

Q18. A contact lens is made of plastic with an index of refraction of 1.5. The lens has an outer radius of curvature of 4 cm (convex surface) and an inner radius of curvature of 8 cm (concave surface). The focal length of the lens is:

- a) 8 cm b) 4 cm c) 16 cm d) 5.3 cm e) 1.33 cm

Q19. A converging lens has a focal length f . If the lens magnification equals 2, then the object's location is:

- a) $2f$ b) $f/2$ c) $4f$ d) $1.5f$ e) $0.25f$

Q20. A lens has a focal length f and a power P . The power of a lens with a focal length $f/3$ is:

- a) P b) $P/3$ c) $3P$ d) $P/6$ e) $6P$

Q15. Where must an object be placed in front of a converging lens in order to obtain a virtual image?

- a) At the focal point
- b) At twice the focal length
- c) Greater than the focal length
- d) Between the focal point and the lens
- e) Between the focal length and twice the focal length

Q16. A converging lens of focal length 20 cm is placed in contact with a converging lens of focal length 20 cm. The focal length of this combination is:

- a) 10 cm
- b) -10 cm
- c) 60
- d) -60
- e) 25

Q17. A 2.00-cm tall object is placed 40.0 cm from a lens. The resulting image is 8.00-cm tall and upright relative to the object. The focal length of the lens is

- a) 26.6 cm
- b) 80.0 cm
- c) 32.0 cm
- d) 64.0 cm
- e) 53.3 cm

2
=

- Q14 The magnification of a flat (planar) mirror is:
a) zero b) 1 c) ∞ d) -1 e) 10
- Q15 A contact lens is made of plastic with an index of refraction of 1.50. The lens has an outer radius of curvature of +2.00 cm and an inner radius of curvature of -2.50 cm. The focal length of the lens is:
a) 5 cm b) 10 cm c) 15 cm d) 20 cm e) 40 cm
- Q16 An object located 32.0 cm in front of a lens forms an image on a screen 8.00 cm behind the lens. The magnification of the lens is:
a) 1 b) 0.50 c) 0 d) -0.10 e) -0.25
- Q17 A camera lens has a focal length of +0.1 m and was focused on a tree 3 m from the lens. If the tree height is 2 m, how tall is the image on the film?
a) -0.07 m b) -0.27 m c) 1.07 m d) 2.70 m e) 3 m

Q17. The virtual image is reproduced by

- a) Convergent lens only b) Divergent lens only **c) Convergent & Divergent lenses**
d) Depends on the object position e) None of these

Q18. What is the value of the focal length f_{n_2} of a convergent lens with index of refraction ($n_2=1.5$) if it was $f_{n_1}=5\text{cm}$ for an index of refraction $n_1=1.4$.

- a) 2.5 cm b) 3 cm **c) 4 cm** d) 6 cm e) 8 cm

Q19. An object is located in front of the lens with $f = 2$ cm. The reproduced image will be behind the lens with a distance of 4 cm. The object distance in front of the lens is

- a) $S = 2$ b) $S = 3$ **c) $S = 4$** d) $S = 10$ e) $S = 12$