1. The spectral data you see in this image is the most common gas in the Martian atmosphere.

Analyze the spectral data below to identify the most common gas in the Martian atmosphere.

*(Mark the one best answer.)*

- [ ] A Water
- [ ] B Oxygen
- [ ] C Hydrogen
- [ ] D Carbon dioxide

2. Every light source has a unique signature spectrum that depends on _____.

Write T if the phrase completes the sentence and makes it true; write F if the phrase makes the sentence false.

- [ ] the composition of elements in the light source
- [ ] the brightness of the light source
- [ ] the distance to the light source
- [ ] the composition of gases in the atmosphere

3. Astronomers try to answer the question, “What are stars made of?” The easiest and most efficient way for them to find out is to _____.

*(Mark the one best answer.)*

- [ ] A send a spacecraft to crash into it and send back data before it burns up
- [ ] B use a spectroscope to analyze the light by different wavelengths
- [ ] C use a big telescope to get a very magnified image of the star
- [ ] D determine if it is a dwarf star, red giant, or other object
4. Study the diagram of the electromagnetic spectrum to help you answer this item.

Student A stated the claim: “A microwave oven creates higher energy waves than the X-rays put out by an X-ray machine in a hospital.”

If you agree with Student A, provide evidence from the electromagnetic spectrum above to support that claim. If you disagree with Student A, write your own claim and support it with evidence from the diagram.

5. You read about scientists and how they continue to explore space. What are three of the “big questions” that scientists are currently investigating or planning to investigate in the future? Which question do you find most interesting and why?
6. We can model a star-with-planet(s) system using an orrery that has a light source at the center and model planets that orbit it.

How does the orrery model help us think about how to look for planets orbiting other stars?

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

7. Analyze this light curve of a star.

   ![Transit Light Curves graph]

How many planets do you think are orbiting this star? ________

How do you know?

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________
8. Student B stated this claim: “Humans will soon have the technology to travel to other planets. That means preserving the systems on Earth is not that important.”

Do you agree or disagree? Provide evidence that supports Student B’s claim or your own.

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

9. Below are parameters that have been determined in the discovery of planet Kepler-737b. Use the data to make and support a claim as to whether or not the planet could support life.

<table>
<thead>
<tr>
<th>Planet name</th>
<th>Orbital period (days)</th>
<th>Planet size (Earth=1)</th>
<th>Planet temp °C</th>
<th>Light at planet’s surface (Earth=1)</th>
<th>Star temp (K)</th>
<th>Star diameter (Sun=1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kepler-737b</td>
<td>34.99</td>
<td>1.14</td>
<td>19.0</td>
<td>1.71</td>
<td>3765</td>
<td>0.521</td>
</tr>
</tbody>
</table>

__________________________________________________________________________
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Name ________________________________