Drawing Ray Diagrams for Concave and Convex Mirrors

CONCAVE MIRRORS

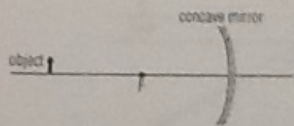1. Copy Figure 11.23(a) into your notebook.

Figure 11.23(a) Draw the object and the mirror.

2. To determine where the image of the tip of the arrow will be, draw two rays. Draw the first ray parallel to the principal axis until it strikes the mirror and reflects through the focal point (Figure 11.23(b)).
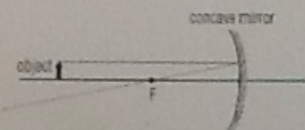
Figure 11.23(b) Draw the first ray.

3. Draw the second ray through the focal point until it strikes the mirror and reflects parallel to the principal axis (Figure 11.23(c)).
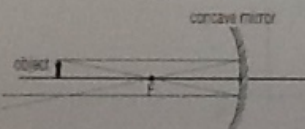
Figure 11.23(c) Draw the second ray.

4. These two rays intersect at only one location. This is where the image of the tip of the arrow is. Draw the inverted image (Figure 11.23(d)).
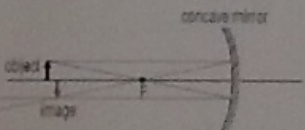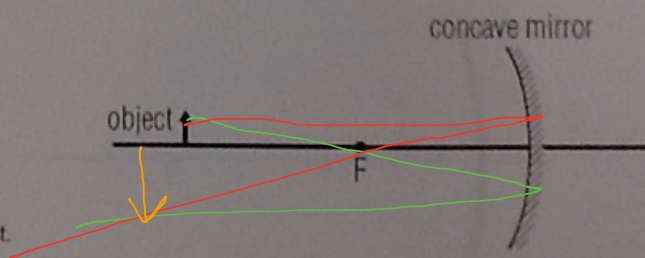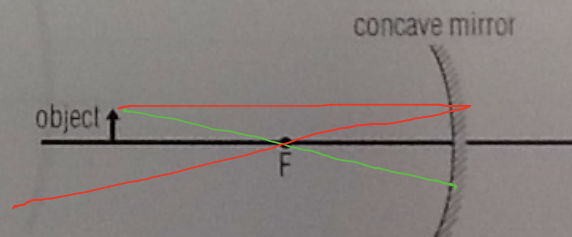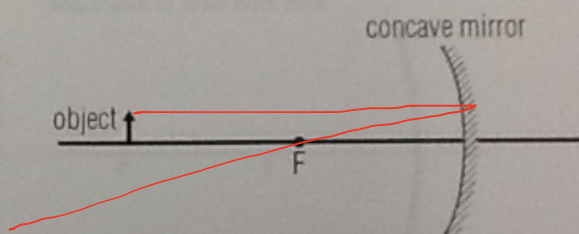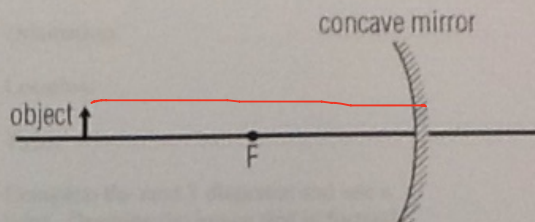
Figure 11.23(d) Draw the inverted real image.

5. Repeat the process for other parts of the object.
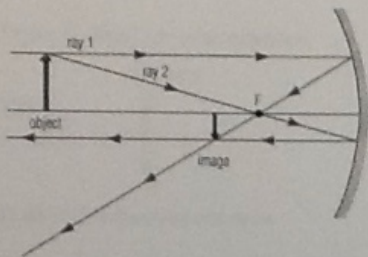
Figure 11.12 Concave mirror ray diagram

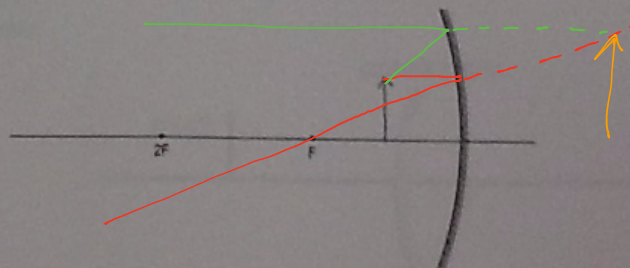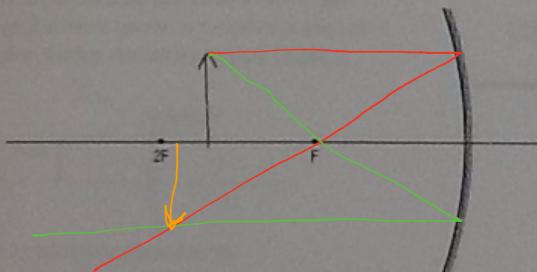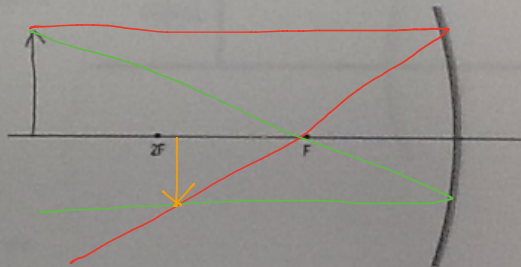Using the diagram to the left describe the image that is formed:

Size:

Orientation:

Location:

Type:

Complete the next 3 diagrams and use a ruler. Describe the image that is formed. Make sure to draw both rays.

ONVEX MIRRORS

1. Copy Figure 11.24(a) into your notebook.
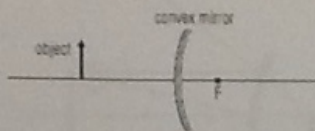
convex mirror

object

F

Figure 11.24(a) Draw the object and mirror.

2. Draw the first ray parallel to the principal axis until it strikes the mirror, where it reflects away in a line that appears to come from the focal point. Draw a dashed line from the point on the mirror where the ray strikes through the focal point (Figure 11.24(b)).
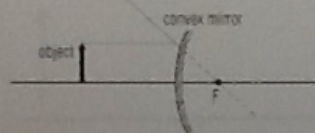
convex mirror

object

F

Figure 11.24(b) Draw the first ray.

3. Draw the second ray toward the mirror heading for the focal point until it strikes the mirror and reflects back parallel to the principal axis. Draw a dashed line through the mirror parallel to the principal axis until it intersects the first dashed line (Figure 11.24(c)).
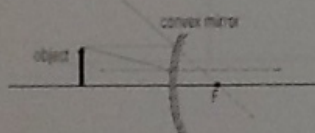
convex mirror

object

F

Figure 11.24(c) Draw the second ray.

4. The intersection of both dashed lines represents the virtual image of the tip of the arrow. The image for a convex mirror is always virtual, upright, and smaller.
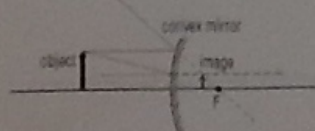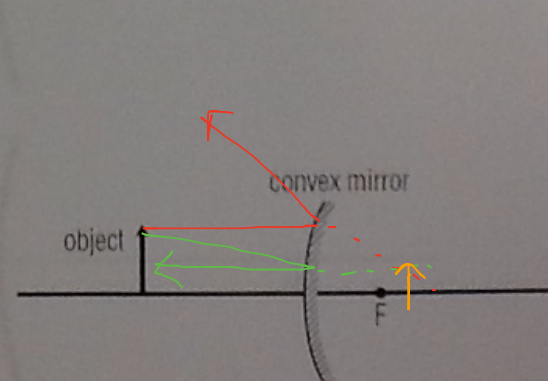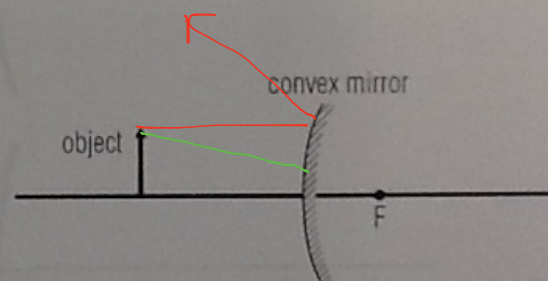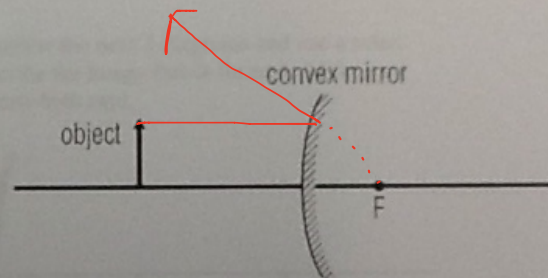
convex mirror

object

F

Figure 11.24(d) Draw the upright, virtual image.

Using the diagram to the left describe the image that is formed:

Size:

Orientation:

Location:

Type:

Complete the next 3 diagrams and use a ruler. Describe the image that is formed. Make sure to draw both rays.
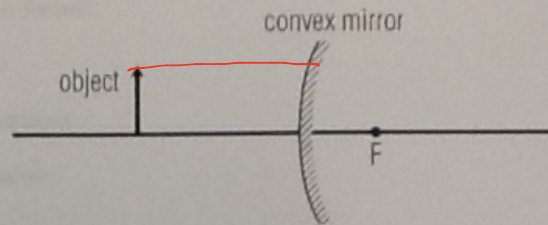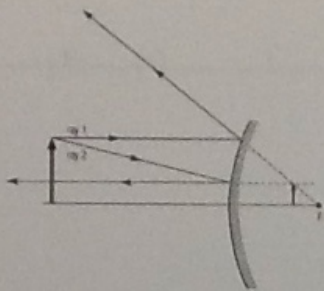
Figure 11.18 Convex mirror ray diagram