

Image properties

Table 6 illustrates the kind of image which can be obtained using a converging lens for different positions of the object. All the information can be obtained by drawing the appropriate ray diagram.

Table 6

Position of object	Location of image	Properties of image			
		Nature	Erect or inverted	Larger or smaller than object	Application
Between lens and F	On same side of lens as object, but further away from lens	Virtual	Erect	Larger	Magnifying glass
At F	At infinity	Real	Inverted	Larger	Searchlight
Between F and 2 F	Beyond 2F	Real	Inverted	Larger	Cinema projector
At 2 F	At 2 F	Real	Inverted	Same size	Telescope – erecting lens
Just beyond 2F	Between F and 2 F	Real	Inverted	Smaller	Camera
Very far away from lens	At F	Real	Inverted	Smaller	Astronomical telescope

The camera

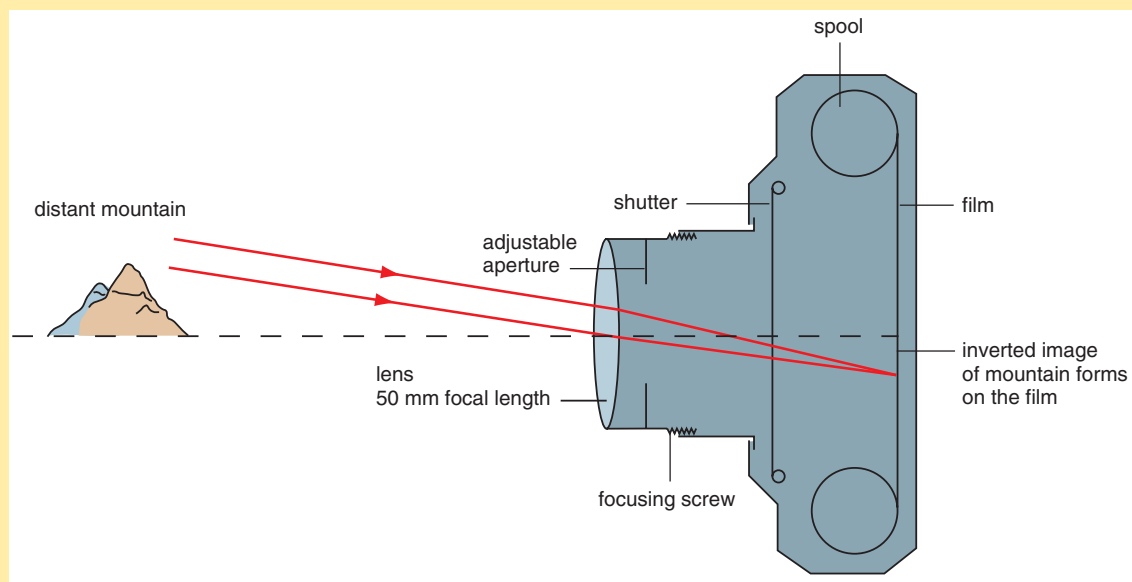


Figure 34

How a camera focuses light rays to produce an image

Figure 34 is a diagram of a simple camera. The purpose of the lens is to project an image of a distant object onto a light-sensitive film.

Focusing is achieved by changing the distance between the lens and the film. This is done by moving the lens backwards or forwards using the focusing screw.

Shutter speed can also be set by the photographer. A very fast speed (typically $\frac{1}{250}$ th of a second) needs to be set by a sports photographer if the action of a goalkeeper making a save is to be captured without blurring. On the other hand, the photographer may set a much slower speed (about $\frac{1}{60}$ th of a second) when taking a posed shot of a wedding.