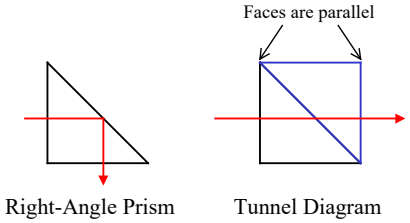
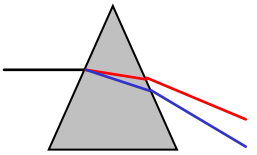
Prisms

Dispersive Vs. Reflecting Prisms

To determine the prism type, construct a tunnel diagram and examine the entrance and exit faces. If they are parallel, the prism is a reflecting prism. Otherwise, the prism is a dispersive prism.



Reflecting Prism

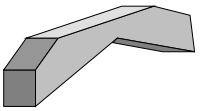


Dispersive Prism

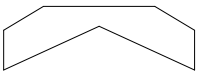
Roof Vs. Non-Roof Prisms

A reflective surface in a prism can either be flat (non-roof) or made of two perpendicular surfaces (roof). The purpose of the roof is to flip the image axis that is perpendicular to the plane of incidence on the roof. In addition, since two reflections actually occur during a "roof" reflection, the handedness does not change.

Non-Roof Prism

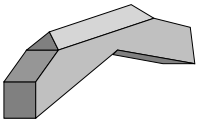


Three-D Representation

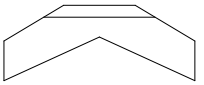


Schematic Representation

Roof Prism



Three-D Representation



Schematic Representation

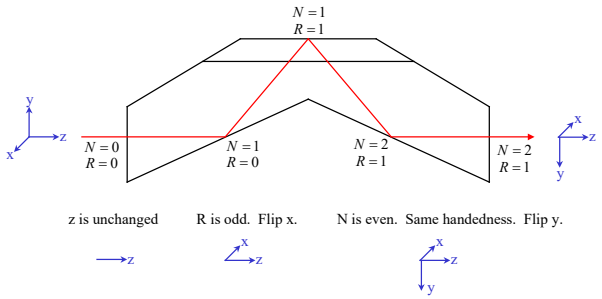
Determining Image Orientation

A common purpose of a prism is for image orientation. The image axes can be reoriented in an arbitrary manner using prisms.

<u>To determine the image orientation</u>

1) Assume an initial orientation.
2) Image axis aligned with direction of propagation remains unchanged.
3) Count the total number of non-roof reflections, N, and the number of roof reflections, R, produced by the prism. R=1 for one roof.
4) If R is odd, then the image axis perpendicular to plane of incidence is inverted. Otherwise, it remains unchanged.
5) If N is odd, the handedness changes. Otherwise, the handedness remains the same.
6) Knowing two coo

<u>Example 1</u>



<u>Example 2</u>