Light from rough objects in all directions.

**Proof:** We can see the object from all directions.

**Example:** Tennis ball

We are going to use this idea to figure out how images form with mirrors.

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**Plane Mirror:** (No focal point)

**Concave/Converging Mirror:**

**Convex/Diverging Mirror**
We remember from algebra that the shape that will perfectly focus parallel rays is the parabola:

![Parabola diagram]

However, truly parabolic mirrors are very expensive to make, so most curved mirrors are actually segments of a sphere, or *spherical* mirrors. Spheres are much easier to make (think balloons), and, if they don't subtend large angles of curvature, are pretty fair approximations of parabolic mirrors.

Spherical mirrors have a center of curvature and an approximate focal point as follows:

Law of Reflection says...

![Spherical mirror diagram]

\[ C = 2f \]
From Law of Reflection and our knowledge of mirrors, we develop three rules for predicting the location of an image:

1. Draw a light ray emanating from the object parallel to the principal axis, bouncing off the mirror directly toward or away from the focal point. (II and thru f)

2. Draw a light ray emanating from the object toward the mirror, in line with the focal point, which then bounces off the mirror parallel to the principal axis. (Thru f and II)

3. Draw a light ray emanating from the object toward the mirror, in line with the center-point, which then bounces off the mirror in the direction from which it came (Thru c and back)