More Practice Problems: Mirror Equation

sketch ⟶ solve ⟶ verify

1. An object 2.0 cm high is placed 5.0 cm in front of a concave mirror of focal length 10.0 cm. Describe the image.

2. An object is located 15.0 cm in front of a convex mirror of focal length 10.0 cm. Describe the image.

3. An object is placed 20.0 cm in front of a concave mirror. The image produced is half the size of the object, and inverted. What is the focal length of this mirror?

4. A convex mirror has a radius of curvature of 30.0 cm. An object is placed 10.0 cm in front of this mirror. Where is the image of this object located?

5. A concave mirror of focal length 10.0 cm produces an image that is inverted and 4 times smaller than the object. How far from the mirror is the object located?

6. When an object is placed 4.0 cm in front of a convex mirror, its image is located 2.4 cm behind the mirror. What would be the magnification provided by this mirror if an object was placed 8.0 cm in front of the mirror?

Mirror Equation Worksheet

1) A 2.0 cm tall object is placed 5.0 cm in front of a convex mirror with a focal length of – 4.0 cm.

   Show the image of this object using a ray diagram to scale. Describe the image.

2) An object, 45.0 cm high, is placed in front of a convex mirror. A virtual image, 15.0 cm high, is formed. The focal length of the mirror is -30.0 cm.

   At what distance is the object from the mirror?

   A)   20.0 cm

   B)   60.0 cm

   C)   90.0 cm

   D)   120.0 cm

3) Haran is manipulating a concave mirror that has a focal length of 10.0 cm. His physics teacher tells him that the difference between d_o and d_i is 15.0 cm and that the image is larger than the object and has a negative magnification.

   Where should Haran place the object to obtain the desired image?

   A) d_o = 15.0 cm and d_i = 30.0 cm

   B) d_o = 30.0 cm and d_i = 15.0 cm

   C) d_o = 5.0 cm and d_i = -10.0 cm

   D) d_o = 10.0 cm and d_i = -5.0 cm

1. Smaller, upright, behind mirror, virtual
2. B
3. A