Curved Cylindrical Mirrors

Hypothesis: What do you think will happen to your image when you look into a cylindrical mirror and when you change your distance from it?

Procedures:
1) Hold the cylindrical mirror so that its long axis is horizontal.
2) Position yourself so that you can clearly see a reflection of your face.
3) Record observations on the chart below for the following: hold earlobe and wink eyes. Be sure to move closer and further away from the distance to notice any changes.
4) Now hold the cylindrical mirror so that its long axis is vertical.
5) Record observations on the chart below for the same: hold earlobe and wink eye. Be sure to move closer and further away from the distance to notice any changes.

<table>
<thead>
<tr>
<th>Axis</th>
<th>Description being CLOSER</th>
<th>Description being FURTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Corner Mirrors

Hypothesis: What happens to an image when adding more mirrors on each side?

Procedure:
1) Take one mirror and place an object next to it, observing the image when rotating the mirror around it.
2) Use another mirror and tape the two edges of it together using duct tape. Again observe when changing the angle. Close your right eye and look at a single mirror straight on. Notice that the left eye of the image is closed. Now close your right eye and look at two mirrors that form a 90-degree angle. Notice that the right eye of this image is closed.

Adapted from [http://www.exploratorium.edu/snacks/cylindrical_mirror/index.html](http://www.exploratorium.edu/snacks/cylindrical_mirror/index.html)
[http://www.exploratorium.edu/snacks/corner_reflector/index.html](http://www.exploratorium.edu/snacks/corner_reflector/index.html)
[http://www.exploratorium.edu/snacks/look_into_infinity/index.html](http://www.exploratorium.edu/snacks/look_into_infinity/index.html)
3) Now make a corner reflector by opening the two taped mirrors to 90 degrees and resting them on the third mirror, so that the three mirrors form a half cube. Close one eye and stare right at the corner where the three mirrors join. Move your head and notice that the pupil of your open eye always falls right at the corner. Open both eyes and look at the corner. One eye may appear to be closer to the corner than the other. This is your dominant eye.

<table>
<thead>
<tr>
<th>Number of Mirrors</th>
<th>Observations of what you see</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Parallel Mirrors:**

**Hypothesis:** How does an image change when an object is placed between two parallel mirrors and the distance is changed either going closer to one side or another?

Procedure:
1) Take two mirrors and carefully adjust them so that they are parallel to each other.
2) Carefully place an object between the two parallel mirrors, making sure to measure EQUAL distance between the two mirrors.
3) Record observations, also when changing the distance in either directions.

<table>
<thead>
<tr>
<th>Distance</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the middle</td>
<td></td>
</tr>
<tr>
<td>Closer to one side</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from [http://www.exploratorium.edu/snacks/cylindrical_mirror/index.html](http://www.exploratorium.edu/snacks/cylindrical_mirror/index.html)  
[http://www.exploratorium.edu/snacks/corner_reflector/index.html](http://www.exploratorium.edu/snacks/corner_reflector/index.html)  
[http://www.exploratorium.edu/snacks/look_into_infinity/index.html](http://www.exploratorium.edu/snacks/look_into_infinity/index.html)
Reflections:

For each mirror experiment, try to explain what is happening with **LIGHT** and **REFLECTION**.

Curved Cylindrical Mirror:

Corner Mirror:

Parallel Mirror:

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