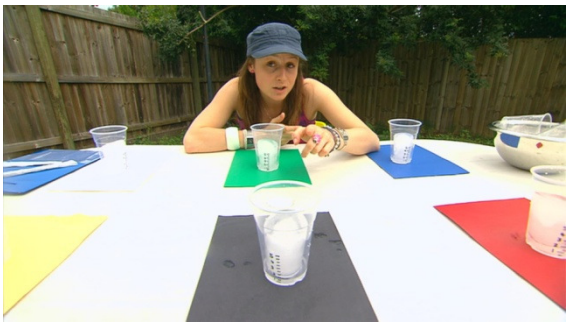
Solar Ice Cubes

On SCOPE's Desert Science episode, Julia melted ice cubes using different coloured pieces of paper.
Here's how you can do it at home:



What you need:

- 6 pieces of different coloured paper
- 6 small plastic cups
- 6 large plastic cups
- Measuring jug
- Marker pen
- Water
- Pen and paper to record your results

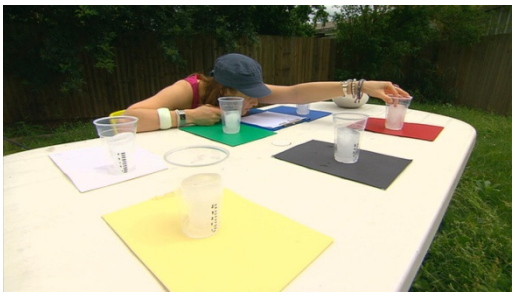
What to do:

1. Lay out 6 small cups and fill each one with about 200mls of water.
2. Place the cups in the freezer.
3. Using the marker pen, make little markings at even intervals (~0.5cm) up the side of each large cup.
4. Once the water has frozen in the small cups, take all your materials outside, into a sunny spot.
5. Position each piece of paper in direct sunlight and place a large cup on top of each.
6. Place one ice cube in each large cup and record the time.
7. After five minutes, check how much each ice cube has melted, by measuring the level of water in each cup. Record your results.
8. Repeat step 7 about 10 minutes and then after about 15 minutes.

   Which piece of coloured paper made the ice melt fastest/slowest?

What's happening?

A colour looks the way it does because light waves are absorbed or reflected. So red is red because it reflects red light and absorbs all other light colours. The absorbed light energy is converted into heat energy and used to melt the ice cubes.



Also, different light waves have different energies; red light is a lower energy wave than blue. So the more energy absorbed, the more energy available to melt the ice cube.

For example, the colour red reflects lower energy light waves and absorbs higher energy light waves, so you probably found that the red ice block melted faster than the blue!