

Mirrors and Reflections -Coordinate Systems

Apparatus

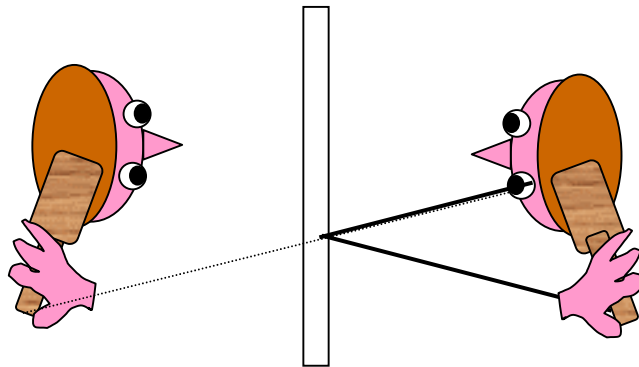
large mirror

Action

The students look at their own reflection in the mirror. They should try moving a hand left and right and up and down. They should recognize that left and right are reversed, but not up and down.

The Physics

In a reflection left and right seem to be reversed, but not up and down. This is because we define left and right as relative to ourselves, not our surroundings. It is important to know how you are defining your coordinate system. For example, “towards the wall” and “away from the wall” are not reversed, just as up and down are not reversed. Up and down directions in an externally defined coordinate system, as well as in your internally defined system of coordinates. They are defined externally, usually relative to the ground, hence are not reversed.



Accompanying sheet

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Look at your reflection in the mirror.

Move your right hand to the right.

What does your reflection do?

Which way does the reflected hand move?

Why are left and right reversed in the mirror but not up and down?