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GSA (Math) Portion

Question No # 06 . Part (a)

Solution

Let denote the current age of son $= y$ and the current age of father $= x$.

According to the given information

Five years ago, the son's age was $y - 5$ and the father's age $= x - 5$.

At that time, the age of the father was thrice the age of son, so we can set up the equation:

$$x - 5 = 3(y - 5)$$

Now if the son (y) = 30 years old, we can substitute that into the equation.

$$x - 5 = 3(30 - 5)$$

$$x - 5 = 3(25)$$

$$x - 5 = 75$$

$$x = 75 + 5$$

$$x = 80$$

So, the current age of father is 80 years.

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Part (b)

Solution

Given Mean = 50

Find the value of $y = ?$

Now, we know that Mean is the sum of all numbers divided by total numbers.

$$M = \frac{10 + 30 + y + 50}{4} \quad \text{--- (1)}$$

So, Mean = 50 Put the value of mean in the above equation.

$$50 = \frac{10 + 30 + y + 50}{4}$$

$$200 = 90 + y$$

$$y = 200 - 90 \Rightarrow 110$$

$$y = 110$$

Now, to check the value, we have to put the value of y in eq (1)

$$M = \frac{10 + 30 + 110 + 50}{4} = \frac{200}{4}$$

we will get mean 50

So, the value of $y = 110$.

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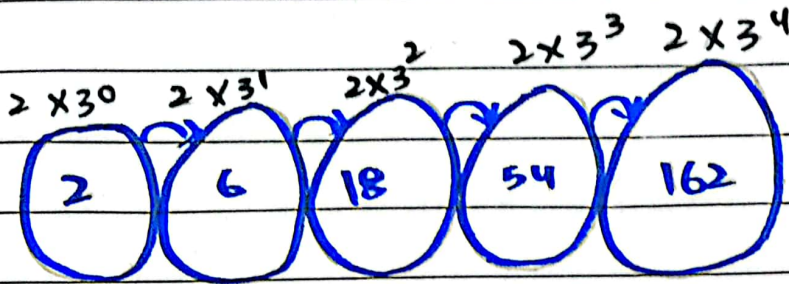
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Part (c)

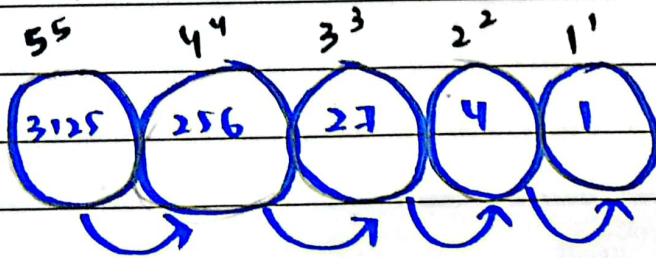
i) 2, 6, 18, 54, ?

Solution



Here, the series follows the multiplication of 2 with ascending order of power of 3.

ii) 3125, 256, ?, 4, 1



Here, the series follows the descending order with the descending number and power.

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Part (d)

Solution

Let the two numbers be x and y , and their given ratio is $1:5$. This implies that

$$x:y = 1:5$$

So, we can express x in terms of y as $x = 1y$
and $y = 5y$.

The product of the two numbers is given as 320

$$xy = 320$$

Substitute x in terms of y into the equation:

$$(1y) \times (5y) = 320$$

Simplify the equation.

$$5y^2 = 320$$

Divide both sides by 5 to solve for y^2 :

$$y^2 = 64$$

Now, find y by taking the square root of both sides:

$$y = \sqrt{64} = 8$$

Since $x = 1y \Rightarrow$ so $x = 8$.

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$$\text{Difference} = x^2 - y^2 = 8^2 - 8^2 = 64 - 64 = 0$$

Therefore, the difference between the squares of the two is 0.

Question No # 07 Part (b)

Data

Given data according to the given condition.

Men	Days	Hours
195 ↑	20 ↓	10 ↓
x ↑	15 ↓	13 ↓

Applying inverse proportion because higher the number of men lesser will be the number of days and higher will be the number of hours.

solution

$$\frac{x}{195} = \frac{20^4}{15^3} \times \frac{10}{13} \Rightarrow \frac{40}{39}$$

$$x = \frac{40 \times 195}{39} \Rightarrow 200$$

$$x = 200 \text{ Days Men}$$

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Part (c)

Solution

Given data

$$U = \{a, b, c, d, e, \dots, z\}$$

$$A = \{a, e, i, o, u\}$$

$$A' = ?$$

Solution

We know that $A' = U - A$

$$A' = \{a, b, c, d, \dots, z\} - \{a, e, i, o, u\}$$

$$\text{So, } A' = \{b, c, d, f, g, h, j, k, l, m, n, p, q, r, s, t, v, w, x, y, z\}$$

Part (d)

Solution

To find the perimeter of the base, first we have to find base area of the pyramid.

So, the formula of the volume (V) of a pyramid is given by

$$V = \frac{1}{3} \times \text{Base Area} \times \text{Height}$$

Volume is given which is equal to 372

Height is also given which is 3 km

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To convert height into ^{centi} meters = 3×10^3 .
~~and base~~

In the case of a square pyramid, where the base is a square, the formula can be expressed as:

$$V = \frac{1}{3} \times \text{side length}^2 \times \text{height}$$

Putting the values in the above equation.

$$372 = \frac{1}{3} \times s^2 \times (3 \times 1000)$$

$$372 = \frac{1}{3} \times s^2 \times 3000$$

$$s^2 = \frac{372 \times 3}{3000}$$

$$s^2 = \frac{1116}{3000}$$

$$s^2 = 0.372$$

$$s = 0.61 \text{ cm.}$$

Now that we know the side length of the base, the perimeter (P) of the base of the square pyramid is given by:

$$P = 4 \times s$$

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$$P = 4 \times 0.61$$

$$P = 2.44 \text{ cm}$$

Therefore, the perimeter of the base of the square pyramid is approximately 2.44 cm.

Part (a)

Solution

Let's denote the cost price of each scooter as C .

For the first scooter, she sold it for 9600 with a 20 percent profit. The selling price (Sp_1) is given by.

$$Sp_1 = C + 0.20C = 1.20C$$

For the second scooter, she sold it for 9600 with a 20 percent loss. The selling price (Sp_2) is given by

$$Sp_2 = C - 0.20C = 0.80C$$

The total selling price (Sp_{total}) for both scooters is the sum of the individual selling price.

$$Sp_{\text{total}} = Sp_1 + Sp_2 = 1.20C + 0.80C = 2.00C$$

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The total cost price (C_p total) both scooters is the sum of the individual cost prices:-

$$C_{p \text{ total}} = 2C$$

let's
now, find the profit and loss percentage.

$$\text{Profit or loss percentage} = \left(\frac{S_{p \text{ total}} - C_{p \text{ total}}}{C_{p \text{ total}}} \right) \times 100$$

Substitute the values:

$$\text{Profit and loss percentage} = \left(\frac{2C - 2C}{2C} \right) \times 100$$

$$\text{Profit or loss percentage} = 0\%$$

Therefore, there is no overall profit or loss. The total profit or loss percentage is 0%.

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Question No#02

Section 1

Part (a)

1) What is COP?

The conference of ^{the} parties (COP) is the supreme decision-making body of the United Nations Framework on Climate Convention (UNFCCC).

The primary objective of COP meetings is to assess progress in dealing with climate change and to negotiate and implement further actions to address this global challenge.

2) What is COP 28 and UAE consensus?

2.1) Landmark deal

COP-28, held in the UAE, concluded with the UAE consensus, heralded as the "beginning of the end" of the fossil fuel era.

2.2) Goals

The deal aims to phase down fossil fuels, achieve net zero carbon dioxide emissions by 2050, toipale

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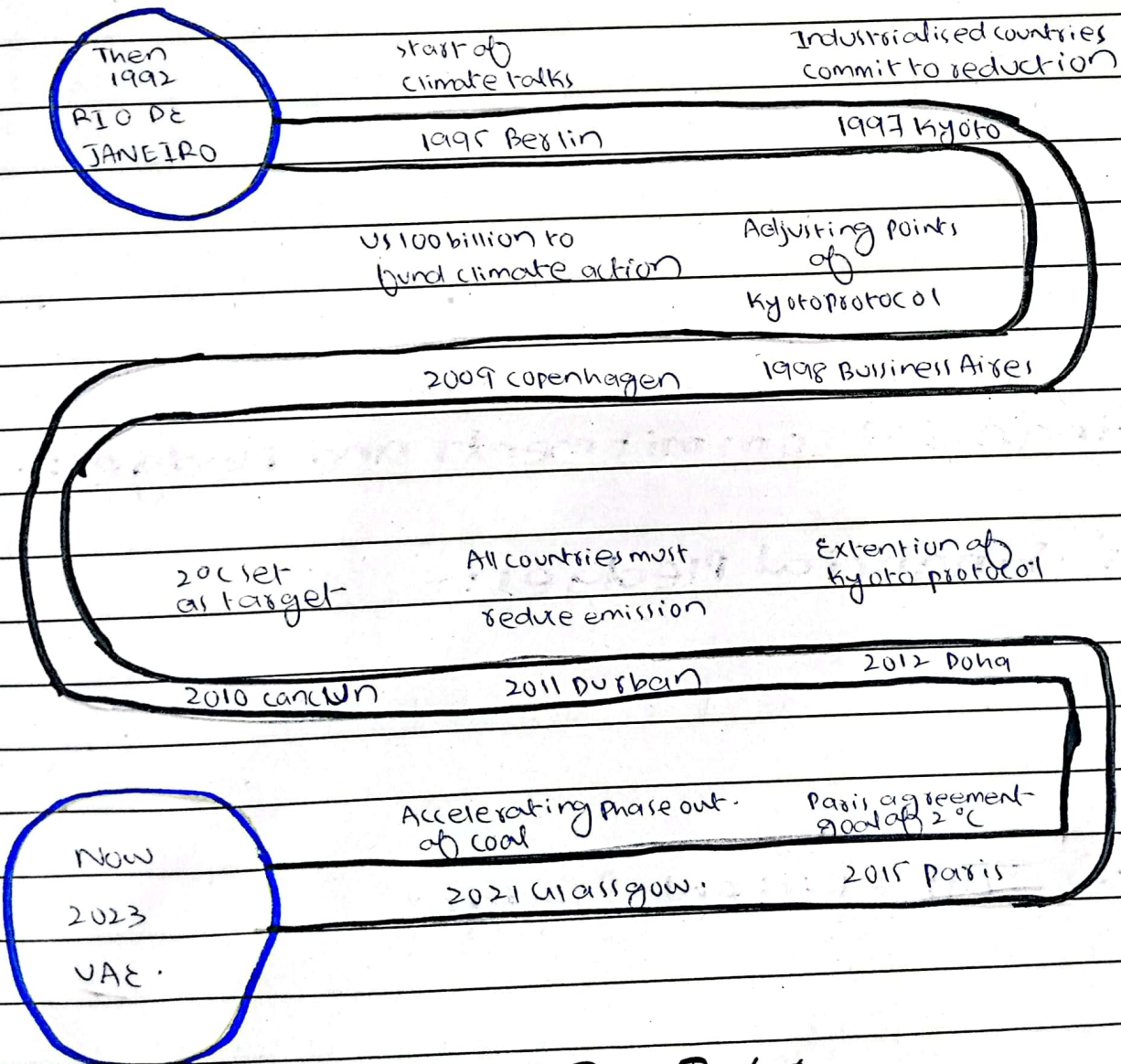
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renewables, and double energy efficiency by 2030.

2.3) Climate Target

The world must cut greenhouse gas emissions by **43 percent** by **2030** and **60 percent** by **2035** to limit global warming to the **1.5-degree** celsius goal of the 2015 Paris agreement.



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3) Financial Issues and Disparities

3.1) Global Stock Trade

Despite a global stock trade agreement, differences persist between developed and developing countries regarding financing for climate goals.

3.2) Developing Countries' concerns

Developing countries argue that ambitious commitments can harm their transition to green energy. Some countries cite the need for fossil fuel revenues to fund their transition to green energy.

4) Financial commitments and Pledges:-

4.1) Financial Pledges:-

Total pledges at COP 28 amount to over ~~58~~ 57 billion dollar.

4.2) Insufficient Pledges

Despite pledges, developing nations require as much as

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5.9 trillion dollars for the pre-2030 period to address the climate change.

4.4) Renewable Energy investment:-

4.3 trillion dollars per year needs to be invested in renewable energy over the next seven years.

4.5) Loan based finance

Much of the funding is available in the form of loan or investments, hindering developing countries' ability to take meaningful climate action.

4.6) Unmet Pledge of 100 billion dollar

Industrialized nations pledged 100 billion dollars annually by 2020 to help developing countries to adapt and transition, however, that pledge is still not materialized.

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Part (b)

1) What is solid waste management?

Solid waste management refers to the systematic control, collection, treatment, disposal and recycling of solid waste.

2) Different Methods of SWM

2.1) Source Reduction (waste minimization)

This involves reducing the generation of waste at the source by encouraging the use of products with less packaging. Encourages the reuse of products and metals.

2.2) Recycling

Involves the collection of recyclable materials, such as glass, plastic, and metals. These materials are then sorted at recycling facilities.

2.3) Compositing

Compositing involves the decomposition of organic waste such as kitchen and garden waste into nutrient rich compost through natural process.

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2-4) Incineration

Solid waste is burned at high temperature in controlled incinerators to convert it into ash and gases.

2-5) Landfills

The most traditional method involves burying solid waste in designated landfills.

2-6) Bio remediation

Utilizes micro-organisms to break down and detoxify hazardous waste material into nutrient-rich material.

2-7) Plastic gasification

In this method, plastic is burned, but this method is outdated and not used in the modern world.

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Part (d)

What are renewable resources

Renewable resources are the resources which are environmental friendly and do not deplete with the time.

Renewable Energy resources under CPEC.

2.1) Wind Power Plant - Jhimpir

The Jhimpir wind power plant is the renewable power plant which operates under the supervision of Pakistan's and China's engineers. The project is the part of the CPEC.

2.2) Solar - Qaid-i-Azam solar power project.

The Qaid-i-Azam solar power project is funded under CPEC and delivered more than 1000 MW electricity annually.

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2.3) Hydro Project - Karot hydro project ATK

Hydro power project include Karot hydro project is funded under CPEC. It operates on the principle of hydro electricity which is cheap and clean energy.

Question No # 04.

What is Earthquake?

Earthquakes are the sudden release of energy in the form of seismic waves which lead to destruction.

How it is generated?

Earthquakes are generated due to following reasons. Tectonic plate movements, human-induced earthquakes, volcanic activity. However, the most common cause of the earthquake is movement of tectonic plates. When plates are rubbed with each other it releases energy in the form of seismic waves which cause earthquake and movement of the ground.

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Difference between Earthquake and Tsunami.

The major difference between earthquake and tsunami is that earthquake can cause tsunami, but tsunami can not caused earthquake.

Tsunami are caused by the under water earthquakes.

Part (b)

What is Coriolis Force?

The Coriolis force is an apparent force that acts on moving objects in a rotating system, such as the Earth. This force is responsible for the deflection of moving objects, such as air masses, ocean currents, or projectiles, as they traverse the surface of a rotating celestial body.

How Hurricanes are generated?

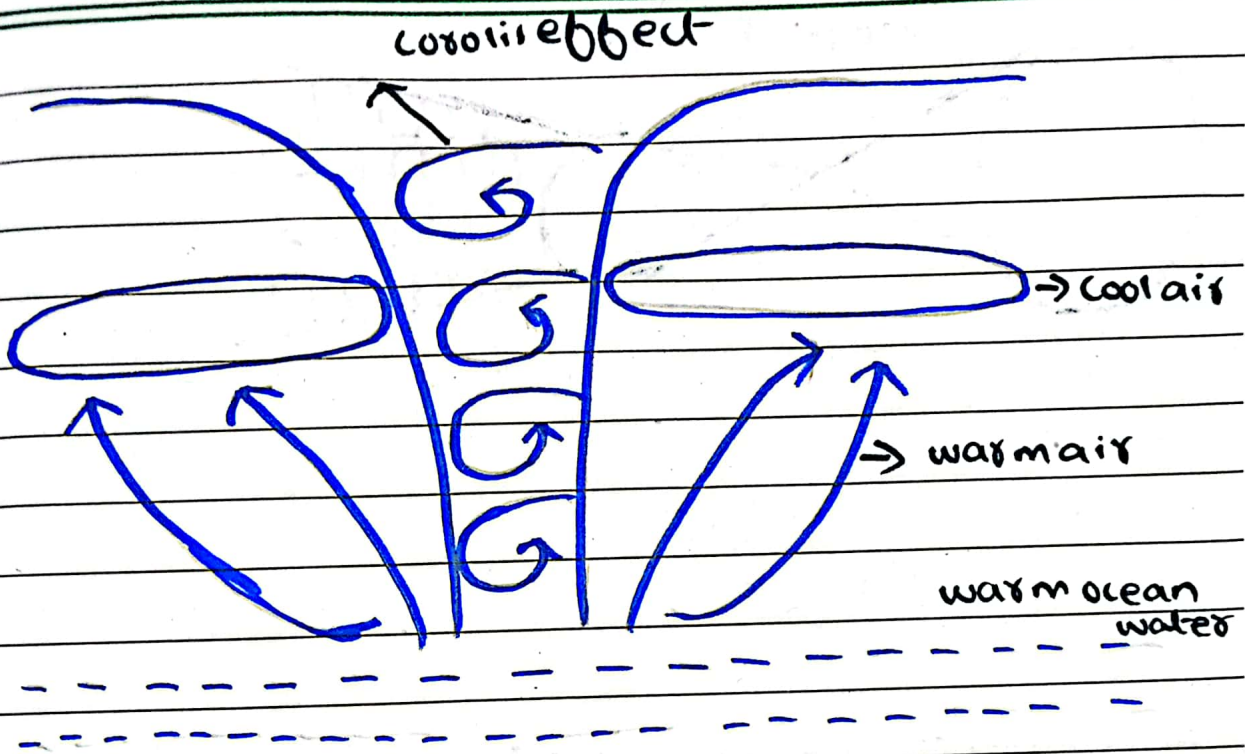
Hurricanes, also known as cyclones or typhoons in different regions, are powerful tropical storms that form over warm water oceans.

The process follows following conditions: warm water, ocean evaporation and heat transfer, Coriolis effect

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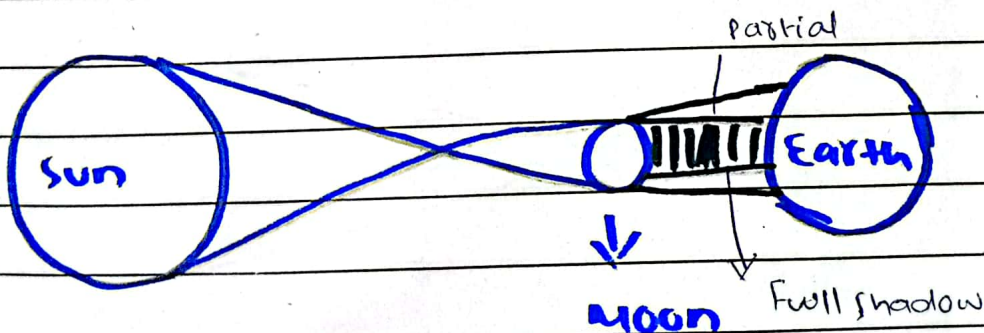
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Part (c)

Distinguish Solar and Lunar Eclipses.

The main difference between solar and lunar eclipse is that solar eclipse occurs when moon comes in between the sun and the earth.

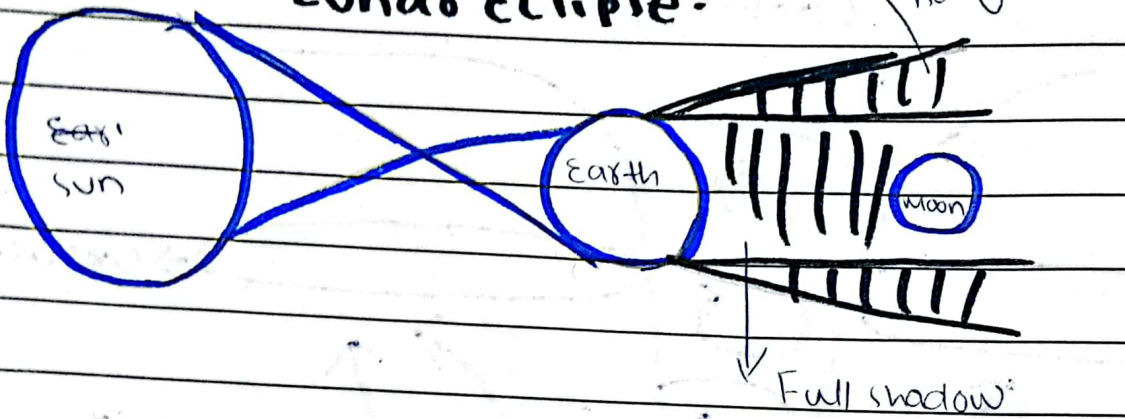


↳ Solar Eclipse

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Lunar Eclipse -



In the lunar eclipse, the earth comes between the moon and the sun.

