

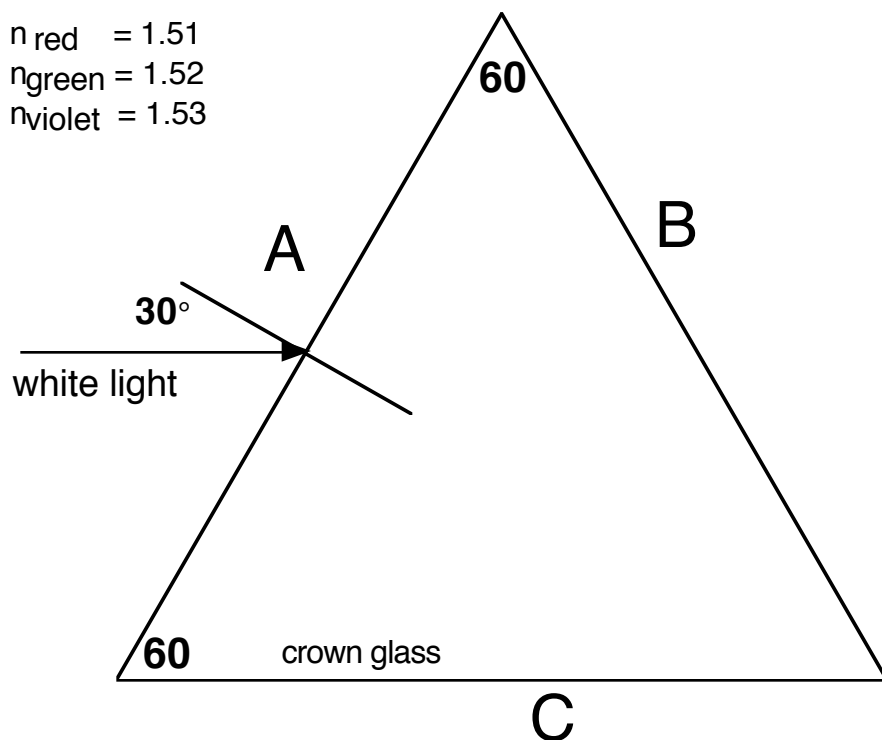
## Refraction of light in a prism

### Indices of refraction

$n_{\text{red}} = 1.51$   
 $n_{\text{green}} = 1.52$   
 $n_{\text{violet}} = 1.53$

### Critical angles:

Red  $\theta_c = 41.47^\circ$   
 Green  $\theta_c = 41.14^\circ$   
 Violet  $\theta_c = 40.81^\circ$



### ***Assignment:***

- Follow the refractions of white light entering the prism from the left as shown.
- Determine the angles of refraction at interface A for red, green and violet. Using a protractor, sketch the rays over to interface B at the proper angles of incidence there. Enter your results in the table
- Determine the angles of incidence and refraction at interface B. Show your calculations on the back, and enter your results in the table. Construct normals to the interface at appropriate places, and show the rays as they refract at their correct angles. One of the colors will have an incidence angle such that the critical angle is exceeded. Show what happens to that ray by calculation and diagram. Enter results in the table.

|       | $\theta_i$ at A | $\theta_r$ at A | $\theta_i$ at B | $\theta_r$ at B | $\theta_i$ at C | $\theta_r$ at C |
|-------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| red   | 30.0°           |                 |                 |                 |                 |                 |
| green | 30.0°           |                 |                 |                 |                 |                 |
| blue  | 30.0°           |                 |                 |                 |                 |                 |