

The Pinhole Camera

1. Calculate the distance from the pinhole to an object that is 3.5 m high, and whose image is 10 cm high in a pinhole camera 20 cm long.
2. Calculate the height of a building 300 m away from the pinhole camera that produces an image 3.0 cm high in a pinhole camera 5.0 cm long.
3. A 1.5 cm inverted image is produced on the screen of a camera when a picture is taken of an 80 m tall tree. What is the magnification?
4. A pinhole camera, 25 cm long, is used to photograph a building 10 m high, located 30 m from the camera. Calculate the height of the image on the film.
5. A pinhole camera, 20.0 cm long is used to photograph a student 175 cm high. If the image is 10.0 cm high, how far from the camera is the student?
6. Determine the magnification in questions 4 and 5.
7. A large pinhole camera has a magnification of 0.050 for a tree located 5.0 m from the camera. What is the size of the image on the screen?

Answers

1. 7.0 m
2. 180 m
3. 1.9×10^{-4}
4. 8.3 cm
5. 350 cm
6. 8.3×10^{-3} 5.7×10^{-2}
7. 25 cm