

4.3 REFLECTION

Name _____ Date _____ Period _____

Your challenge:

Using a remote control, turn on a TV when you are not in a direct line with it.

Rules:

1. You have only ONE SHOT to successfully turn on the TV – no practice shots!
2. You must use all the mirrors provided to your group.

Questions:

1. Before trying to use the remote, draw a diagram showing where the TV and remote control are, where you need to place the mirrors so the remote control can turn on the TV, and where any barriers (such as walls, lab benches, or doors) are located. Include the path the infrared light beam follows from the remote control to the TV.

Drawings will vary, but should show the mirrors placed in such a way that the incoming IR beam at each mirror reflects off at the same angle as it approached the mirror (the angle of incidence should equal the angle of reflection).

2. With the mirrors arranged as in the drawing above, press the On button on the remote. Were you able to turn on the TV the first time? If not, why do you think you did not turn on the TV?

Answers will vary, but may include that the mirrors were not aligned properly, or that the path the infrared light beam had to travel was too far and the infrared light beam was too faint to turn on the TV by the time it got to the TV.

3. How did you know when you had the mirrors set up the right way before you tried it?

Make sure you could see with your eyes that all the mirrors were lined up in such a way that you could see the infrared detector on the TV when you look at the first mirror the remote control's light will hit. Then aim the remote control at that spot on the first mirror.

4. What does this experiment tell you about the similarities between visible and infrared light?

Both visible and infrared light reflect off of mirrors in the same way. Both behave the same way, and must, therefore, be similar kinds of light. In fact, both act like waves, and both are part of the electromagnetic spectrum.