

Name _____ Hour _____



Mirror Problems

For each of the following problems, find the size (hi) and distance of the image (q) from the mirror using a diagram and equations. Then circle whether it is a real or virtual image.

Problem 1 An object that is 2 cm high is 5 cm in front of a **convex** mirror with a focal length of 2 cm.
scaled ray diagram:

$q =$ _____
 $hi =$ _____

equations:

$q =$ _____
 $hi =$ _____

Real / virtual image

Problem 2 An object that is 1 cm tall is located 3.5 cm from a **concave** mirror with a focal length of 2 cm. scaled ray diagram:

$q =$ _____
 $hi =$ _____

equations:

$q =$ _____
 $hi =$ _____

Real / virtual image

Problem 3 You put a 0.7-cm tall plastic pig 1.3 cm in front of a **concave** mirror with a focal length of 3 cm. See your notes for help with the ray diagram.
scaled ray diagram:

$q =$ _____
 $hi =$ _____

equations:

$q =$ _____
 $hi =$ _____

Real / virtual image

Answers: 1) $hi = 0.57\text{cm}$, $q = -1.43\text{ cm}$ 2) $hi = -1.33\text{ cm}$, $q = 4.67\text{ cm}$ 3) $hi = 1.23\text{ cm}$, $q = -2.29\text{ cm}$

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Mirror Problems

Problem 4 A shaver's face is 10 cm from a **concave** shaving mirror with a focal length of 20 cm.

- a. At what distance from the mirror is the image (q)? Solve this using equations.
(ans. -20 cm)

$q = \underline{\hspace{2cm}}$

- b. How much does the mirror magnify the shaver's face? (ans. 2- show your work)

$m = \underline{\hspace{2cm}}$

Problem 5 A motorist sees the image of a car in the **convex** rear-view mirror with a focal length of 1.0 m.

- a. If the car is 1.6 m tall and 7.0 m away from the mirror, what is the height of the image (h_i)? Solve this using equations. (ans. 0.2 m) Find q first!

$h_i = \underline{\hspace{2cm}}$

- b. What is the magnification of the mirror? (0.125)

$m = \underline{\hspace{2cm}}$