

Objective:

To compare the images formed by concave and convex mirrors based on the location of the object.

Materials:

- small convex mirror
- small concave mirror
- mirror holder
- candle
- meter stick
- screen holder
- index card

Part One: Concave Mirror

1. Place your candle (the object) at least twice the focal length away from your mirror.
2. Use your index card as a screen and adjust its location so that an image is projected onto it.
Hint: It should be clearly the candle flame, not just reflection of light!
3. At what distance from the mirror does the clearest image form? _____ cm
4. How does the size of the projected image compare to the size of the flame?

5. Next, place the candle at exactly twice the focal length from your mirror.
6. Move your index card so that an image is projected onto it. At what distance from the mirror does the clearest image form? _____ cm
7. How does the size of the projected image compare to the size of the flame?

8. Next, place the candle closer to the mirror, but still outside the focal length.
9. Move your index card so that an image is projected onto it. At what distance from the mirror does the clearest image form? _____ cm
10. How does the size of the projected image compare to the size of the flame?

11. Place the candle at a distance equal to the focal length from the mirror.

Part One: Concave Mirror

12. Look into your mirror. Describe the appearance of the flame of the candle.

13. At the focal length, move your index card so that an image is projected onto it. At what distance from the mirror does the clearest image form? If no image is projected, make note of that. _____ cm

14. Place the candle at a distance less than the focal length from the mirror.

15. Look into your mirror. Describe the appearance of the flame of the candle.

16. Move your index card so that an image is projected onto it. At what distance from the mirror does the clearest image form? If no image is projected, make note of that. _____ cm

Part One: Conclusions

1. If the object is placed outside of the focal length, what kind of image is formed? Justify with evidence from your findings.

2. Is there an image formed when the object is placed at the focal length? Justify with evidence from your findings.

3. If the object is placed inside of the focal length, what kind of image is formed? Justify with evidence from your findings.

Part Two: Convex Mirror

1. Place your candle at some distance from the convex mirror.

2. Look into your mirror. Describe the appearance of the flame of the candle.

3. Move the candle to a greater distance than it was previously. Does anything about the image of the candle change when the distance increases?

4. Now move the candle to a shorter distance from the mirror than it was in the first situation. Does anything about the image of the candle change when the distance decreases?

Part Two: Conclusions

1. What kind of image is formed by convex mirrors? Justify with evidence from your findings.

2. What is the relationship between the size of the image and the distance the object is located from the mirror?
