Lenses, an introduction.

Pin holes and lenses.

Lenses are use to control light that strikes the film to create a focused image. Why do we need lenses to do this? Without a lens light behaves in a variety of uncontrolled ways.
Some of these means of control are,

- illumination
- signal fires / light houses
- provides energy
- hearts / warms
- photosynthesis
- colour changes with time of day.

sunshine = light = radiation

General statement on radiation or the electromagnetic spectrum?

Light is constructed of a variety components they are,

- Gamma rays
- X rays
- Ultra Violet
- Visible spectrum
- Infrared
- Experimental
- Radar
- Television
- Radio
- Ultrasonic
- Sonic
- Infrasonic

The human eye is sensitive to a very small group of waves near the middle of the spectrum.

When wave lengths in the visible spectrum strike the retina of the eye the brain senses light, each wavelength or combination of wavelengths produces the sensation of a different colour and a mixture of all the wavelength's produces colourless "white light"

For most purposes, films are manufactured to be sensitive to about the same wavelength's the the human eye sees.

Limitations of a pinhole Camera.

None of the image detail is ever quite sharp and clear. This is because the narrow bundle of light rays reflected from any one part of of the subject through the pinhole forms a beam that is diverging (gradually getting wider) The best representation you can get of any one high light or point of detail in the subject is a disc of light. What should be details become many overlapping discs of light which give the image it's fuzzy appearance.

Using a lens instead.

The best way to form a more "photographic image" is to make the hole bigger rather than smaller. Then bend the broad beams of light you produce so that it narrows (converges) instead of continuing to expand (diverge). This is done by using refraction through a piece of clear glass.