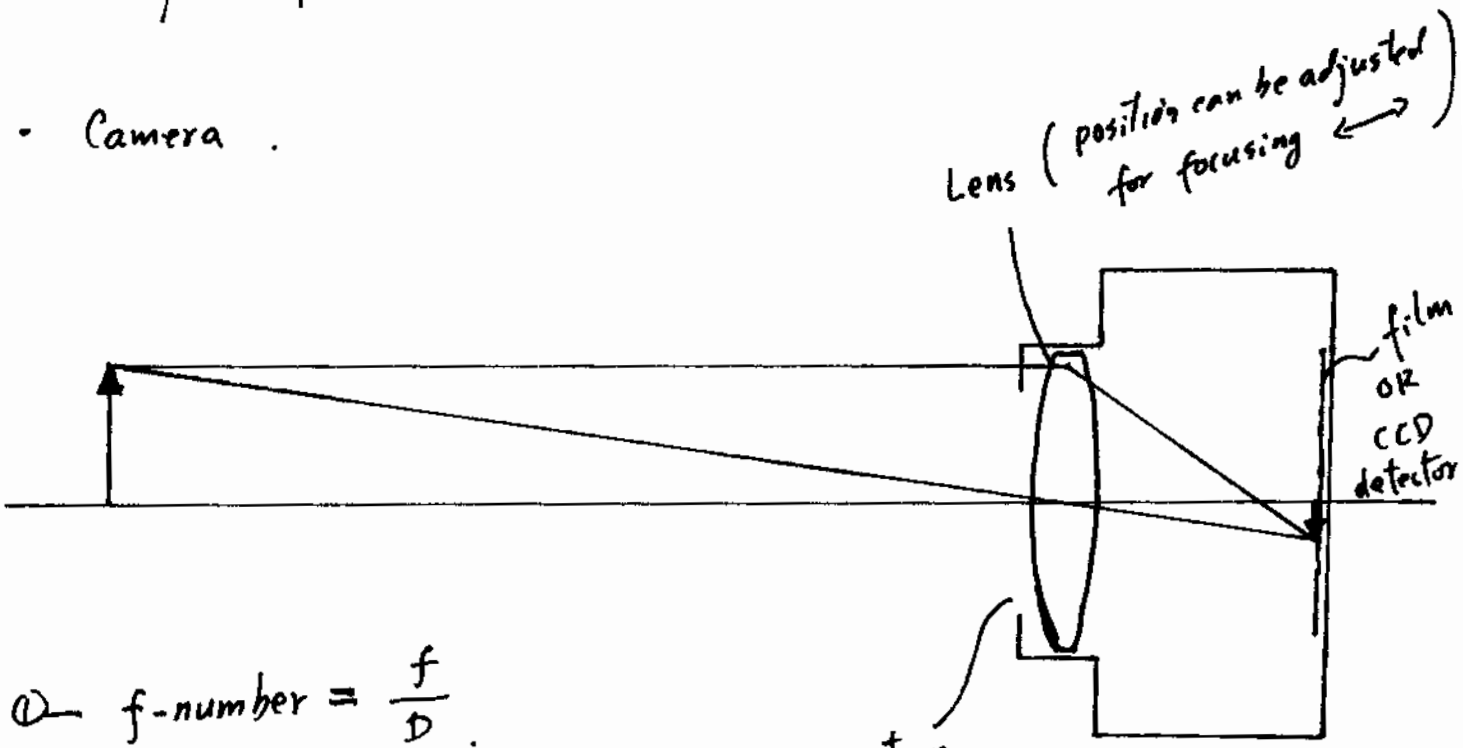
Physics 102

Lecture 28

Mon. Nov. 15, 2004

Ch. 27. Optical Instruments.

- Camera.



① f-number $= \frac{f}{D}$.

f = focal length.

D = diameter of aperture. (size can be adjusted to control amount of light and field of depth.)

The smaller the f-number, the larger the aperture. the more light to come in. (good for dark enviorement).

The larger the f-number, the smaller the aperture. less light, but better depth of field.

② Speed. — time of exposure. { High speed — short time; low speed — long time.

- The Human Eye.

— just like a camera.

① Lens system

Cornea + Aqueous humor + lens + Vitreous humor

↑

f can be automatically adjusted

by changing the curvature (shape)

↖ via Ciliary muscle.

② Aperture

Iris — control the pupil size.

③ Detector (film)

Retina

- Nearsightedness and farsightedness — Next.

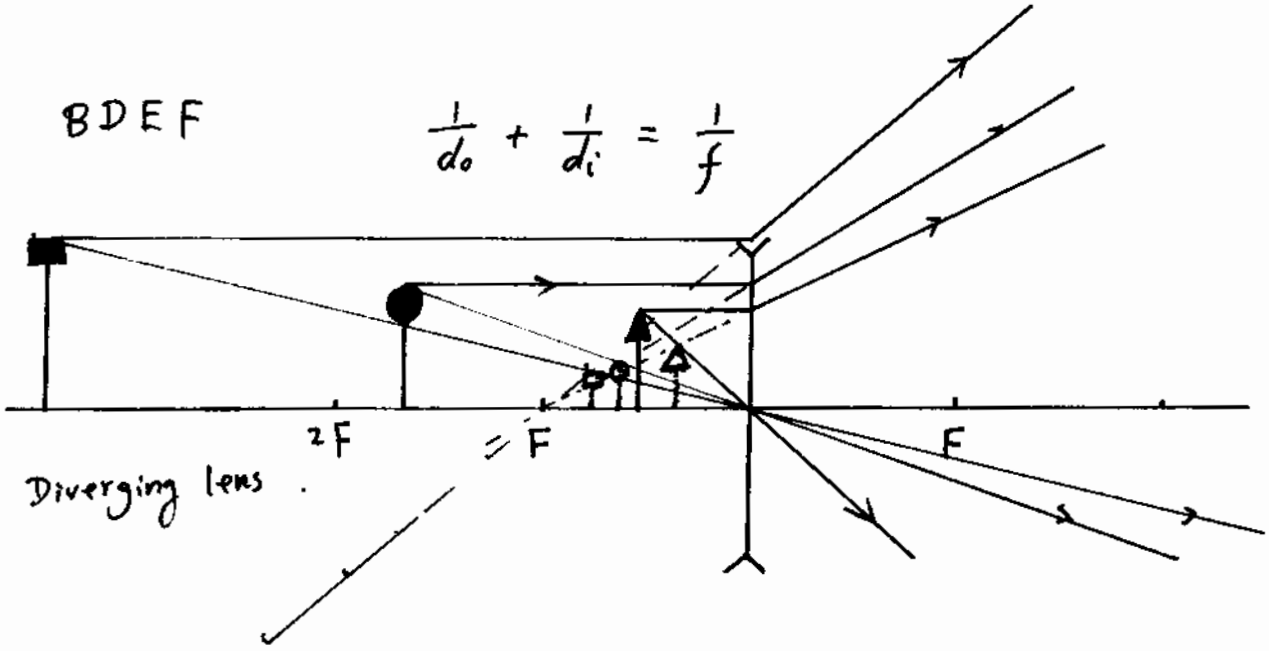
A) A diverging lens can produce a real, inverted, reduced image.
B) A converging lens can never produce a virtual, upright, reduced image.
C) A converging lens cannot produce a real, inverted reduced image.
D) For a converging lens an object has to be placed between the focal length and the lens in order to form a virtual image.
E) A diverging lens always produces a virtual, upright, reduced image.
F) A converging lens can produce a virtual, upright, enlarged image.

RDEE

Physics 102

CAPA set #8 Solutions

1. BDEF $\quad \frac{1}{d_o} + \frac{1}{d_i} = \frac{1}{f}$



Diverging lens.