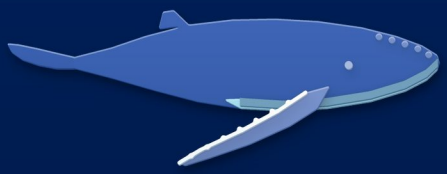
Earth's Sun Hat

Polar | Film: Buoy Ahoy! Polar | Game: Keep it Cool



Our question

Does a white surface or a dark surface warm up more in sunlight?

You need: Two identical cups with the same amount of water, white paper, black or dark paper, sticky tape, a thermometer if you have one, a sunny spot, a timer

What to do

1. Wrap one cup in white paper and one in dark paper.
2. Measure the starting temperature of the water in each cup.
3. Put both cups side by side in the sun.
4. Measure each cup every 10 minutes for 30 minutes. No thermometer? Feel the water with a finger and rank them.
5. Graph your results.

Fair test: Keep these the same: the cups, the amount of water, the starting temperature and the sunny spot.

Safety: Never look at the Sun.

Our results

Time (minutes)	White cup (°C)	Dark cup (°C)
0		
10		
20		
30		

Think about it

- Which cup warmed up more? Why?
- How is the white cup like sea ice, and the dark cup like open ocean?
- Sea ice grows in winter and melts in summer. What does adding or removing heat do to water?

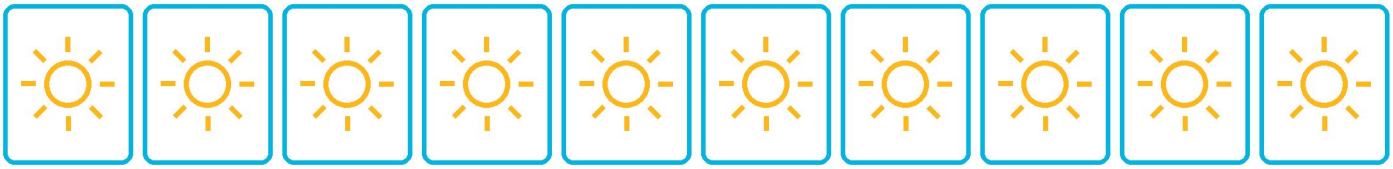
Curriculum link: Year 5: light can be absorbed and reflected. Year 3: adding or removing heat changes state (sea ice freezing and melting).

Sea Ice, Krill and Whales

From the film

- Bright white snowy ice bounces up to nine out of every ten parts of the sunlight that hits it back into space. Dark open ocean soaks up almost all of it.
- Every winter the sea ice around Antarctica grows until it covers an area more than twice the size of Australia.
- Algae grow on the bottom of the ice. Baby krill nibble the algae through the winter. Humpback whales eat krill.
- In 2026 scientists measured one of the smallest winter amounts of sea ice ever recorded.

Shade the bar: nine out of every ten parts of sunlight bounce back



Your turn

1. Write ‘nine out of every ten’ as a fraction and as a percentage. Shade the bar to show it.

2. Draw the food chain from the film: algae → ? → ?

3. What could happen to whales like Willa if there is less sea ice?

4. Australia covers about 7.7 million square kilometres. What is double that?

5. Willa swims from the Kimberley to the Southern Ocean. Put these places in order from north to south and mark them on a map: Perth, Camden Sound (in the Kimberley), Shark Bay, Broome.