

In this activity, you will determine if the law of reflection applies to all types of mirrors.

Materials:

- flat mirror
- convex mirror
- concave mirror
- thumbtack
- protractor
- ruler
- paper

Part One: Flat Mirror

1. Place a flat mirror along the edge of the paper.
2. Push the thumbtack into the paper to one side of the mirror.
3. Looking into the mirror at an angle so that you see a reflected image of the thumbtack, use your ruler to trace a line from the mirror to the reflected image. This is the line of reflection.
4. Repeat this procedure, looking at the reflection of the thumbtack from a different angle.
5. Trace a line from the thumbtack to where the line of reflection intersects the edge of the paper. This is the line of incidence.
6. Trace a line straight across the page from where the lines of incidence and reflection intersect. This is the normal line.
7. Using a protractor, measure the angle between the normal line and the line of incidence. This is the angle of incidence.

angle of incidence = _____

8. Measure the angle between the normal line and the line of reflection. This is the angle of reflection.

angle of reflection = _____

9. How do the angle of incidence and the angle of reflection compare to each other?

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10. Repeat for the other lines of incidence and reflection.

angle of incidence = _____

angle of reflection = _____

11. How do the angles between the normal line and the lines of incidence and reflection compare to each other?

Part Two: Convex Mirror

1. Place a convex mirror along the edge of the paper.
2. Push the thumbtack into the paper to one side of the mirror.
3. Looking into the mirror at an angle so that you see a reflected image of the thumbtack, use your ruler to trace a line from the mirror to the reflected image. This is the line of reflection.
4. Repeat this procedure, looking at the reflection of the thumbtack from a different angle.
5. Trace a line from the thumbtack to where the line of reflection intersects the edge of the paper. This is the line of incidence.
6. Trace a line straight across the page from where the lines of incidence and reflection intersect. This is the normal line.
7. Using a protractor, measure the angle between the normal line and the line of incidence. This is the angle of incidence.

angle of incidence = _____

8. Measure the angle between the normal line and the line of reflection. This is the angle of reflection.

angle of reflection = _____

9. How do the angle of incidence and the angle of reflection compare to each other?

10. Repeat for the other lines of incidence and reflection.

angle of incidence = _____

angle of reflection = _____

11. How do the angles between the normal line and the lines of incidence and reflection compare to each other?

Part Three: Concave Mirror

1. Place a concave mirror along the edge of the paper.
2. Push the thumbtack into the paper to one side of the mirror.
3. Looking into the mirror at an angle so that you see a reflected image of the thumbtack, use your ruler to trace a line from the mirror to the reflected image. This is the line of reflection.
4. Repeat this procedure, looking at the reflection of the thumbtack from a different angle.
5. Trace a line from the thumbtack to where the line of reflection intersects the edge of the paper. This is the line of incidence.
6. Trace a line straight across the page from where the lines of incidence and reflection intersect. This is the normal line.
7. Using a protractor, measure the angle between the normal line and the line of incidence. This is the angle of incidence.

angle of incidence = _____

8. Measure the angle between the normal line and the line of reflection. This is the angle of reflection.

angle of reflection = _____

9. How do the angle of incidence and the angle of reflection compare to each other?
10. Repeat for the other lines of incidence and reflection.

angle of incidence = _____

angle of reflection = _____

11. How do the angles between the normal line and the lines of incidence and reflection compare to each other?

Conclusions:

1. To which types of mirrors does the law of reflection apply? Justify your answer with evidence from your findings.
