

Keeping safe in the Sun

It's winter and you are lucky enough to be going snowboarding.

When you snowboard, you will be high up in the mountains, hopefully in the sunshine. The ultra violet light from the Sun causes sunburn, which can lead to skin cancer. This UV light is stronger in the mountains than on a beach. The snow also reflects UV light onto your face. You can even get sunburnt while it is snowing.



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This means you want to take a very good sunscreen to block the UV light, and to keep you safe. You've bought some sunscreen, but the labels have rubbed off the bottles.

You have some beads that change colour in ultra violet light. You decide to create an experiment to test which is the best sunscreen to use on your trip.

**PS Don't forget your goggles - your eyes need protection too.
Happy snowboarding and keep safe in the Sun!**



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Equipment

- UV reflecting beads
- 3+ different lotions
- UV dark lamp/security torch
- Stopwatches
- Plastic bags
- Cotton buds

Things to do

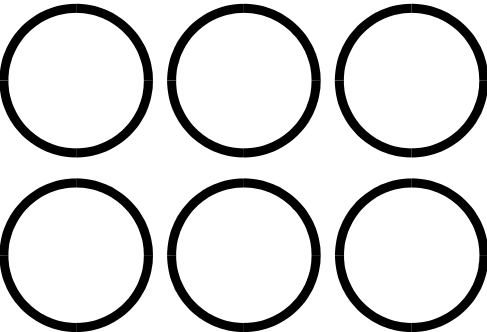
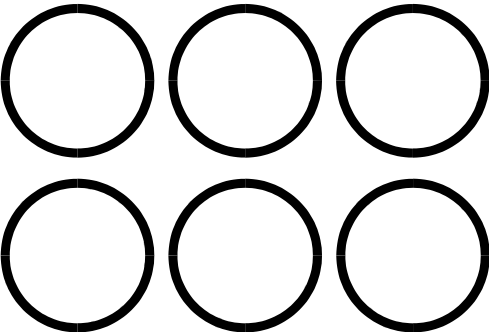
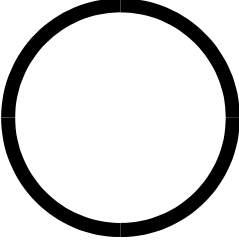
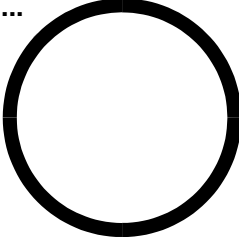
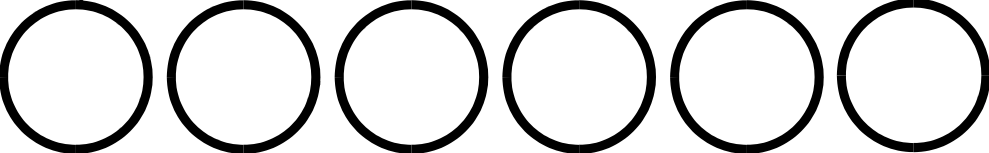
- Plan your experiment
 - What is it you want to test?
 - What will you keep the same or change?
 - What do you predict will happen?
- Obtain your evidence
 - Make sure you record your evidence
- Decide how to present your results
- Evaluate your results
 - Was your prediction correct?
 - Were there any unusual measurements?
 - How could you improve your experiment?

You could explore:

- Does glass block uv light?
- Do the different colour beads react in the same way/time?
- How does clothing protect you from UV radiation?
- How long does sunscreen last?
- How easy is it to wash sunscreen off?
- Some makeup includes a sunscreen. This is a good area to explore with older girls.

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Planning

We are investigating ultraviolet light and sunscreen	
We could change ... 	We could measure/observe ... 
We will change ... (independent) 	We will measure/observe ... (dependent) 
Our question is ...	
We will keep these the same 	
We predict that ...	
This is because	

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Obtaining evidence

Change ... (independent)	Measure ... (dependent)				
					Average



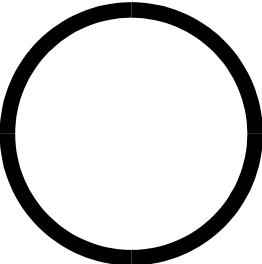
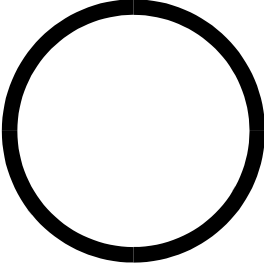
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Presenting the results



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Considering evidence and evaluating

When we changed	What happened to	is ...
		
<p>Why did this happen?</p> <p>Was your prediction correct?</p> <p>Were there any unusual measurements?</p> <p>Why do you think these happened?</p>		
<p>Would you make any improvements, if you did this experiment again?</p> <p>What else could you try to find out about UV light?</p>		

Workshop leader notes

Equipment

- Colour change beads (eg)
- 2-3 different sunscreen
- 1 baby lotion
- Clear plastic bags
- Cotton buds
- UV light source (eg black light, UV torch)
- Stop watch
- Coloured pencils

Safety

The UV beads will change colour outside, even if it is cloudy. However, you may wish to use UV LED torches, or black lights, if you do not have easy access to an outside space. These should be used with care, not point into eyes, and following any other manufacturer's recommendations.

Suggested method

The aim of this activity, is to encourage the participants to come up with their own investigation. Therefore, we haven't provided the students with comprehensive 'how to' notes. Instead, they have a selection of planning tools, to help them prepare a good investigation.

There are many ways to carry out this investigation. We recommend placing the beads into the plastic bags, and checking that they change colour under UV light. You can then sort the beads into different colours, if you think this might make a difference.

Let the beads return back to white.

Then you can try thinly smearing the outside of a bag with sunscreen (imagine the bag is your skin, you don't normally put a thick layer of cream on). We suggest providing cotton buds for this – it suggests that you don't need much cream! Try several different bags, with different sunscreens/lotions.

You can try timing how long it takes for different beads to change colour. Try making a colour chart, as the beads do get deeper in colour with more exposure to UV.