LIGHT AND SOUND TEST

1. Circle True or False:

   a) Light is a type of energy.  
      T  F
   b) The colours in a rainbow have a specific order.  
      T  F
   c) Shadows form because light can be absorbed.  
      T  F
   d) Light reflects best off of dark surfaces.  
      T  F
   e) Water can be used as a magnifying lens.  
      T  F
   f) Sound is a type of energy.  
      T  F
   g) An echo is a sound that has reflected.  
      T  F
   h) Sound can move objects.  
      T  F
   i) Sound reflects best off of hard flat surfaces.  
      T  F

2. For each of the statements circle light, sound or both.

   a) Travels in waves.  
      Light  Sound
   b) Can be modified  
      Light  Sound
   c) Can be reflected.  
      Light  Sound
   d) Can be absorbed.  
      Light  Sound
   e) Bends when it goes into a different substance.  
      Light  Sound
   f) Caused by vibrations.  
      Light  Sound

3. Label the following as “light sources” or “reflected light.”

   ![source]  ![reflected]  ![reflected]  ![source]
4. Make a list of three natural light sources and three artificial light sources.

<table>
<thead>
<tr>
<th>Natural</th>
<th>Artificial</th>
</tr>
</thead>
<tbody>
<tr>
<td>sun</td>
<td>light bulb</td>
</tr>
<tr>
<td>fire</td>
<td>TV</td>
</tr>
<tr>
<td>...etc</td>
<td>...etc</td>
</tr>
</tbody>
</table>

5. Make a list of three hot light sources and three cool light sources.

<table>
<thead>
<tr>
<th>Hot</th>
<th>Cool</th>
</tr>
</thead>
<tbody>
<tr>
<td>sun</td>
<td>firefly</td>
</tr>
<tr>
<td>fire</td>
<td>TV</td>
</tr>
<tr>
<td>...etc</td>
<td>...etc</td>
</tr>
</tbody>
</table>

6. What does a prism do to light?

When white light goes into a prism is causes the light to bend. Each colour bends a different amount and the result is that it shows a rainbow.

7. Why might you recommend to someone that they switch to LED Christmas lights? (Be sure to discuss our experiment, not just prior knowledge.)

In our experiment we measured the temperature change of regular and LED Christmas lights over a 5 minute time span. In that time the regular lights got much hotter, meaning they were wasting electricity making heat. LED lights save electricity, which will save you money, and they are safer because they stay much cooler than incandescent bulbs.

8. What is the difference between “pitch” and “loudness?”

Pitch is how high or low a sound is. For example a flute is high pitched and a tuba is low pitched. Loudness refers to the volume of the sound. For example, a whisper is not loud, but a yell is loud.
9. Describe how the human ear works.

A sound wave is channelled into the ear by the outer ear. The wave then travels
down the ear canal where it contacts the eardrum. When it contacts the eardrum, it causes the eardrum to vibrate. The vibrations are transferred to
three tiny bones in your middle ear. The bones then send the signal to the
liquid filled, shell-shaped, cochlea in your inner ear. The cochlea has many hairs
attached to nerves that interpret the sound and send it to your brain.

10. Make a list of things that use light or sound to work. (Not things that produce light or sound.)

Light - DVD Player, Video Game Systems, automatic Doors, Barcode Scanner, Motion Sensors, Fibre Optics, Solar Panels, etc

Sound - Ultrasound, Voice Activated Controls, Touch-Tone Phone, etc

11. Choose one human invention that uses light or sound to keep us safe. Explain how light or sound is used in this invention, and how it works to keep us safe.

Many possible answers.