Cameras

The word “camera” comes from the Latin word for a room (also “chamber”). The first cameras were rooms or lightproof tents with a small hole in one wall. The hole projected an inverted image of the outside scene on the opposite wall. These “dark rooms” have been used by landscape artists for hundreds of years. A pinhole camera works on the same principle of focusing light through a small hole.
Lenses

The problem with pinhole cameras was that they let very little light into the camera. With the development of (very slow) light sensitive film in the 1850s, more light was needed without making the pinhole larger, which greatly reduced sharpness. Lenses were developed to do this. But lenses have the additional and sometimes unwanted feature of focal length.
Focal length

Virtual cameras in software have many of the features as glass lenses in reality. One of these is focal length. The next three slides show what different focal lengths do to the representation of 3 dimensional forms. You can see 35-50 mm length (wide angle) lenses distort the center of the subject. Lengths greater than 70 mm (telephoto) flatten it. Best for realistic representation is 50-65 mm.
Aperture

The aperture in a physical camera allows the user to adjust the amount of light entering the camera. But they have a secondary effect of changing the **depth of field**: the range of distances from the image plane that are in sharp focus.
Large Aperture

Medium Aperture

Small Aperture
Controlling depth of field and the amount of light entering the lens

F-stop = focal length of lens/aperture
Depth of Field

In optics, particularly as it relates to film and photography, depth of field (DOF) is the distance between the nearest and furthest objects in a scene that appear acceptably sharp - Wikipedia
Depth of field at fully open iris and almost closed iris.
Ansel Adams

This California photographer used a very small aperture to make landscape images where the nearest rock to the furthest mountain top were all in sharp focus. This gave his photographs a feeling of vast depth and scale. By contrast, a wide aperture creates a narrow depth of field that gives a feeling of miniaturization.
the depth of field will increase to infinity. For a camera that has a hyperfocal distance opposite the one you are using. If you then adjust the aperture, the depth of field will increase as well.