Evading Motion Detection

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ACTIVITY

Motion detectors are devices that respond to changes in electromagnetic radiation. They can detect movement and then open store doors, turn on the lights in public washrooms, or signal the presence of home intruders. Suppose you're designing a motion detector that will let you know when a person approaches your front door. What is it about the motion that you would want the sensor to detect? Its range? Its speed? What else?

Predictions

In this activity, you will observe and investigate a commercial motion detector. Your teacher has placed a motion detector in the classroom. The motion detector contains a sensor. Predict how you could move within the range of this sensor and evade detection. Discuss your prediction with classmates and write down reasons for your prediction.

Procedure and Observations

1. As class members move about in front of the detector, observe its sensitivity. Note what the sensor seems to do in response to motion. Draw a box to represent the room. Then sketch the limits of the detector's sensitivity. The region within which the detector works is its active area.

2. In small groups, brainstorm about how a person could move inside the active area without being detected. Consider testing what the sensor responds to first. Come to a consensus on the best way to test your predictions. Then send a group member to try each of the evasion tests until one is successful. Write down what happens.

Think about these questions as you do the activity:

- **?** What does this motion detector detect? Does it detect movement or something else?
- **?** What kind of motion could you make to evade this detector?
- **?** What type of shielding might help you evade this detector?

Design Connection What uses can you think of for this kind of motion detector?