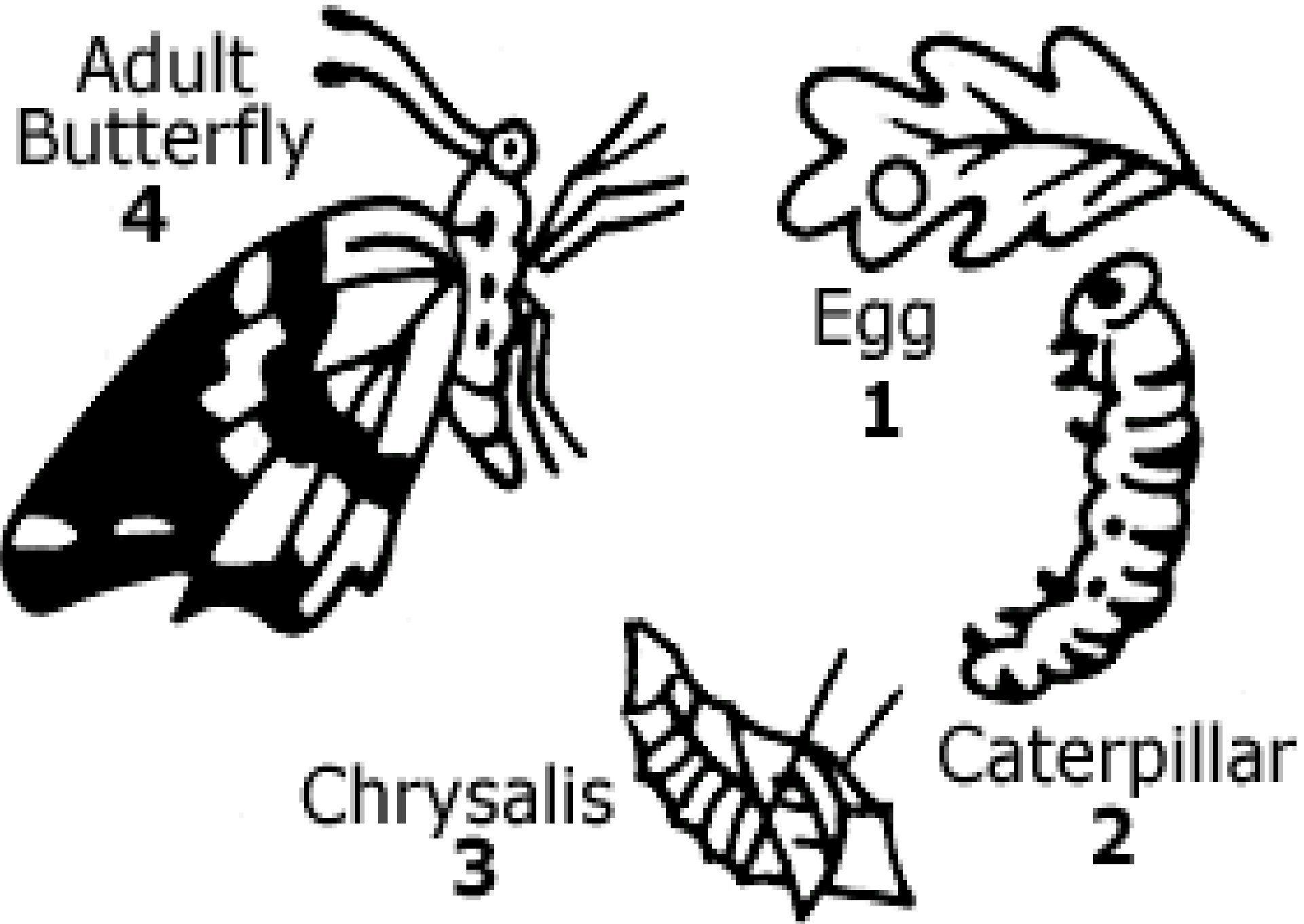


The Science of Butterflies



Butterfly Life Cycle



Butterflies are useful to us.

Butterflies and bees are attracted to flowers to collect the nectar.

As they collect the nectar they move pollen grains from one flower to another.

This helps the plant **pollinate** and so the flower will become a fruit or a seed.

The fruit and seeds are important to us as food.



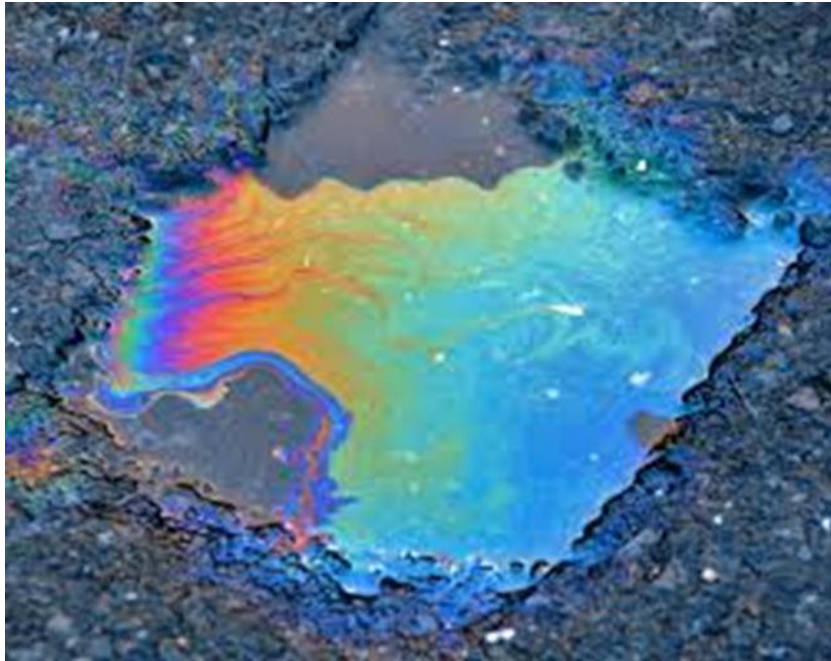
It is not how it is—it is how we see it!



Butterflies get their beautiful colours and patterns from the way they interact with light and not from coloured pigments



Butterfly wing colours are just like rainbows and oil on water and the colours we see on CDs

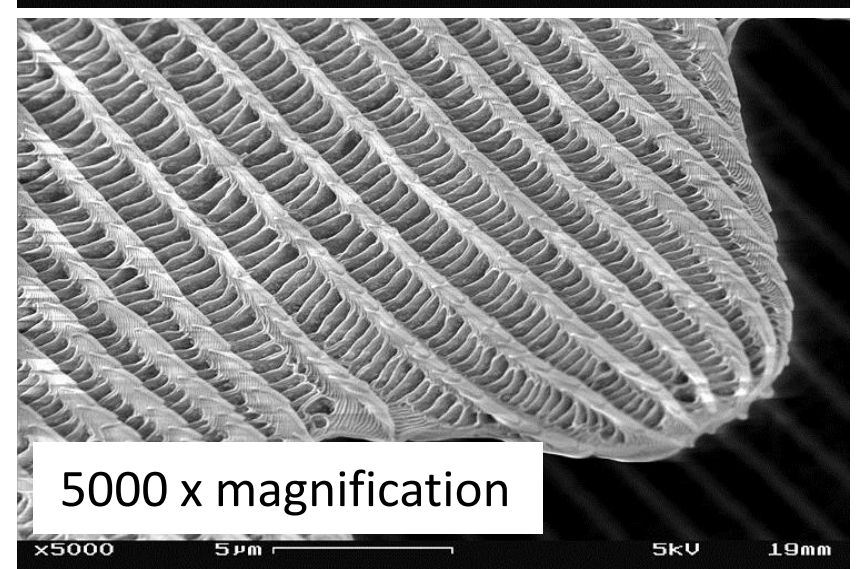
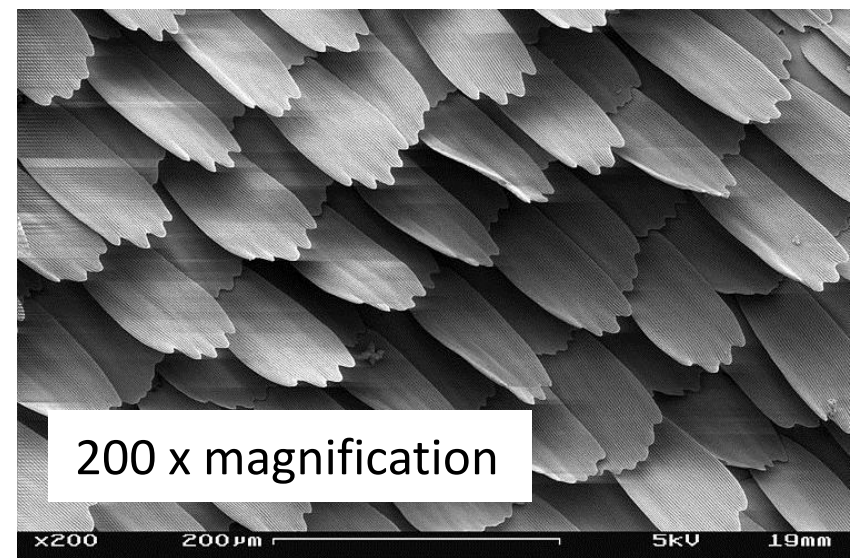


Amazing Scales

Butterfly wings are covered with thousands of scales.

If we magnify any part of the wing 200 times we see that there is no change in colour and the scales are stacked up like the tiles on a roof.

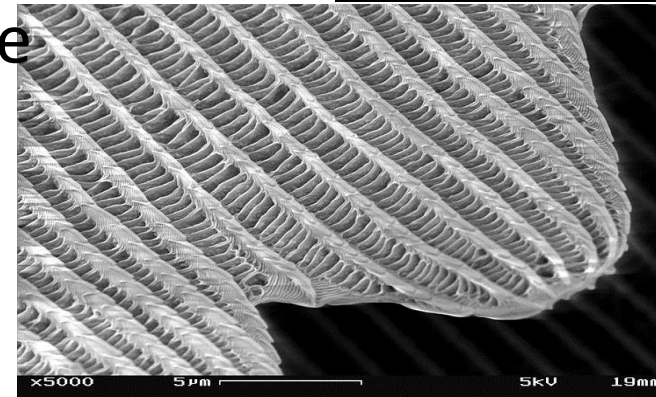
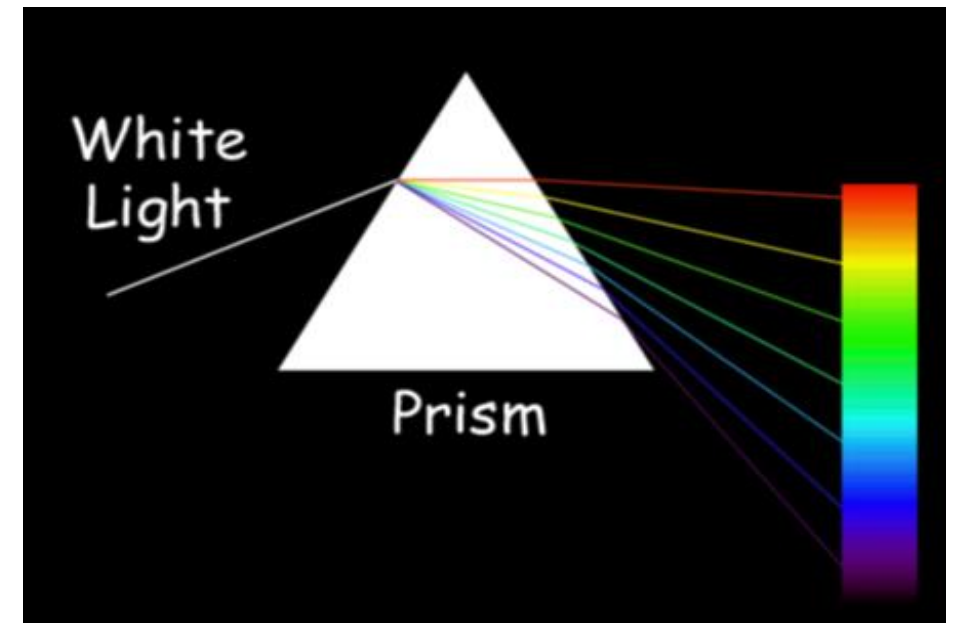
When we magnify up to 5000 times we see that the scales are like a ladder fabric. Each little layer in the ladder is made of a see-through substance with an air gap in between



Colour and Shimmer

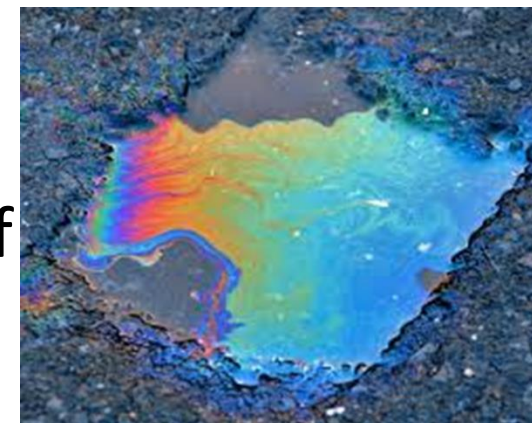
The light all around us is made up of the colours of the rainbow – the **light spectrum**.

The layers of the butterfly scales split up the light so that just one of the colours of the rainbow is reflected into our eyes.



In rainbows it is the raindrops which split up the light into colours

And with oil in puddles it is the thin layer of oil which splits the light on a CD it is the grooves



How may butterflies help us in the future.

- New kite and aircraft designs that could change the way we fly.
- Measuring air pollution and making our air cleaner.
- Making new fabrics that change colour to camouflage.
- Non toxic paints that will not harm the environment.
- Faster optical computers for even faster internet communication.



Paper butterfly

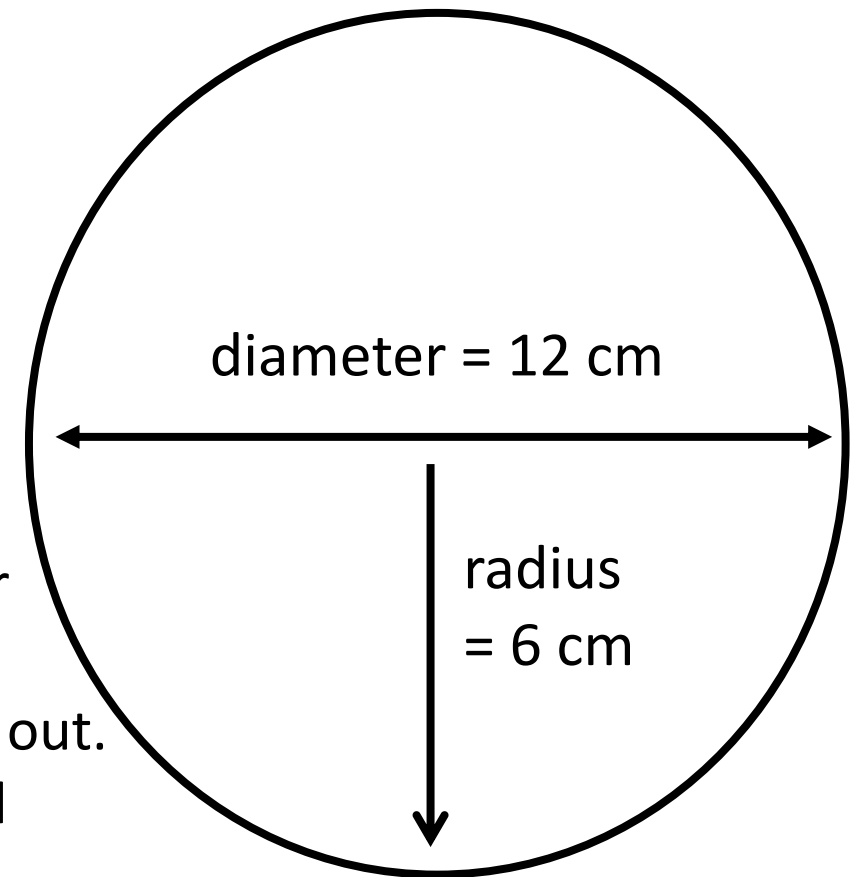
Square

1. Draw a square on coloured paper using a template or a pencil and ruler.
2. Decorate the square, cut it out.
3. Concertina fold, **starting at the corner**. Each fold ~ 0.5 cm in size.

12 cm

Circle

1. Draw a circle on coloured paper using a template or compass.
2. Decorate the circle, cut it out.
3. Concertina fold, each fold ~ 0.5 cm in size.



Making Up

- Take the folded square, then the circle and then the triangle overlapping the final fold in each shape.
- Wrap a pipe cleaner round the centre and twist to make the body and antennae.

Isosceles Triangle

1. Draw a triangle on coloured paper using a template or pencil and ruler.
2. Decorate the triangle, cut it out.
3. Concertina fold, each fold ~ 0.5 cm in size.

