1. I recognize that bright lights can damage my eyes and that I should not look at the Sun—either directly or with binoculars or telescopes.

*Sample question: During a solar eclipse, what are some safe methods people might use to watch the eclipse?*

2. I can identify a wide range of sources of light.

*Sample question: What are some artificial and some natural light sources?*

3. I can distinguish objects that emit their own light from those that require an external source of light in order to be seen.

*Sample question: Classify the following objects under the categories “Emits Light” and “Reflects Light”: stars, the Moon, a cat’s eyes, car headlights, candles.*

4. I can demonstrate that light travels outward from a source and continues unless blocked by an opaque material.

*Sample question: Examine 2-4 different diagrams and identify the diagram showing the correct path of light.*

5. I can describe changes in the size and location of Sun shadows during the day—early morning, to midday, to late afternoon.

*Sample question: Examine a diagram and correctly identify, from the size of the shadow, the time of day. (Remember: long shadows are cast when the sun is low in the sky, such as in the morning or evening. Short shadows are cast when the sun is high in the sky, near midday. Also, shadows are cast opposite from the direction of the light source.)*
6. I recognize that opaque materials cast shadows, and I can predict changes in the size and location of shadows resulting from the movement of a light source or from the movement of a shade-casting object.

Sample question: Examine 2-4 different diagrams and correctly identify a) the direction of the light source, and b) the correct location and size of shadow caused by the light source hitting an object that is moving or stationary.

7. I can distinguish transparent materials from opaque materials by determining if light passes through them and by examining their shadows.

Sample question: Read the list of objects and circle the one that is opaque: a window, a clear glass lid, a person, a pair of eyeglasses.

8. I can classify materials as transparent, partly transparent (translucent) or opaque.

Sample question: classify these objects as transparent, translucent, or opaque:

_______ a wine glass_______ wax paper_______ a book

9. I recognize that light can be reflected and that shiny surfaces, such as polished metals and mirrors, are good reflectors.

Sample question: Name 3 objects that reflect light.
Sample question: Identify the correct path of reflected light when it bounces off a mirror.

10. I recognize that light can be bent (refracted) and that such objects as aquaria, prisms and lenses (such as those in eyeglasses) can be used to show that light beams can be bent.

Sample question: Identify the diagram showing how a pencil appears when in a glass of water.

11. I recognize that light can be broken into colours and that different colours of light can be combined to form a new colour.

Sample question: Examine a diagram and select, from a list of choices, the correct description of what is happening (i.e., light shines through a prism to show the spectrum of colours; overlaying the primary colours of light* (red, blue, and green) makes new colours).

*The primary colours of light are different from the primary colours of paint (red, blue, and yellow).

12. I can demonstrate the ability to use a variety of optical devices, describe how they are used, and describe their general structure.

Sample question: Study a diagram and select, from a list of choices, the correct description of the object being shown and how it is used (i.e., a pinhole camera, a kaleidoscope).