

Part Q Problems

The answers below are based on sketches (not shown), and are accurate only to within 10-15%.

Convex Lenses

1. The focal point of a convex lens is 60 cm from the lens. An 80-cm tall object is placed 120 cm from the lens.

- (a) How far from the lens is the image? *Answer: 120 cm*
- (b) How tall is the image? *Answer: 120 cm*
- (c) Is the image upright, or inverted? *Answer: inverted*
- (d) Is the image real, or virtual? *Answer: real*

2. The focal point of a convex lens is 60 cm from the lens. A 40-cm tall object is placed 30 cm from the lens.

- (a) How far from the lens is the image? *Answer: 60 cm*
- (b) How tall is the image? *Answer: 60 cm*
- (c) Is the image upright, or inverted? *Answer: upright*
- (d) Is the image real, or virtual? *Answer: virtual*

Concave Lenses

1. The focal point of a concave lens is 120 cm from the lens. A 100-cm tall object is placed 80 cm from the lens.

- (a) How far from the lens is the image? *Answer: 50 cm*
- (b) How tall is the image? *Answer: 60 cm*
- (c) Is the image upright, or inverted? *Answer: upright*
- (d) Is the image real, or virtual? *Answer: virtual*

2. The focal point of a concave lens is 80 cm from the lens. An 80-cm tall object is placed 40 cm from the lens.

- (a) How far from the lens is the image? *Answer: 30 cm*
- (b) How tall is the image? *Answer: 50 cm*
- (c) Is the image upright, or inverted? *Answer: upright*
- (d) Is the image real, or virtual? *Answer: virtual*