CONCAVE AND CONVEX MIRROR AND MAGNIFICATION PRACTICE PROBLEMS

1. A concave mirror produces an image on a wall that is 30.0 cm high from an object that is 6.5 cm high. What is the magnification of the mirror? (ANS: 4.6)
2. A convex mirror has a focal length of -0.90 m. An object with a height of 0.40 m is 2.5 m from the mirror.
   a. Calculate the image distance. (ANS: -0.7 m)
   b. Calculate the image height. (ANS: 0.1 m)
3. A concave mirror has a focal length of 6.0 cm. An object with a height of 0.60 cm is placed 10.0 cm in front of the mirror.
   a. Calculate the image distance. (ANS: 15.0 cm)
   b. Calculate the image height. (ANS: -0.9 cm)
4. An object is placed 75.0 cm from a concave mirror. A real image is produced 50.0 cm away. What is the magnification? (ANS: -0.67)
5. A concave mirror creates a virtual image of a candle flame that is 10.0 cm high. If the magnification of the mirror is 12.5, what is the height of the candle flame? (ANS: 0.80 cm)
6. A convex security mirror in a warehouse has a focal length of -0.50 m. A forklift, which is 2.2 m tall, is 6.0 m from the mirror.
   a. Calculate the image distance. (ANS: -0.5 m)
   b. Calculate the image height. (ANS: 0.2 m)
7. A dancer is applying makeup using a concave mirror. The dancer’s face is 35.0 cm in front of the mirror, and the image is 72.0 cm behind the mirror. Use the mirror equation to calculate the focal length of the mirror. (ANS: 68.1 cm)
8. An object 25.0 cm tall is placed 80.0 cm in front of a convex mirror that has a radius of curvature of 1.5 m.
   a. Calculate the image distance. (ANS: -38.7 cm)
   b. Calculate the image height. (ANS: 12.1 cm)
9. A candle 3.0 cm high is placed 30.0 cm from a converging mirror with a focal length of 20.0 cm.
   a. Calculate the image distance. (ANS: 60.0 cm)
   b. Calculate the image height. (ANS: -6.0 cm)
   c. Provide the SALT characteristics.
10. A trucker sees the image of a car passing her truck in her diverging rear-view mirror, whose focal length is 60.0 cm. The car is 1.5 m high and 6.0 m away.
    a. Calculate the image distance. (ANS: -54.5 cm)
    b. Calculate the image height. (ANS: 13.6 cm)