

Q. What is weather cycle? Describe it cases and parts

Weather cycle; Water cycle;

The water cycle is a continuous natural process that circulates water b/w the Earth surface, atmosphere and back again. It involves processes such as

- Evaporation
- Condensation
- Precipitation
- Runoff
- Transpiration

It/ These are maintaining a dynamic balance of water on a planet. Solar energy drives this cycle, influencing weather patterns and sustaining life.

Causes of water cycle

The water cycle is driven by solar energy. Sunlight heats the Earth's surface, causing water to evaporate from oceans, lakes and rivers.

The water cycle is continuous process of water constantly moving through its various phases.

On average a water molecule spends about 98% of its time in the ocean around 20 days in the atmosphere, 13 days in ice, and just a few days in lakes and rivers before returning to the ocean.

The specific volume and distribution of water in each phase vary with climatic conditions.

Different parts of water cycle:

- (1) Evaporation:
Water changes from liquid to vapour.
- (2) Condensation:
Water vapour condense into clouds.
- (3) Precipitation:
Moisture falls as rain, snow, sleet or hail.
- (4) Runoff:
Excess water flows into rivers and oceans.
- (5) Transpiration:
Plants release water vapour through their leaves.

Q. What is Air Pollution? Discuss its cause and measurement methods. Name the countries with the highest and lowest percentage of air pollution.

Air Pollution

Air pollution refers to the presence of harmful substances such as particulate matter, gases and pollutants in the Earth's atmosphere. It can have adverse effects on human health, ecosystem and the climate.

Causes

1. Industrial Emissions

Combustion processes and industrial activities release pollutants.

2. Vehicle Emissions

Exhaust from automobiles contributes to air pollution.

3. Agricultural Practices

Pesticides and fertilizers release pollutants into the air.

Measurement Methods of Air Pollution;

Air Index Quality

A numerical scale assessing air quality based on concentrations of pollutants.

Satellite Observations;

Satellites monitor atmospheric composition helping track pollution level globally.

Ground level Monitoring Stations;

Deployed in urban areas, these stations measure concentrations of various pollutants.

According to World Air Quality Report 2021, countries with highest level of air pollution include.

- Bangladesh
- Pakistan
- India

Countries with relatively low air pollution level includes

- New Zealand
- Sweden
- Finland,

The ranking may vary annually based on specific pollutants and measurement methods.

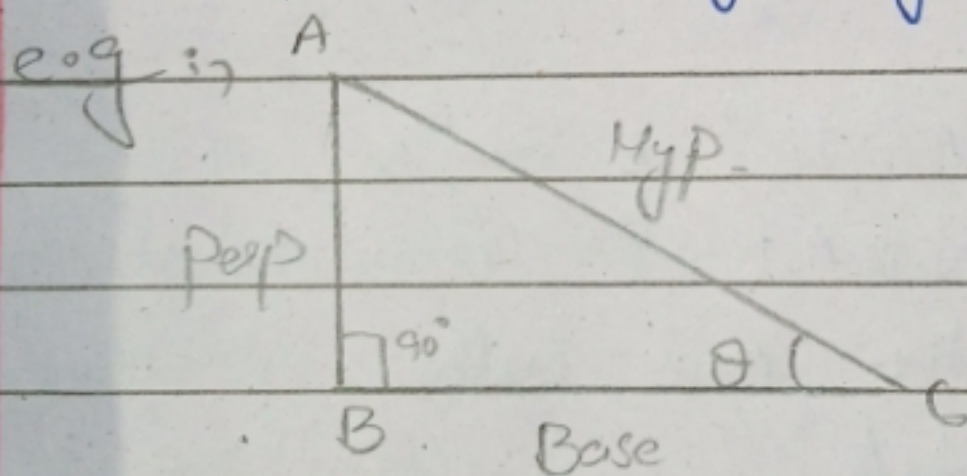
Q. 1. (a) Define and then draw the following.

(i) Right angle Triangle:

A right-angled triangle is a triangle, that has one side of interior angles equal to 90° or any one angle is a right angle known as Right angle Triangle.

OR

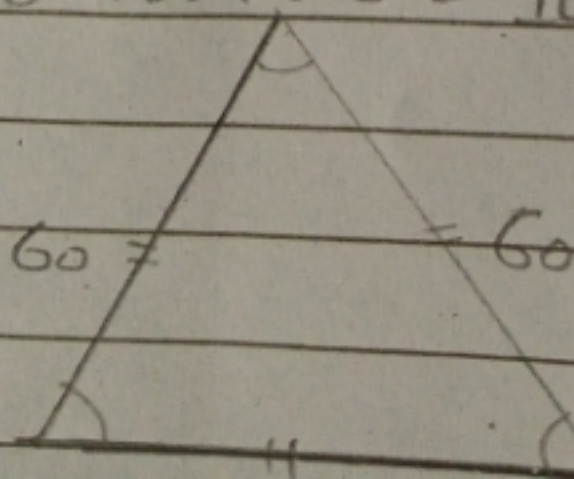
A Triangle having one angle of 90° known as Right angle Triangle.



(ii) Equilateral Triangle:

A Triangle having 3 sides and 3 angles are equal, then it is known as Equilateral Triangle.

e.g. $60 + 60 + 60 = 180^\circ$



(b) Define the following Terms.

(1) Mean / Average:

Mean is defined as; to reduce to error and to find out the accuracy.

$$\text{Mean} = \frac{\text{Sum of observation}}{\text{No of observation}}$$

e.g. $6, 4$

$$\frac{6+4}{2} = \frac{10}{2} = \boxed{5}$$

(2) Median: Median is defined as; a statistical term used to represent the mid value in the arranged data.

e.g. $2, 4, 6, 8, 10$

$$\text{med} = 6$$

e.g. $2, 4, 6, 8, 10, 12$

$$\text{Med} = 6, 8$$

$$= \frac{6+8}{2} = \frac{14}{2} = 7$$

3. Mode:- Mode is define as;
It is a Statistical term used the most repeated value in the given data.

eg:- 2, 4, 6, 6, 8

mode = 6.

2, 4, 6, 6, 8; 8, 10, 12, 12.

mode = 6, 8, 12.

4. Range:- Range is define as;
It is the difference b/w of max and minimum value in the given data.

eg:- 2, 4, 6, 8, 10.

$R = 10 - 2$

$R = \boxed{8}$

(5) There are nine students in a group having ages 15, 15, 16, 16, 16, 17, 17, 18, 19. Calculate mean, median, mode, range of their ages.

Mean = $\frac{\text{Sum of observation}}{\text{No of observation}}$

37
34
48
430
149

= $\frac{15 + 15 + 16 + 16 + 16 + 17 + 17 + 18 + 19}{9}$

= $\frac{149}{9}$

Mode:- The most repeated value in given data is 16.

Median:

15, 15, 16, 16, 16, 17, 17, 18, 19

Solⁿ

$$\text{Med} = \frac{16 + 16}{2}$$

$$= \frac{32}{2}$$

$$\text{Med} = \boxed{16}$$

Range:

15, 15, 16, 16, 16, 17, 18, 19

Solⁿ

$$R = \text{Max} - \text{min}$$

$$R = 19 - 15$$

$$R = \boxed{4}$$