

PHYSICS - X-PART-4 CLASS 51



Rainbow

1. When is the rainbow formed?

\* In the morning and in the evening

2. Where will be the Sun when the rainbow is seen in the East?

\* West

3. Where will be the Sun when the rainbow is seen in the West?

\* East

4. What is the phenomenon that causes rainbow?

\* Dispersion of light caused by the water droplets in the atmosphere causes rainbow.

The figure shows a ray of sunlight falls obliquely on a water drop.

1. How many times does a ray of light undergo refraction when it passes through a water droplet?

\* The light undergoes two times refraction in the water droplet

2. What about the internal reflection?

\* One time

3. What is the colour seen at the upper edge of the rainbow?

\* Red

4. What is the colour seen at the lower edge?

\* Violet

5. How the rainbow is formed?

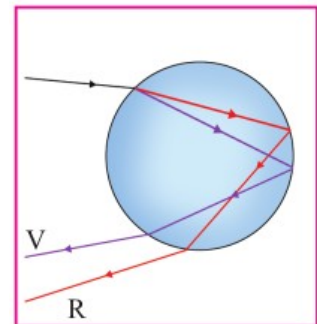
\* Sunlight, when it passes through water droplets, undergoes refraction and internal reflection. The light ray emerging from the water droplets which make the same angle with

the line of vision have the same colour. These droplets appear in the form of an arc of a particular colour. Thus there is red colour at the upper edge and violet colour at the lower edge. All the other colours are seen in between, depending on their wavelengths.

\* When the position of the sun is near the horizon, the rainbow appears to be bigger.

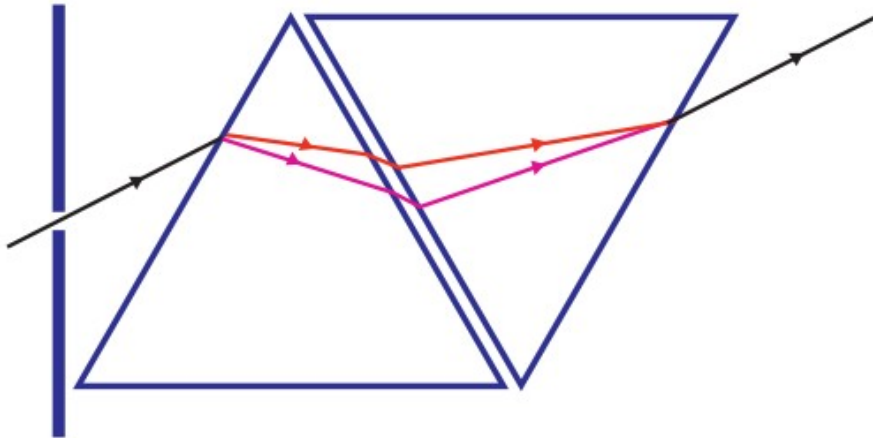
\* When seen from an aeroplane, the rainbow is seen as a circle.

\* When the sun is much above the horizon, the rainbow disappears.



## Recombination of colours

Pass white light through a prism and obtain the constituent colours on a screen. A prism similar to the first is placed in inverted position, adjacent to the first (Fig.6.11).



1. What happened to the light when it passed through the first prism?  
\* The white light separates into its component colours
2. What happened when it passed through the second one?  
\* The colours formed in the first prism recombine to form white light.

## Worksheet

1. Which is the colour seen in the lower end of the spectrum coming out of a water drop in air? What about in the upper end?
2. Which is the colour seen in the lower arc of a rainbow? What about in the uppermost arc?