

# Questacon at HOME

## Activity sheet

# Experimenting with Rainbows

Have you ever seen a rainbow? When do they appear? We sometimes see rainbows after the rain when the sun is shining.

### You will need:

- A clear bowl or glass with water
- A source of light - torch or phone
- A white wall or large piece of white paper
- Old CDs
- Coat hanger
- String

### Make a Rainbow

#### What to do:

- Pour water into the clear bowl or glass and put the bowl or glass near a white wall.
- Shine a light through the side of the bowl or glass so that the light shines through the water onto the white wall.
- Move the torch light a little until you see some colours. Look at the wall to see if you have made a rainbow. (You may want to turn off the lights because this experiment works best in low light).
- What colours can you see? Can you move the light and move the rainbow?

#### What's happening?

White light, like light from a torch or sunlight, is made up of seven colours - red, orange, yellow, green, blue, indigo, violet. When light shines through water (like sunlight through rain drops) the water separates the white light into the seven colours that make it up. This process is called refraction and each colour refracts a different amount just like in a real rainbow.



Australian Government

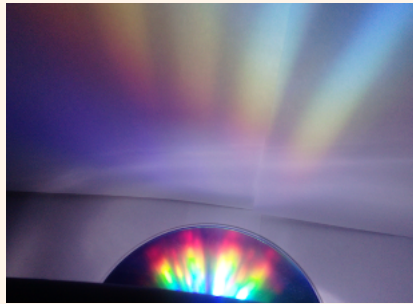
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## CD Rainbows



### What to do:

- Find an old CD and look at the shiny side. What do you see? What happens when you tilt it back and forth?
- Put the CD on the floor or a table near a white wall or piece of paper stuck to the wall.
- Turn off the lights (a dim room works best) then shine a torch onto the CD at an angle and watch the light reflect onto the wall. What do you see?
- Experiment with moving the light. What happens when you change the angle of the touch?
- Experiment with changing the distance the CD is from the wall and the distance the light is from the CD. What happens?
- Experiment with going outside on a sunny day and reflect the sunlight off the CD.
- Attach some old CDs to a coat hanger with string and hang it outside in the sun. Ideally you want an area with access to sunlight near an area of shade. Watch as the sunlight hits the CDs and makes colourful rainbows.

### What's happening?

A CD has a mirrored surface with small, evenly spread out, tracks or pits. These pits on the CD separate the white light from the torch into the seven colours that make up white light (red, orange, yellow, green, blue, indigo, violet). The colours you see reflecting from a CD are similar to the colours you see on a soap bubble or an oil slick.

### Discover more!

Watch Questacon's early childhood Science Time Colour and Light episode on Questacon's YouTube channel to discover more about how light makes rainbows.

Look at the surface of a bubble. Can you see a rainbow?

On a sunny day, spray a hose outside. Can you see a rainbow in the spray of water?

Can you find other items in your home that might cause a rainbow reflection like the CD?

