5.4 Investigating Light Refraction

Using a meter

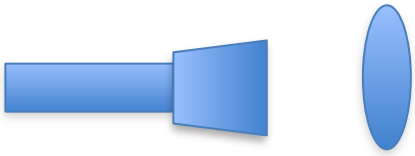
Experiment 1 Using a lens to increase light brightness

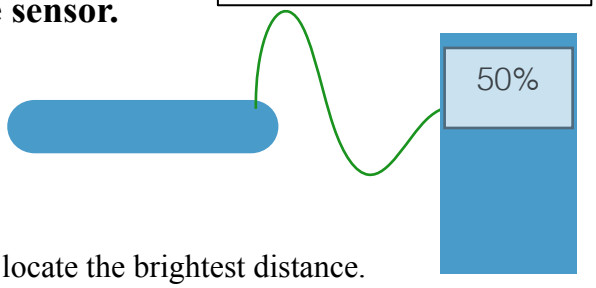
Equipment Required

Light Sensor or Light meter
Lens or magnifying glass
Torch
Note: If using LEGO NXT and light sensor:
Choose View on the main menu with light sensor connected to port 3.

Collecting Data

Setup the torch, lens and sensor on the table so that the torch shines through the lens to the sensor.

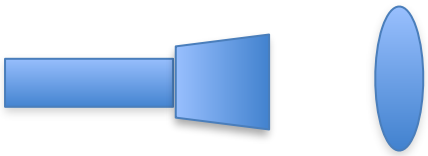




Move your sensor slowly away from the lens to locate the brightest distance. Record the distance. This is called the focal length of the lens.

Record Focal length: _____

Show on the diagram below how the light gets focussed and becomes the brightest spot.



Using NXT light sensor and lamps

Experiment 2 Using a prism to bend light around corners

Equipment Required

Light Sensor or meter
Triangular Prism

Collecting Data

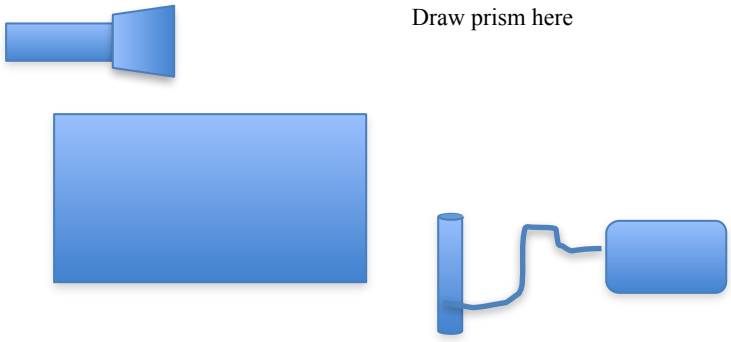
Setup the torch, prism and sensor as shown.

1. Using a corner of a wall or large object, place the torch on one side and the sensor on the other.
2. Record the sensor reading?
3. Now add the prism at the corner and rotate the prism until the sensor reads the highest value. What is your brightest value?

Results

Light reading without prism	Maximum Light reading with prism

4. Show on the diagram below how the light gets to the sensor from the torch.



Conclusion

What are two things lens and prisms can do?

Why do torches often have a lens at the front?