

Refraction

The speed of light in a vacuum is constant,
But light is slowed down when it passes
through a transparent medium.

The amount by which it is slowed down is
called the Refractive Index n

$$n = \frac{\text{speed of light in vacuum}}{\text{speed of light in medium}}$$

Refraction

The slowing down of light has a very important consequence:

The direction of a light beam is changed when it passes from one medium to another

What path should he follow to safety most quickly?

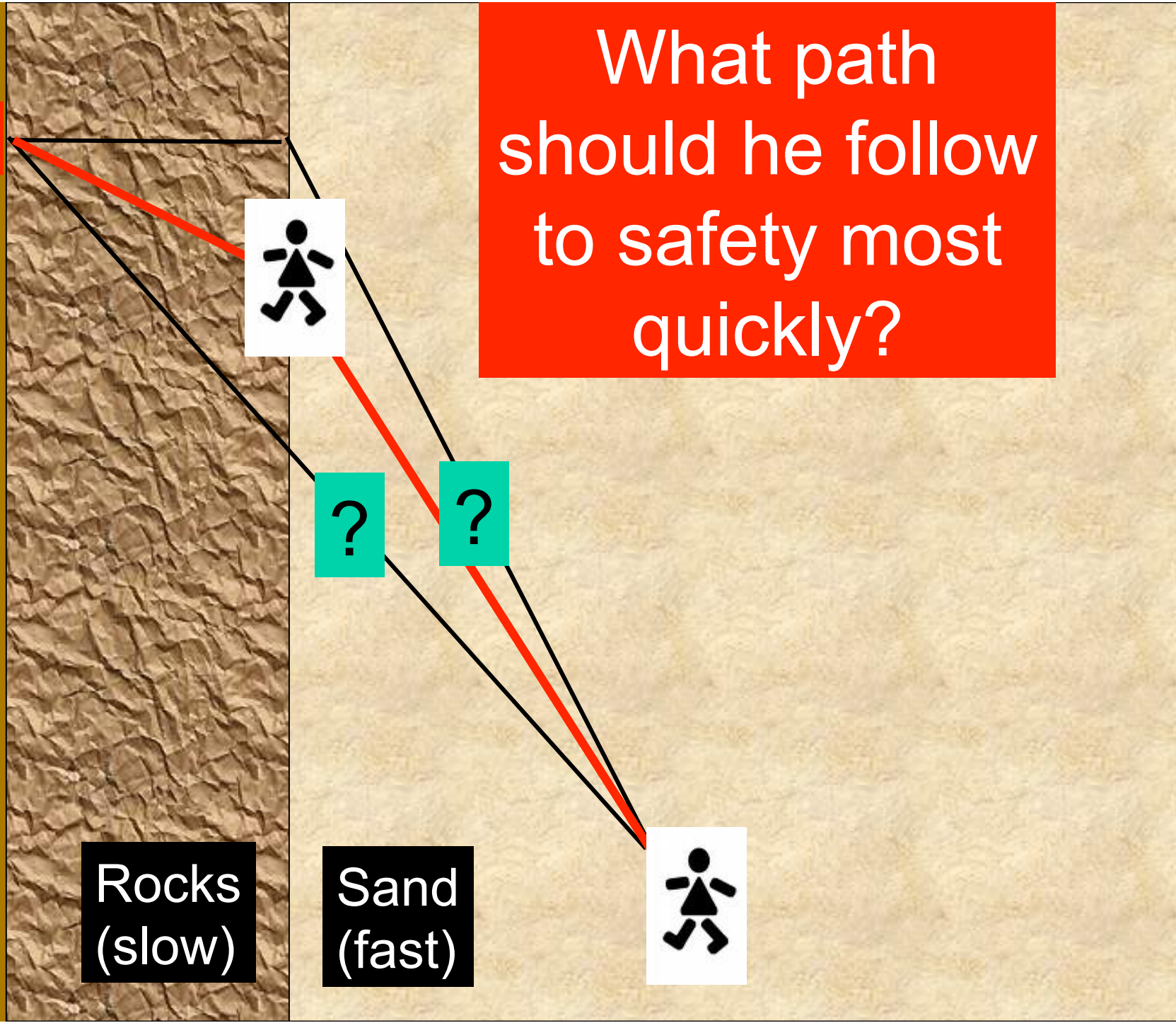


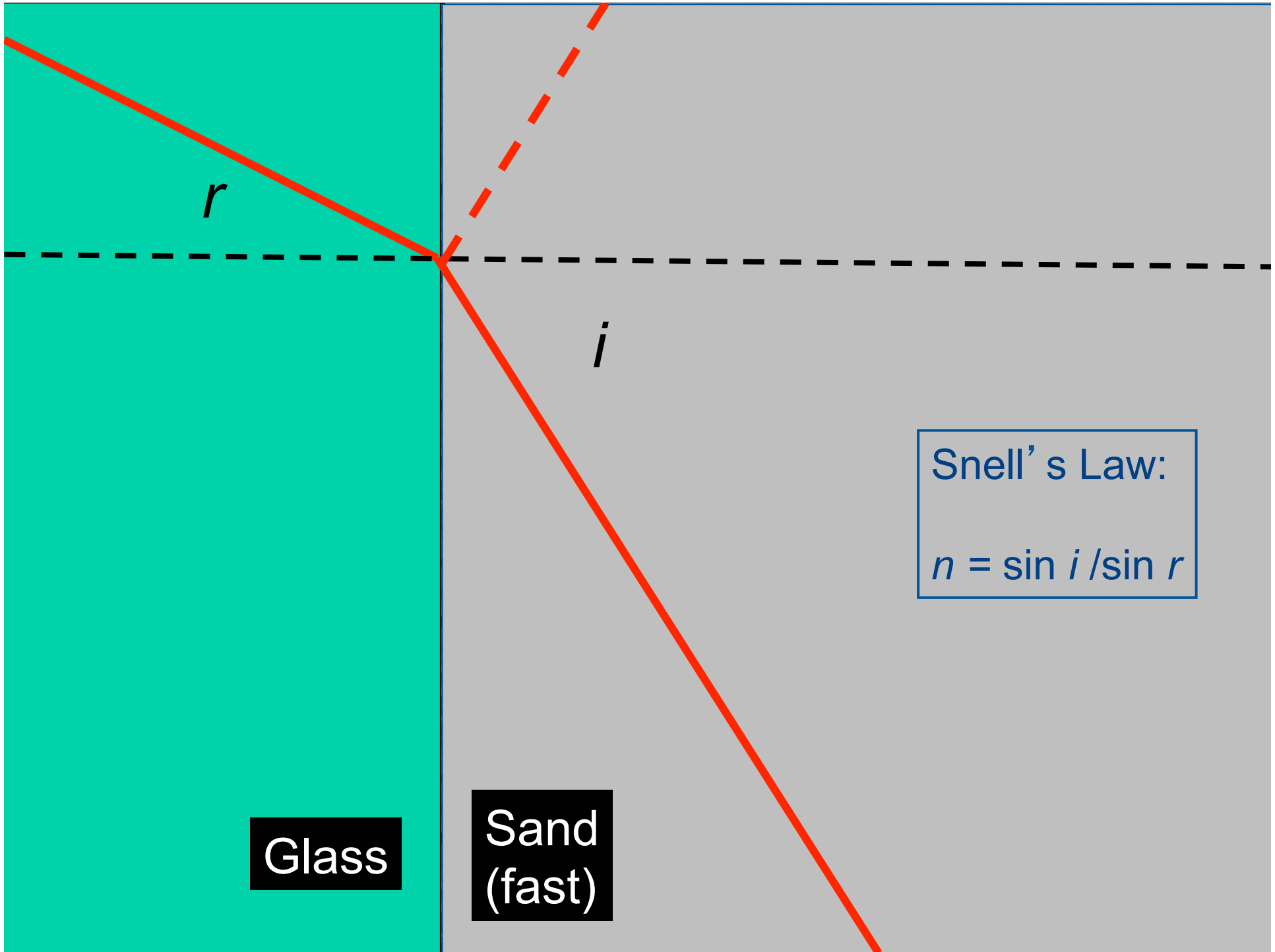
Cliff



Rocks (slow)

Sand (fast)

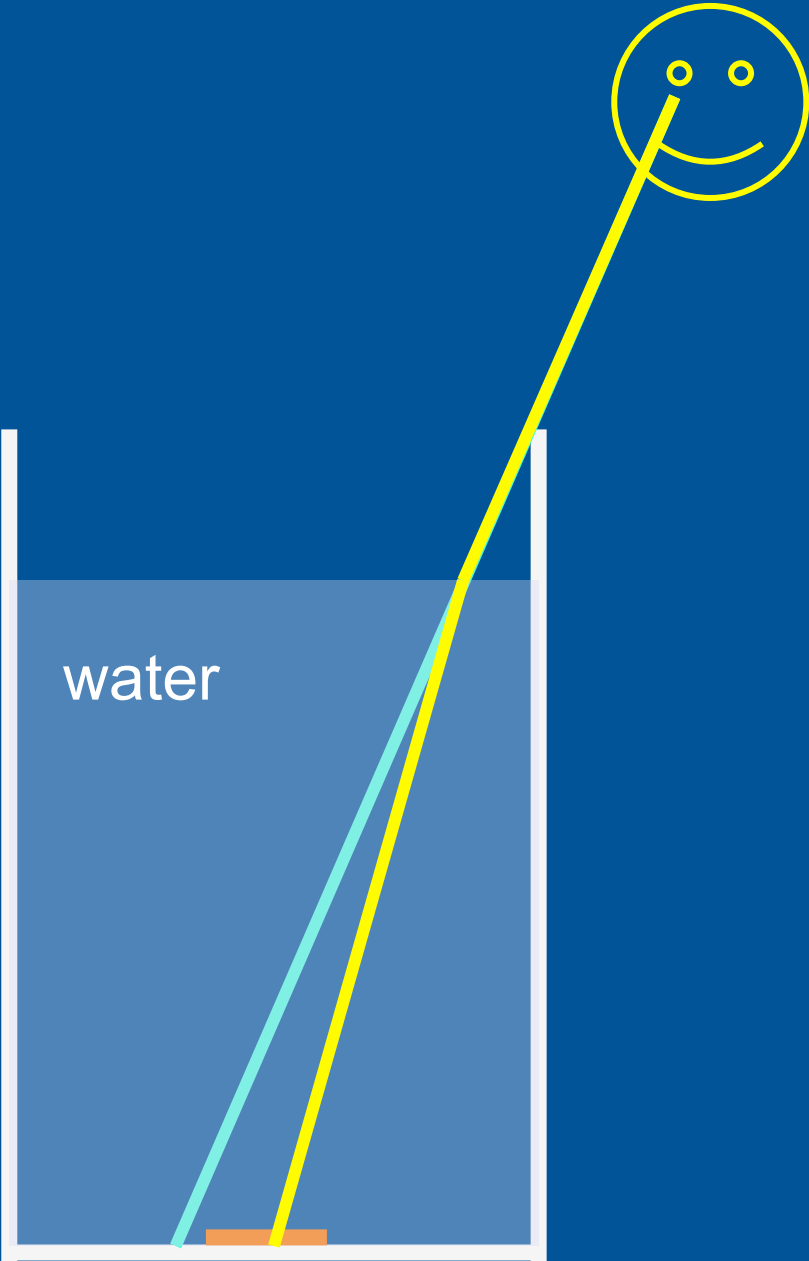




Glass

Sand
(fast)

Snell's Law:
 $n = \sin i / \sin r$



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$$n = \sin i / \sin r$$

*n is the refractive index of the
glass;*

Refractive index of air = 1

Refraction

Refractive index varies with wavelength:
short wavelength blue light is refracted
more than longer wavelength red light

