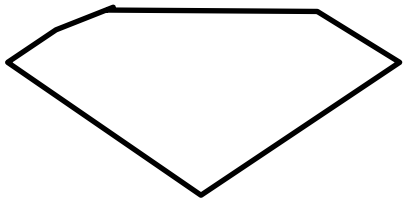
SNC2D

Total Internal Reflection

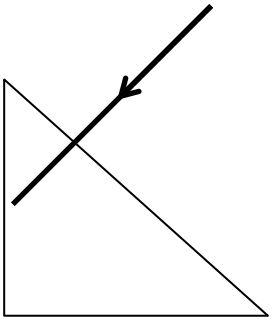
Draw a ray diagram of light as it moves through a diamond. Use the outline below.
Highlight/circle where TIR occurs.

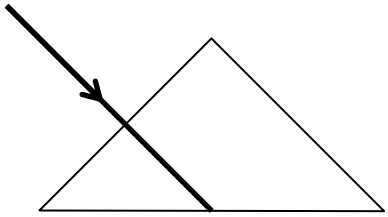


Describe what a fibre optic cable is. Draw a ray diagram of how a fibre optic cable permits light to move from one end to another.

List 3 applications of the use of fibre optic cables (for more examples see pg 528 in the textbook.)

Complete the following two ray diagrams for glass triangular prisms.





Provide two reasons why using glass triangular prisms are better than using mirrors in binocular, cameras, and other technologies?

Describe what “retro-reflectors” are and provide 3 specific applications for how they are used.

Application Questions

Solve the following problems.

1. Why does total internal reflection occur only when light travels more slowly through the first medium than in the second and not the other way around? Include a ray diagram with your answer.

2. Will you get more total internal reflection with a medium that has a small critical angle or with one that has a large critical angle? Explain.

3. Determine how much time it would take to send a signal through a fibre optic cable 10,583 km in length (the direct distance from Toronto to Beijing). Assume that light travelling through the fibre optic cable is made of glass.

Textbook Questions: pg. 531 #1-3, 5, 8, 9