td>
<td>autotroph</td>
</tr>
</tbody>
</table>

**Part A**

Which of the organisms in the chart would you classify as a fungus? Explain your answer.

**Part B**

*Staphylococcus aureus* and *Microcystis aeruginosa* have different cell wall compositions and belong to two different kingdoms.

Why could the cell wall composition make them so different that they would belong to two different kingdoms?
**Exemplar**

**Part A**
*Saccharomyces cerevisiae* since is a unicellular heterotroph with chitin in its cell wall.

*AND*

**Part B**
The cell wall adds an extra layer of protection. The cell wall composition therefore influences where they can live or in what harsh environments and conditions they may survive.

<table>
<thead>
<tr>
<th>Rubric</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response demonstrates a limited</td>
<td>Response demonstrates a partial understanding of the standard.</td>
<td>Response demonstrates a complete understanding of the standard.</td>
<td></td>
</tr>
<tr>
<td>to no understanding of the</td>
<td>Student earns 0 points for not meeting any of the requirements</td>
<td>Student earns 1 point for 1 part correct and complete.</td>
<td>Student earns 2 points for all parts correct and complete.</td>
</tr>
<tr>
<td>standard.</td>
<td>for score point 1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>Student earns 1 point for 1 part correct and complete.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>OR</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Student earns 1 point for 1 part correct and complete AND for one part partially correct.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>