



How Are Rainbows Formed

1. Light from Sun strikes raindrop
2. Some of the light is reflected
3. The rest of the light is refracted
4. Light splits into component colours
5. Reflected at rear of raindrop
6. Refracted again as it leaves raindrop
7. Colours are further dispersed

Colour Order

Man sees rainbow.
red at top.
blue at bottom

Angle in the Sky

- The critical angle for water is 42°
- For Total Internal Reflection to occur the critical angle must be reached by the incoming light.

Full Circle Rainbows

- While rainbows are usually cut, because the full 84° cone doesn't fit on the sky, in rare situations full circle rainbows can be seen (Circular rainbow shot from a Thai Airways airliner)

Double Rainbows

- Double reflection within water droplets can produce secondary rainbow. Usually it is much fainter, and therefore over-shadowed by the primary rainbow. However, when it is visible it is quite spectacular. Note that the colours in the secondary bow are in reverse to the primary one. Also, the band between bows is darker than the two other areas. This is called [Alexander's band](#).

Moonbows

- Bows can also be formed from lunar light too! They are difficult to capture because they are much fainter than rainbows. Notice how bright the background on the picture below is (even though it was taken during the night).

