



## Soaking up the Sun: An Investigation of Sunscreens and Ultraviolet Intensity

Geology/Earth Science

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4. Study your graph. Is there any logical relationship between the intensity of light and SPF number? In other words, does SPF 30 have double the protection of SPF 15? Does SPF 8 have double the protection of SPF 4? See if you can find any mathematical relationship between SPF number and actual protection.
  
5. What is SPF? Based on this lab, what SPF would you choose for your skin type and level of outdoor activity?
  
6. Study the active ingredients in each sunscreen. Describe how ingredients might determine effectiveness of each sunscreen.
  
7. Compare the Banana Boat SPF 30 to the Target SPF 30. Which one provides better protection? Why?
  
8. What is the difference between UVA and UVB radiation? Does each sunscreen protect your skin equally well in terms of UVA and UVB protection? Why or why not.
  
9. If you have a pair of eyeglasses, sunglasses, or clothing, test them for UV protection. Report findings below.
  
10. How good are the UV beads at detecting UV radiation? What are their limitations?

### Part 2: Other Factors Affecting UV Radiation Intensity

1. Take the following background data using the sun trackers and weather station data at the same time you take UV readings. I will show you how to use the sun trackers.

Date	Time	Sun Altitude	Sun Azimuth	Elevation	Temperature (°C)	Humidity (%)	Barometric Pressure (in. Hg)	Radiation (W/m <sup>2</sup> )	UV Index	Atmosphere Transmission of Sunlight %

2. How might the date and time of day affect solar radiation received?
  
3. How might the sun altitude (height above horizon) and azimuth (direction on horizon) affect solar radiation?
  
4. How might the elevation above sea level affect solar radiation?
  
5. Do you think temperature, humidity, or barometric pressure has an effect on UV radiation received? Why or why not?
  
6. What is the ultraviolet index? What factors does it depend on?
  
7. What time of year do you need to be most concerned about wearing sunscreen? Least concerned?