

## I Now Know I Can't Hide Post-Quiz **Answer Key**

1. Explain how IR technology can be used to find a person lost on a hike.

*Example answer:* Use a special infrared camera that detects heat. Since a person's body is warmer than the surrounding terrain, it shows up as a bright white object.

2. What part of the electromagnetic spectrum can be used to "see" at night?

**Infrared waves**

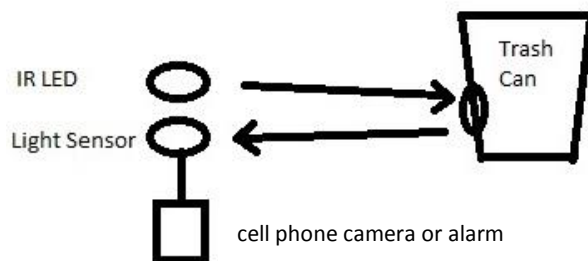
3. What are the wavelengths of IR?

IR is beyond the red edge of visible light and extends from a wavelength of 740 nm (0.00003 inches) with a frequency of 400 THz to wavelength of about 30 cm (12 inches) with a frequency of 3 GHz. Infrared is invisible to the eye, but people can feel it as heat.

4. List four ways scientists and engineers use IR technology to conduct research and design products.

*Example answers:* Scientists and engineers use IR to create night vision technology, study the temperatures of parts, track objects, for heating, for communications (such as a remote control devices), study chemical compositions, study the earth and weather, and study astronomy.

5. Sketch a block diagram of a circuit that uses an IR LED, an IR light sensor, a reflector and a camera (or an alarm) to detect an object that crosses the path of your curbside trash container. Also explain how the circuit works.



*Example answer:* The LED emits IR light towards the trash container. The IR light is reflected back towards the light sensor that has an output to a cell phone camera (or an alarm circuit). If an object crosses between the sensor and the trash container, the IR light is reflected differently, which is detected by the IR light sensor. When this difference is detected, the IR light sensor sends a signal to activate the camera (or alarm).