

## 1. COMPLETE THE FOLLOWING TABLE

#	do	di	f	M	image	lens	case #
A		-20.0	+10.0				
B		+5.5		+4.0			
C		-20.0		-0.25			
D	+5.0		+2.5				
E	+0.25			-0.25			
F			-10.0	+0.25			
G			+0.5	+10.0			

2. An object is placed 15 cm from a diverging lens that has a focal length of 15 cm. Find the image distance and the magnification.

3. An object is placed 5.0 cm from a diverging lens that has a focal length of 10 cm. Find the image distance and the magnification.

4. An object is placed 5.0 cm from a converging lens that has a focal length of 10 cm. Find the image distance and the magnification.

4. An object is placed 10 cm from a lens and a virtual image is formed that is twice the size of the object. Find the focal length and the type of lens.

5. An object is placed 20 cm from a lens and a virtual image is formed 4.0 cm from the lens. Find the focal length and the type of lens.

6. A typical 35 mm camera has a converging lens that has a focal length of 50 mm. The subject of a photographer's picture is a dog that is 5.000 m from the lens. Find the proper distance the lens must be from the film to get a focussed picture.

7. The lens in a slide projector has a focal length of 20 cm. What should the distance from the lens to the slide be if the screen is 6.00 m from the lens? If the dimensions of the slide are 2.5 cm x 3.5 cm, find the dimensions of the image formed on the screen.(hint 2.5 is width and 3.5 is the height of object)

8. In the movie the Firm, Tom Cruise must photocopy some documents. The photocopier he is using has a lens with a focal length of 15 cm. To save paper he wants to reduce each copy. If the distance between the original and the copy paper is 62.5 cm, find the magnification. (hint: you must find image and object distances first)

9. A candle is placed 100 cm from a screen. Find the possible positions that a converging lens having a focal length of 20 cm could be placed to produce an image.

10. A photographer wishes to take a picture of the moon with a camera having a converging lens with a focal length of 50 mm. The diameter of the Moon is  $3.5 \times 10^6$  m and the distance from the Earth to the Moon is  $3.8 \times 10^8$  m. Find the size of the image produced on the film.

11. Assuming that your eye has a diameter of 3.0 cm, find the focal length of your lens as you read a book that is 30 cm from your eye.

12. Referring to the last question, if the shortest possible focal length of your eye is 2.25 cm, find your near point i.e. the smallest object distance such that you can still focus.

13. Referring to question #10, If the photographer replaced his lens for one that has a focal length of 200 mm, what would the size of the image be?

14. A real image is formed 50.0 cm from an object. If the image is five times the size of the object, find the focal length of the lens. (Hint: find image and object distances first)