UV Detectives
WHICH MATERIAL PROTECTS THE BEST?

Problem
Which material blocks the most ultraviolet light: cloth, roofing shingle, UV protective lens, non-UV protective lens, SPF 4 sunscreen or SPF 45 sunblock?

Research
Answer the following True or False questions:

True/False  Ultraviolet light has a shorter wavelength than visible light.
True/False  Ultraviolet light and visible light are both forms of radiation.
True/False  Since I can’t see ultraviolet light, it can’t hurt me.
True/False  Ultraviolet light can easily pass through any material.
True/False  Ultraviolet radiation can cause sunburns.

Identification of Variables
Identify the Independent Variable, Dependent Variable, Constants and Control of this experiment:

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable</td>
<td></td>
</tr>
<tr>
<td>Constants</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td></td>
</tr>
</tbody>
</table>

Hypothesis
If cloth, roofing shingle, a UV protective lens, a non-UV protective lens, SPF 4 sunscreen and SPF 45 sunblock are exposed to ultraviolet light, then the ____________________________ will block the most ultraviolet light.

(cloth / roofing shingle / UV protective lens
non-UV protective lens / SPF 4 sunscreen / SPF 45 sunblock)
**Data Collection and Analysis**

**Directions:** Place 5 ultraviolet sensitive beads in each test chamber and expose them to ultraviolet light for **2 minutes**. On a scale of 1 to 4, quickly estimate and record how much the beads changed color on the chart below.

### UV Detectives Data Chart

<table>
<thead>
<tr>
<th>SPF 4 Sunscreen</th>
<th>Non-UV Protective Lens</th>
<th>Cloth</th>
<th>Non-exposed Control</th>
<th>Exposed Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPF 45 Sunblock</td>
<td>UV Protective Lens</td>
<td>Roofing Shingle</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 = No Change   2 = Little Change   3 = More Change   4 = Maximum Change

**Conclusion**

[ ] APPEARS TO HAVE BLOCKED THE MOST ULTRAVIOLET LIGHT.

**Questions to Think About**

1. Which material or materials allowed the beads to change the most? The least?

2. What are some other materials that could protect you from ultraviolet radiation?

3. Why is the ozone layer important?

4. What is ultraviolet radiation?