Question 01:

Assertion (A): Paleoclimate research utilizes proxy data from natural sources like ice cores and sediment layers to analyze Earth's climatic variations over geological timescales. Reason (R): Proxy data provide precise, unaltered records of climate variables, allowing scientists to obtain exact temperatures and atmospheric conditions from any past year.

Options:

a) Both A and R are true, and R is the correct explanation of A.
b) Both A and R are true, but R is not the correct explanation of A.
c) A is true, but R is false.
d) A is false, but R is true.

Correct Answer: (c) A is true, but R is false.

Question 02:

Assertion (A): Increasing the area under afforestation can help mitigate climate change.

Reason (R): Trees absorb atmospheric methane, which reduces greenhouse gases significantly.

Options:

(a) Both A and R are true, and R is the correct explanation of A.
(b) Both A and R are true, but R is not the correct explanation of A.
(c) A is true, but R is false.
(d) A is false, and R is true.

Correct Answer: (c) A is true, but R is false.

Question 03:

Assertion (A): Climate change is accelerating the melting of polar ice caps.

Reason (R): The rise in average global temperatures enhances the albedo effect, which leads to more ice accumulation.

Options:

a) Both A and R are true, and R is the correct explanation of A.
b) Both A and R are true, but R is not the correct explanation of A.
c) A is true, but R is false.
d) A is false, and R is true.

Correct Answer: (c) A is true, but R is false.

Question 04:

Assertion (A): Deforestation in tropical regions contributes to global warming.

Reason (R): Forests are carbon sinks that absorb carbon dioxide, and their removal increases the amount of CO_2 in the atmosphere. Options:

a) Both A and R are true, and R is the correct explanation of A.
b) Both A and R are true, but R is not the correct explanation of A.
c) A is true, but R is false.
d) A is false, and R is true.

Correct Answer: (a) Both A and R are true, and R is the correct explanation of A.

Question 05:

Assertion (A): Urbanization contributes to the urban heat island effect.

Reason (R): Increased vegetation and water bodies in cities absorb more solar radiation, increasing urban temperatures.

Options:

a) Both A and R are true, and R is the correct explanation of A.
b) Both A and R are true, but R is not the correct explanation of A.
c) A is true, but R is false.
d) A is false, and R is true.

Correct Answer: (c) A is true, but R is false.

Question 06:

Assertion (A): Reducing methane emissions is essential for mitigating climate change. Reason (R): Methane has a shorter atmospheric lifespan than carbon dioxide but is significantly more effective at trapping heat.

Options:

a) Both A and R are true, and R is the correct explanation of A.
b) Both A and R are true, but R is not the correct explanation of A.
c) A is true, but R is false.
d) A is false, and R is true.

Correct Answer: (a) Both A and R are true, and R is the correct explanation of

Question 07: Which of the following is the main objective of SDG 1?

a) Achieve quality education
b) End poverty in all its forms everywhere
c) Promote affordable and clean energy
d) Reduce inequalities within and among countries

Correct Answer: b

Question 07: Which SDG aims to "Ensure access to affordable, reliable, sustainable, and modern energy for all"?

a) SDG 3
b) SDG 7
c) SDG 10
d) SDG 15

Correct Answer: b

Question 08: What is the target year set by the United Nations to achieve the SDGs? a)

2025

b) 2030
c) 2040
d) 2050

Correct Answer: b

Question 09: Some examples of “global commons” are:

a) Biodiversity, climate, and outer-space
b) The Pacific Ocean and Arctic region
c) Education, health, and sustainable development
d) Industrial waste and fossil fuels

Correct Answer: a

Question 10: Choose the correct option which fills in the blanks with the correct focus areas for each SDG below:

- ➔ SDG 3 focuses on _____.
- ➔ SDG 5 aims to achieve _____.
- ➔ SDG 7 is dedicated to ensuring _____ for all.
- ➔ SDG 13 addresses _____.

Options:

a) Good Health and Well-being; Gender Equality; Affordable and Clean Energy; Climate Action
b) Quality Education; Clean Water and Sanitation; Decent Work and Economic Growth; Life Below Water
c) Zero Hunger; Reduced Inequalities; Climate Action; Responsible Consumption and Production
d) Peace, Justice, and Strong Institutions; Industry, Innovation, and Infrastructure; Affordable and Clean Energy; Sustainable Cities and Communities

Correct Answer: a

Question 12: When analyzing a dataset, which statistical test would you use to determine if there is a significant difference between the means of three or more groups?

a) Chi-square test
b) T-test
c) ANOVA
d) Pearson correlation

Correct Answer: c

Question 13: In the context of predictive modeling, which method is best suited for handling highly imbalanced datasets?

a) Linear regression
b) Logistic regression
c) Random forest
d) Support vector machines

Correct Answer: c

Question 14: When performing a principal component analysis (PCA), which of the following is the primary goal?

a) To increase the dimensionality of the dataset
b) To maximize the variance captured in the first few components
c) To identify linear relationships between variables
d) To ensure that the data follows a normal distribution

Correct Answer: b

Question 15: In a regression analysis, which of the following best describes the coefficient of determination (R^2)?

a) The proportion of the variance in the dependent variable that is predictable from the independent variable(s).
b) The square root of the variance in the dependent variable.
c) The correlation coefficient between the dependent and independent variables.
d) The slope of the regression line.

Correct Answer: a

Question 16: Which of the following distributions is appropriate for modeling the number of occurrences of an event in a fixed interval of time or space?

a) Binomial distribution
b) Poisson distribution
c) Normal distribution
d) Exponential distribution

Correct Answer: b

Question 18: In the context of data visualization, which chart type is most suitable for displaying the distribution of a single continuous variable?

a) Bar chart
b) Pie chart
c) Histogram
d) Scatter plot

Correct Answer: c

Question 19: Which statistical measure would you use to assess the strength and direction of a linear relationship between two continuous variables?

a) Mean
b) Variance
c) Correlation coefficient
d) Standard deviation

Correct Answer: c

Question 20: What is the primary purpose of conducting a principal component analysis (PCA)?

a) To maximize the variance captured in the original variables

b) To reduce the dimensionality of the dataset
c) To identify the relationship between the variables
d) To ensure data normality

Correct Answer: b

Question 21: In the context of hypothesis testing, what is a Type I error?

a) Failing to reject a false null hypothesis
b) Rejecting a false null hypothesis
c) Rejecting a true null hypothesis
d) Accepting a true null hypothesis

Correct Answer: c

Question 22: In a dataset with 200 observations, 120 are labeled as class X and 80 as class Y. What is the probability of randomly selecting an observation from class X? a)

0.3

b) 0.4
c) 0.6
d) 0.5

Correct Answer: c

Question 23: In a normally distributed dataset with a mean of 60 and a standard deviation of 10, what percentage of data falls within two standard deviations from the mean?

a) 68%
b) 95%
c) 99.7%
d) 85%

Correct Answer: b

Question 25: In a dataset with a mean score of 70 and a standard deviation of 5, if the scores are normally distributed, what percentage of scores are expected to be between 65 and 75? a) 34%

b) 68%
c) 95%
d) 99.7%

Correct Answer: b

Question 26: Which of the following materials is considered the most sustainable for packaging?

a) Glass

b) Plastic
c) Paper
d) Styrofoam

Correct Answer: A. Glass

Question 27: Which of the following is NOT a component of the ecological footprint? a)

Carbon footprint

b) Water footprint
c) Land use
d) Economic growth

Correct Answer: d. Economic growth

Question 28: What does the number 1 in the recycling symbol ♺ indicate?

a) The item has been recycled once
b) The item can be recycled once more
c) The type of plastic used to make the item
d) The item requires a one-step recycling process

Correct Answer: c. The type of plastic used to make the item

Question 29: Why is palm oil considered controversial in terms of environmental sustainability?

a) It is more expensive than other oils

b) It requires large amounts of water to produce
c) Its production often leads to deforestation
d) It has a short shelf life

Correct Answer: c. Its production often leads to deforestation

Question 30: Which of the following natural disasters is least likely to be influenced by climate change?

a) Hurricanes
b) Floods
c) Earthquakes

d) Droughts

Correct Answer: c. Earthquakes

Question 31: Which state in India experiences the first spell of South-West Monsoon? a)

Goa

b) Gujarat
c) Kerala
d) Maharastra

Correct Answer: c. Kerala

Question 32: Why does the livestock industry contribute significantly to greenhouse gas emissions?

a) Livestock are herbivorous
b) Livestock produce methane during digestion
c) Livestock require large amounts of water
d) Livestock are raised in confined spaces

Correct Answer: b. Livestock produce methane during digestion

Question 33: Arrange the following renewable energy sources in order of their potential to reduce carbon emissions:

a) Solar > Wind > Hydropower > Biomass
b) Biomass > Hydropower > Wind > Solar
c) Wind > Solar > Biomass > Hydropower
d) Hydropower > Biomass > Solar > Wind

Correct Answer: a. Solar > Wind > Hydropower > Biomass

Question 34: The method of removing and storing carbon dioxide from the atmosphere to reduce greenhouse gases is called:

a) Carbon absorption
b) Carbon offset
c) Carbon sequestration
d) Carbon valuation

Correct Answer: c. Carbon sequestration

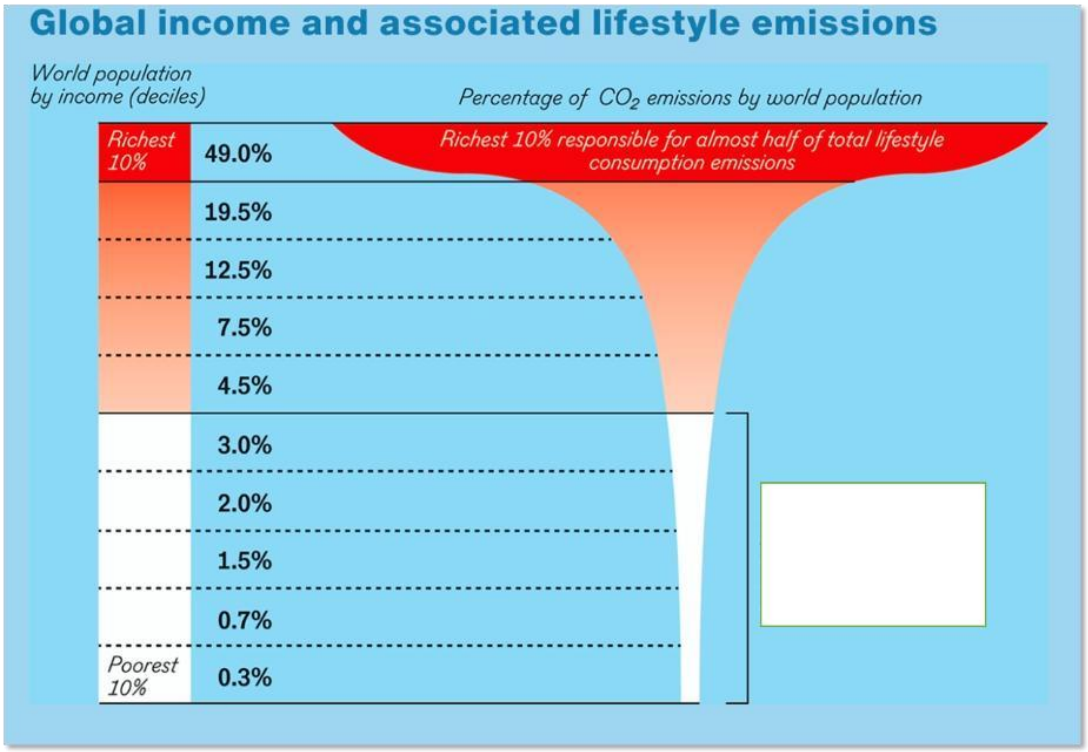
Question 35: The Paris Agreement aims to limit global warming to well below _____ degrees Celsius above pre-industrial levels.

a) 1.0
b) 1.5
c) 2.0
d) 2.5

Correct Answer: b. 1.5

Question 36: Read the graph below and choose the correct answer which correctly completes this sentence:

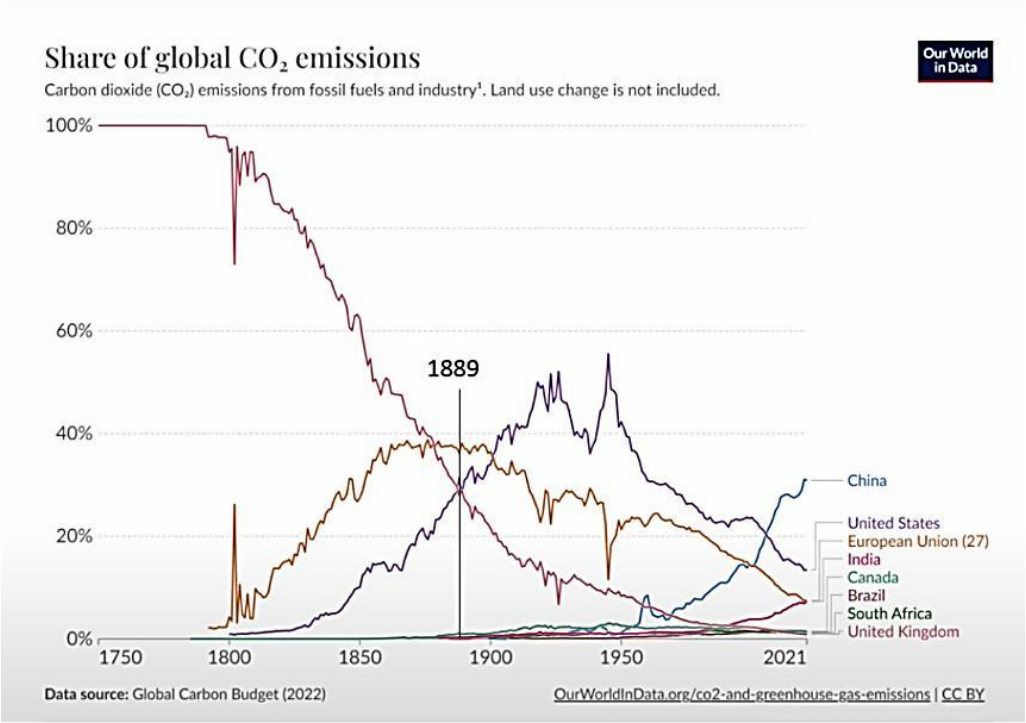
While richest _____ is responsible for almost _____ of emissions, the poorest _____ is responsible for _____ of total lifestyle consumption emissions. (answers are all in percentages)



a) 10, 20, 30, 50
b) 10, 90, 30, 20
c) 50, 10, 20, 50
d) 10, 50, 50, 7

Correct answer is d

37. The figure below illustrates the distribution of global carbon emissions worldwide. Why is the year 1889 considered significant in this context?



a) USA takes over UK in emissions
b) USA starts contributing to global CO2
c) The EU shows up as an equal contributor to global CO2 emissions as the UK d) All of the above

Correct answer is a

- Assertion (A): Aluminium can be infinitely recycled without losing its quality.
- Reason (R): Aluminium recycling involves melting the metal, which does not degrade its physical properties.

a) Both A and R are true, and R explains A.
b) Both A and R are true, but R does not explain A.
c) A is true, but R is false.
d) A is false, but R is true.

- Assertion (A): The increase in atmospheric carbon dioxide results in ocean acidification, negatively impacting marine ecosystems.
- Reason (R): When carbon dioxide dissolves in seawater, it reacts with water to form sulfuric acid, which lowers the ocean's pH and dissolves marine organisms' shells.

a) Both A and R are true, and R explains A.
b) Both A and R are true, but R does not explain A.
c) A is true, but R is false.
d) A is false, but R is true.

- Assertion (A): Climate sensitivity is primarily influenced by cloud albedo feedback.
- Reason (R): Cloud albedo feedback increases the absorption of infrared radiation, trapping more heat in the atmosphere and raising global temperatures.

a) Both A and R are true, and R explains A.
b) Both A and R are true, but R does not explain A.
c) A is true, but R is false.
d) A is false, but R is true.

- Assertion (A): The greenhouse effect is caused by the trapping of heat by certain gases in the atmosphere.
- Reason (R): Greenhouse gases like carbon dioxide, methane, and water vapor allow sunlight to enter the atmosphere but prevent heat from escaping.

a) Both A and R are true, and R explains A.
b) Both A and R are true, but R does not explain A.
c) A is true, but R is false.
d) A is false, but R is true.

- Assertion (A): In the context of a developing country like India, balancing industrial growth with stringent environmental regulations and promoting green technologies can achieve sustainable development without compromising economic progress.
- Reason (R): Strict environmental regulations hinder economic growth by limiting industrial activities and reducing short-term profits, making sustainable development difficult to achieve.

a) Both A and R are true, and R explains A.
b) Both A and R are true, but R does not explain A.
c) A is true, but R is false.
d) A is false, but R is true.

What does the acronym TNFD stand for?

a) Taskforce on Natural Financial Development
b) Taskforce on Nature-related Financial Disclosures
c) Taskforce on Net-zero Financial Disclosures
d) Taskforce on National Financial Development

Which of the following represents the three pillars of sustainability?

a) Economic, Political, Cultural

b) Economic, Social, Environmental
c) Social, Environmental, Technological
d) Economic, Environmental, Ethical

Which of the following practices is NOT considered sustainable?

a) Recycling materials
b) Overfishing
c) Using public transportation
d) Planting trees

The carbon footprint is defined as _____.

a) The total number of trees cut down in a year
b) The number of carbon atoms in a given substance
c) The amount of carbon dioxide emissions produced by an individual, organization, or product
d) The weight of carbon in a specific area

The agreement aimed at addressing the depletion of the ozone layer is the _____.

a) Kyoto Protocol
b) Paris Agreement
c) Montreal Protocol
d) Stockholm Convention

The melting of polar ice caps is a major concern because _____.

a) Melting ice decreases the salinity of the oceans.
b) It leads to the release of trapped methane gas, cooling the Earth.
c) Melting ice adds freshwater to the oceans, causing sea levels to rise.
d) Polar ice caps regulate global oxygen production.

Which among the following is NOT a dimension included in the calculation of UNDP human development index (HDI)?

a) Long and healthy life
b) Gender disparity
c) Knowledge
d) A decent standard of living

Which of the following statements accurately describes the impact of climate change on tropical biodiversity?

a) Climate change has no effect on species migration patterns in tropical ecosystems.
b) Increased temperatures and altered precipitation patterns can lead to the extinction of sensitive tropical species.
c) Climate change enhances biodiversity by creating new habitats in tropical regions.
d) Tropical biodiversity is solely affected by natural disasters and is not influenced by climate change.

What does a number 3 in the following symbol indicate?

a) The item has already been recycled 3 times
b) The item can be recycled 3 more times
c) The type of plastic used to make the item
d) The item requires a 3-step recycling process

Soya is often termed as a protein source that is environmentally friendly. However, it may not be always true because (choose the most relevant option):

a) Growing soyabeans at industrial scale requires deforestation
b) Soyabean plantation requires fertilization that may add to greenhouse gas emissions
c) Soya protein is often more expensive than animal protein
d) Most people still do not prefer to consume soya protein hence the resource used end up being wasted

Water vapour is not considered to have an important role in anthropogenic climate change because…

a) It is not a greenhouse gas.
b) It has a very small residence time
c) Amount of water vapour in air is insignificant in comparison to carbon dioxide
d) Scientists do not know the warming potential of water vapour

Which of the following correctly matches the climate agreements with their descriptions?

Name	Description
1. Paris Agreement	A. Treaty to phase out substances depleting the ozone layer.
2. Kyoto Protocol	B. Agreement from 2009 focusing on climate financing and emissions targets.
3. Montreal Protocol	C. Agreement to limit global warming to below 2°C.
4. Copenhagen Accord	D. First treaty with binding emissions reduction targets.
5. Glasgow Climate Pact	E. Pact from COP26 focusing on climate action commitments.

a) 1-B, 2-A, 3-C, 4-D, 5-E
b) 1-A, 2-C, 3-D, 4-E, 5-B
c) 1-C, 2-D, 3-A, 4-B, 5-E

d) 1-E, 2-B, 3-A, 4-C, 5-D

Which of the following correctly matches the sustainability-related terms with their descriptions?

1. Natural Capital	A. Evaluation of environmental impacts before project approval.
2. Social License to Operate (SLO)	B. Approval from communities for ethical practices.
3. Just Transition	C. Capital comprising natural resources and ecosystems.
4. Integrated Water Resources Management (IWRM)	D. Sustainable management of water resources.

5. Sustainable Supply Chain Management	E. Fair transformation for workers during sustainability shifts.
6. Carbon Sequestration	F. Agricultural practices that integrate ecological principles.
7. Environmental Impact Assessment (EIA)	G. Capturing atmospheric carbon to combat climate change.
8. Agroecology	H. Managing supply chains to enhance sustainability.

a) 1-D, 2-B, 3-F, 4-C, 5-H, 6-G, 7-A, 8-E
b) 1-C, 2-A, 3-B, 4-D, 5-F, 6-E, 7-G, 8-H
c) 1-C, 2-B, 3-E, 4-D, 5-H, 6-G, 7-A, 8-F
d) 1-F, 2-E, 3-C, 4-B, 5-D, 6-H, 7-G, 8-A

Which of the following correctly matches the Sustainable Development Goals (SDGs) with their corresponding goals?

SDG Name	Goal
1. SDG 1	A. Life Below Water

2. SDG 6	B. Affordable and Clean Energy
3. SDG 7	C. Clean Water and Sanitation
4. SDG 11	D. Climate Action
5. SDG 13	E. Sustainable Cities and Communities
6. SDG 14	F. No Poverty
7. SDG 15	G. Life on Land
8. SDG 17	H. Partnerships for the Goals

a) 1-A, 2-F, 3-C, 4-B, 5-D, 6-G, 7-H, 8-E
b) 1-D, 2-E, 3-B, 4-F, 5-C, 6-G, 7-A, 8-H
c) 1-F, 2-C, 3-B, 4-E, 5-D, 6-A, 7-G, 8-H
d) 1-G, 2-A, 3-D, 4-E, 5-F, 6-H, 7-C, 8-B

Which of the following correctly matches the climate-related terms with their descriptions?

Terms	Descriptions
1. Radiative forcing	A. A system for trading carbon emission allowances to reduce industrial carbon footprints
2. Carbon sequestration	B. The change in energy balance in the Earth's atmosphere due to greenhouse gases
3. Cap-and-trade system	C. A scientific body that assesses climate change and provides global policymakers with regular reports.
4. IPCC (Intergovernmental Panel on Climate Change)	D. The process of capturing and storing atmospheric CO2 to mitigate climate change

a) 1-B, 2-D, 3-A, 4-C
b) 1-D, 2-B, 3-C, 4-A
c) 1-A, 2-C, 3-B, 4-D
d) 1-C, 2-A, 3-D, 4-B

In a sample of 200 cities, 30% of the cities reported a significant increase in average temperature over the last decade. If you want to estimate a 95% confidence interval for the proportion of cities experiencing this increase, what are the bounds of the confidence interval?

a) (0.24, 0.36)
b) (0.28, 0.32)
c) (0.25, 0.35)
d) (0.22, 0.38)

In a linear regression model, if the coefficient of determination (R^2) is 0.85, what does this imply about the model?

a) The model explains 15% of the variability.
b) The model explains 85% of the variability.
c) The model has a weak relationship with the data.
d) The model is perfectly predicting outcomes.

If you have a dataset where the mean is 50 and the standard deviation is 5, what percentage of data falls within one standard deviation from the mean (assuming normal distribution)?

a) 50%
b) 68%
c) 95%
d) 99.7%

A researcher finds that 60% of climate models predict increased rainfall due to climate change (Event R). The probability that a model is accurate given it predicts increased rainfall (Event M) is 0.9. If the overall accuracy of climate models is 0.75, what is the probability that increased rainfall predictions are correct (P(M|R))?

a) 0.72
b) 0.45
c) 0.60
d) 0.80

If a student receives a score that is in the 90th percentile on a test, what does this imply?

a) He scored better than 90% of the students who took the test
b) He scored the same as 90% of the students who took the test
c) He scored worse than 90% of the students who took the test
d) He received the highest score in the class

In a survey, 70% of respondents preferred Product A over Product B. If 840 people participated in the survey, how many preferred Product B?

a) 420
b) 294
c) 336

d) 252

If a population of a city increases by 15% in the first year and then by 10% in the second year, what is the overall percentage increase in the population after two years?

a) 25.5%
b) 26.5%
c) 27.5%
d) 28.5%

A factory produces 1200 units of a product in a day. If the production rate increases by 25% for the next week, how many units will be produced in that week?

a) 7,000
b) 8,400
c) 10,500
d) 10,800

If the ratio of the ages of A, B, and C is 4:5:6 and the sum of their ages is 90 years, what is the age of B?

a) 30 years
b) 36 years
c) 40 years
d) 45 years

A researcher collects data on the heights of a sample of plants. The mean height is 15 cm with a standard deviation of 2 cm. If the heights are normally distributed, what percentage of plants are expected to be between 13 cm and 17 cm?

a) 34%
b) 68%
c) 95%
d) 99.7%

A company's revenue increased from $200,000 to $300,000 over a year. What is the percentage increase in revenue?

a) 25%
b) 50%
c) 75%
d) 100%

In a survey, 40% of respondents preferred product A, 35% preferred product B, and the rest preferred product C. If 200 people were surveyed, how many preferred product C?

a) 20
b) 60
c) 50
d) 70

A dataset has a median of 25 and an interquartile range (IQR) of 10. If the lower quartile (Q1) is 20, what is the upper quartile (Q3)?

a) 25
b) 30
c) 35
d) 40

A researcher is analyzing a skewed dataset. Which measure of central tendency would be most appropriate to describe the data?

a) Mean
b) Median
c) Mode
d) Range

If a correlation coefficient between two variables is -0.85, what does this indicate?

a) A strong positive relationship
b) A weak negative relationship
c) A strong negative relationship
d) No relationship

A car travels 150 km at a speed of 50 km/h and then returns the same distance at a speed of 75 km/h. What is the average speed of the car for the entire journey?

a) 60 km/h
b) 62.5 km/h
c) 65 km/h
d) 70 km/h

A cylindrical tank has a radius of 5 meters and a height of 10 meters. What is the volume of the tank in cubic meters?

a) 200π
b) 250π
c) 500π
d) 50π

If (x) and (y) are positive integers such that ($x^2 - y^2 = 45$), which of the following could be the value of (x + y)?

a) 09
b) 10
c) 11
d) 12

The concentration of a pollutant in a river is measured at 15 mg/L. If the river flow rate is 500 cubic meters per hour, what is the total mass of the pollutant passing a point in the river per hour?

a) 75 Kg
b) 7.5 Kg
c) 225 Kg
d) 15 Kg

Half-life of a contaminant in water is 6 months. What is the concentration of the contaminant in the water after 2 years if the measured initial concentration was 6 mg per litre? a) 0.625 mg per litre

b) 1.5 mg per litre
c) 3 mg per litre
d) 1.25 mg per litre

Which of the following visualizations would be most appropriate for displaying the distribution of a dataset with a significant number of outliers?

a) Pie Chart
b) Box Plot
c) Line Graph
d) Bar Chart

What is the primary purpose of data cleaning in a data analysis workflow?

a) To visualize data trends
b) To ensure the data is accurate and usable
c) To generate reports
d) To store data efficiently

Which of the following is an example of primary data?

a) Survey results collected from participants
b) Statistical reports from government databases
c) Historical data from previous studies
d) Data retrieved from social media platforms

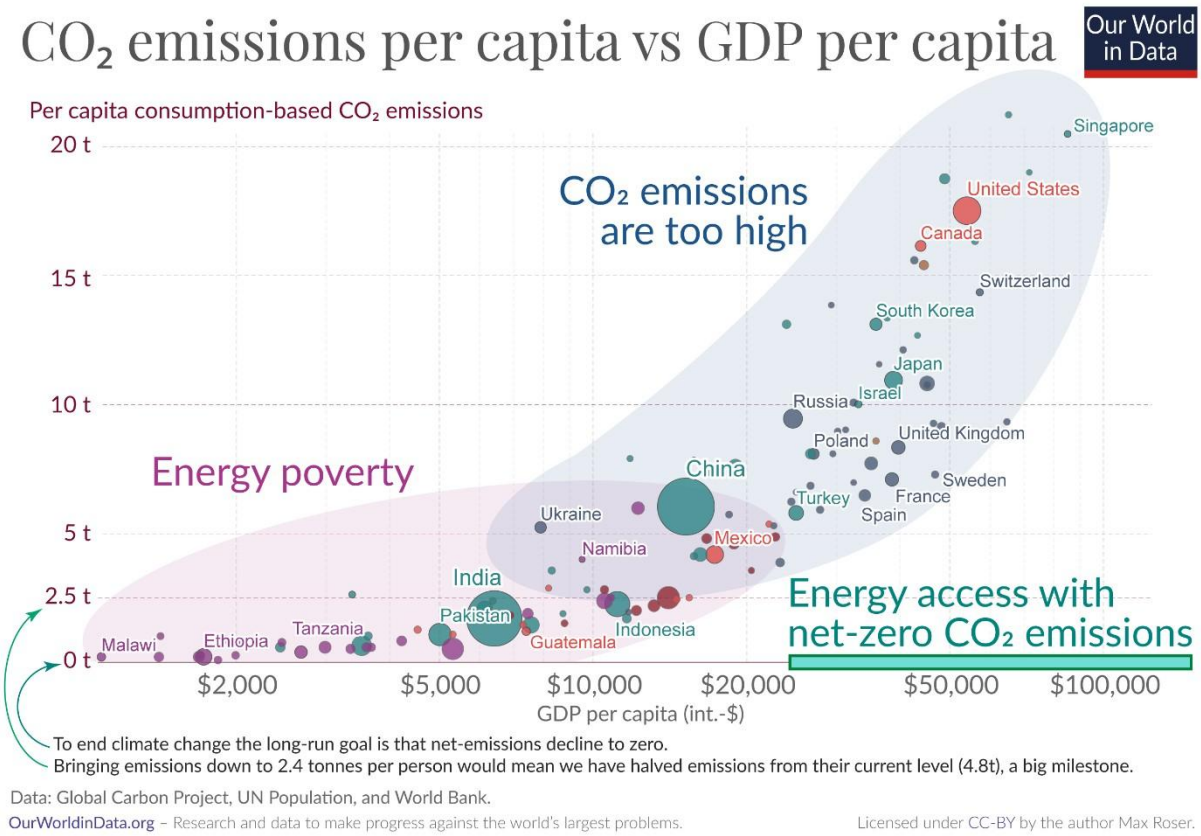
What is a major ethical consideration when working with personal data?

a) Ensuring data is stored in a database
b) Analyzing data without a statistical software
c) Obtaining informed consent from data subjects
d) Increasing the sample size for better accuracy

A researcher scrapes a website that provides daily stock prices of multiple companies over ten years to analyze market trends. Which data types are involved?

a) Discrete, Secondary Data
b) Continuous, Secondary Data
c) Continuous, Primary Data
d) Qualitative, Primary Data

Graph Reading and Interpretation: Critically examine the graph below and answer the questions from 46 – 50.



What is the general trend between CO2 emissions per capita and GDP per capita as shown in the graph?

a) There is no correlation between GDP per capita and CO2 emissions per capita.
b) The relationship between GDP per capita and CO2 emissions per capita is inconsistent.
c) As GDP per capita increases, CO2 emissions per capita decrease.
d) As GDP per capita increases, CO2 emissions per capita also increase.

Which region or group of countries has the highest CO2 emissions per capita?

a) Asia
b) Europe
c) North America
d) Africa

Based on the graph, which country has the highest GDP per capita and the lowest CO2 emissions per capita?

a) United States
b) Singapore
c) Switzerland
d) Sweden

The graph suggests that there is a relationship between energy poverty and CO2 emissions per capita. What is this relationship?

a) Countries with higher energy poverty have higher CO2 emissions per capita.
b) Countries with higher energy poverty have lower CO2 emissions per capita.
c) There is no relationship between energy poverty and CO2 emissions per capita.
d) The relationship is inconsistent.

The graph highlights a cluster of countries with high GDP per capita but relatively low CO2 emissions per capita. What might be some factors contributing to this trend?

a) Increased reliance on renewable energy sources
b) More efficient energy consumption practices
c) Lower population density
d) All of the above

What is the best definition of sustainability based on the given description?

a) A method of conserving resources to ensure economic growth.
b) An approach to life that causes the least possible harm to the natural world or living organisms.
c) A system designed to exploit natural resources for human benefit.
d) A policy aimed at supporting industrial development regardless of environmental impact.

Which of the following best represents the three pillars of sustainability?

a) Economic growth, technological innovation, and resource extraction.
b) Environmental conservation, economic growth, and social equity.
c) Renewable energy, carbon trading, and climate action.
d) Environmental policies, financial investments, and industrial development.

What are the Sustainable Development Goals (SDGs)?

1) A set of goals aimed at addressing the world's most important challenges by 2030.
2) Goals focused solely on economic growth and industrialization.
3) Goals related to ending poverty, providing education, protecting life, addressing inequalities, and tackling climate change.
4) A framework to support unlimited exploitation of natural resources.

Choose the best option:

a) Both 1 and 2
b) only 4
c) only 3

d) Both 1 and 3

Choose the options that correctly differentiate between ESG and sustainability?

1) ESG stands for environment, social, and governance and is specific and measurable.
2) Sustainability is a broader and less tangible concept compared to ESG.
3) ESG focuses only on environmental issues, while sustainability includes social and economic factors.
4) Companies use ESG criteria to make measurable decisions to become greener, more ethical, and better governed.

a) 1 and 2
b) 2 and 3
c) 1, 3 and 4
d) 1, 2 and 4

Which of the following sets of gases includes a gas that is NOT considered a greenhouse gas?

a) Methane (CH_4) and Nitrous oxide (N_2O)
b) Carbon dioxide (CO_2) and Oxygen (O_2)
c) Water vapor (H_2O) and Ozone (O_3)
d) Methane (CH_4) and Carbon dioxide (CO_2)

Which part of the electromagnetic spectrum contributes to the greenhouse effect?

a) Ultraviolet
b) Visible
c) Infrared
d) X-rays

Which climate phenomenon, driven by changes in atmospheric and oceanic circulation, is associated with significant cooling of sea surface temperatures in the equatorial Pacific Ocean?

a) Madden-Julian Oscillation (MJO)
b) Southern Annular Mode (SAM)
c) La Niña
d) Indian Ocean Dipole (IOD)

What is the term for the phenomenon where increased concentrations of greenhouse gases lead to a rise in global temperatures, which in turn affects the carbon cycle?

a) Greenhouse Effect
b) Carbon Feedback Loop
c) Climate Resilience
d) Ocean Acidification

What is a major environmental risk associated with the thawing of permafrost?

a) Decreased atmospheric water vapor
b) Release of greenhouse gases
c) Increased polar bear populations
d) Formation of new glaciers

Assertion (A): The increase in global temperatures is primarily driven by anthropogenic activities.
Reason (R): Natural climate variability, such as volcanic eruptions and solar radiation fluctuations, accounts for the majority of observed warming trends.

a) Both (A) and (R) are true, and (R) is the correct explanation of (A).
b) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
c) (A) is true, but (R) is false.
d) (A) is false, but (R) is true.

Assertion (A): Climate change is the sole cause of increased frequency and intensity of hurricanes.
Reason (R): Other factors, such as natural climate cycles and local weather conditions, also play significant roles in hurricane formation and intensity.

a) Both (A) and (R) are true, and (R) is the correct explanation of (A).

b) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
c) (A) is false, but (R) is true.
d) (A) is true, but (R) is false.

Assertion (A): Climate change mitigation strategies primarily focus on reducing fossil fuel consumption.
Reason (R): Effective climate action also requires adaptation strategies to cope with existing climate impacts that cannot be avoided through emissions reductions alone.

a) Both (A) and (R) are true, and (R) is the correct explanation of (A).
b) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
c) (A) is true, but (R) is false.
d) (A) is false, but (R) is true.

Which of the following particulate matter, also considered harmful to human health, remains suspended in air for the longest period?

a) PM10
b) PM5
c) PM2.5
d) PM100

Short-term exposures to SO_2 can harm the human respiratory system and make breathing difficult. Which of the following industrial processes is the largest contributor to SO_2 emissions?

a) Paper manufacturing
b) Rubber production
c) Textile dyeing
d) Coal-burning power plants

Consider the following statements and choose what happens to sunlight as it passes through Earth's atmosphere? Select the best answer from below.

1) Sunlight is absorbed.
2) Sunlight is reflected back into space.
3) Sunlight is scattered and some reaches the surface.

4) Sunlight is unaffected by the atmosphere.

Select the best answer from below.

a) 1 and 2
b) 1 and 3
c) 1, 2 and 3
d) All the above

Which property allows gases like methane and water vapor to act as effective greenhouse gases?

a) Their ability to form clouds in the atmosphere
b) Their ability to absorb and emit infrared radiation
c) Their high concentration in the atmosphere
d) Their interaction with ultraviolet radiation

Why are polar regions more affected by climate change than tropical regions?

a) They are closer to the Sun during certain times of the year.
b) They have lower solar energy input and are sensitive to feedback loops like ice melting.
c) Their air pressure is higher, making heat retention easier.
d) They have more vegetation, which amplifies warming effects.

What property of water helps regulate Earth's climate by storing and transporting heat?

a) Its high albedo
b) Its low density when frozen
c) Its high specific heat capacity
d) Its ability to dissolve salts

What is the fundamental difference in approach to climate change between the Kyoto Protocol and the Paris Agreement? Choose the best option from the choices below.

a) The Paris Agreement focuses exclusively on carbon pricing mechanisms, while the Kyoto Protocol only addresses carbon trading.

b) The Kyoto Protocol imposed legally binding emission reduction targets on developed countries, while the Paris Agreement introduced voluntary commitments for all nations, with a focus on flexible national plans.
c) The Kyoto Protocol includes explicit financial support for developing countries, while the Paris Agreement delegates this responsibility solely to private corporations.
d) The Paris Agreement mandates technology transfer from industrialized countries to developing countries, while the Kyoto Protocol does not address this issue.

Which of the following strategies most effectively integrates biodiversity conservation and climate change mitigation in the context of natural climate solutions?

a) Large-scale industrial tree planting programs with minor consideration for biodiversity value or local ecosystems.
b) Protecting and restoring tropical forests, wetlands, and peatlands to sequester carbon while preserving habitats for endangered species.
c) Shifting to monoculture reforestation projects with high-value timber species for carbon offsetting.
d) Expanding urban green spaces with the least biodiversity management practices or ecological restoration.

Quantitative Skills Questions (20 Questions)

In a class of 10 students, the average age is 16 years. If two new students join and the average age becomes 17 years, what is the average age of the two new students?

a) 18 years
b) 20 years
c) 22 years
d) 24 years

If a forest area of 1000 hectares is reduced by 10% annually, how much area will remain after 5 years?

a) 590.49 hectares
b) 656.1 hectares
c) 729 hectares
d) 810 hectares

A rectangular garden is twice as long as it is wide. If the perimeter of the garden is 48 meters, what is its area?

a) 144 m^2
b) 192 m^2
c) 128 m^2
d) 72 m^2

In a right triangle with legs measuring 6 cm and 8 cm, what is the length of the hypotenuse?

a) 10 cm
b) 12 cm
c) 14 cm
d) 16 cm

If a sum of money triples itself in five years at simple interest, what is the rate of interest per annum?

a) 5%
b) 10%
c) 40%
d) None of these

In a class of 30 students, 18 students play cricket, 12 play football, and 8 play both games. What is the probability that a student chosen at random plays either cricket or football?

a) 2/3
b) 3/5
c) 11/15
d) 7/10

Why might you check for the spread (variance) of a dataset before making predictions?

a) To identify how consistent the data points are.
b) To determine the average value in the dataset.
c) To remove outliers from the dataset.
d) To simplify the dataset for analysis.

When studying two variables, what does it mean if the trend line has a steep slope?

a) Small changes in one variable lead to large changes in the other.
b) Both variables are constant over time.
c) One variable is unrelated to the other.
d) The trend line is not useful for analysis.

What does a loop do in programming?

a) Defines a variable
b) Executes a block of code repeatedly
c) Stops the program

d) Calls an external function

If a dataset is normally distributed, approximately what percentage of data falls within 2 standard deviations of the mean?

a) 68%
b) 95%
c) 99%
d) 50%

What does a probability value (p-value) of 0.03 indicate in a hypothesis test?

a) There is a 3% chance the null hypothesis is incorrect.
b) There is a 3% chance of observing the result if the null hypothesis is true.
c) The test result is invalid.
d) The sample size is too small.

In a regression analysis, which of the following indicates the strength of the linear relationship between the independent and dependent variables?

a) The slope of the regression line
b) The p-value of the regression model
c) The correlation coefficient (r)
d) The standard error of the estimate

What is the median of the following dataset: 7, 12, 9, 15, 10, 14, 8?

a) 10
b) 9
c) 10
d) 14

In hypothesis testing, if the p-value is less than the significance level (alpha), what is the correct action?

a) Reject the null hypothesis
b) Fail to reject the null hypothesis
c) Accept the null hypothesis
d) Increase the sample size

A community generates 500 kg of waste daily, of which 60% is biodegradable. How much biodegradable waste is generated in a week?

a) 1,800 kg
b) 2,100 kg
c) 2,500 kg
d) 3,000 kg

Given a dataset with an outlier, which measure of central tendency is the least affected by the outlier?

a) Mean
b) Median
c) Mode
d) Range

A company wants to optimize its supply chain by reducing transportation costs. The current transportation cost follows a linear relationship:
Cost = 5x + 50,
where x is the distance in kilometers. If the company plans to reduce the cost by 30%, what should the new transportation cost formula be?

a) 3.5x + 50
b) 4x + 35
c) 3.5x + 35

d) $4x + 40$

A farmer observes that the heights of 100 plants are normally distributed with a mean of 150 cm and a standard deviation of 10 cm. Approximately how many plants are expected to be between 140 cm and 160 cm?

a) 34
b) 68
c) 95
d) 84

A city records the following daily high temperatures over five days: 21°C, 25°C, 23°C, 27°C, and 24°C. The recorded temperatures are then adjusted based on a climate correction factor of +1.5 for each day. What is the average of the corrected temperatures?

a) 24°C
b) 25.3°C
c) 25.5°C
d) 26°C

A wind turbine generates 120 kWh of energy in 5 hours. If the generation rate remains constant, how much energy will it generate in 8 hours?

a) 180 kWh
b) 192 kWh
c) 200 kWh
d) 210 kWh

Date Literacy (10 Questions)

Which of the following best describes the purpose of data normalization?

a) To reduce the size of the dataset
b) To make data fit within a specific range or scale
c) To identify and remove outliers
d) To convert categorical data into numerical data

If the mean of a dataset is greater than the median, the distribution is likely to be:

a) Symmetrical
b) Uniform
c) Positively skewed
d) Negatively skewed

In a scatterplot showing the relationship between two variables, a point far from the rest of the data is called:

a) A correlation
b) A residual
c) A trendline
d) An outlier

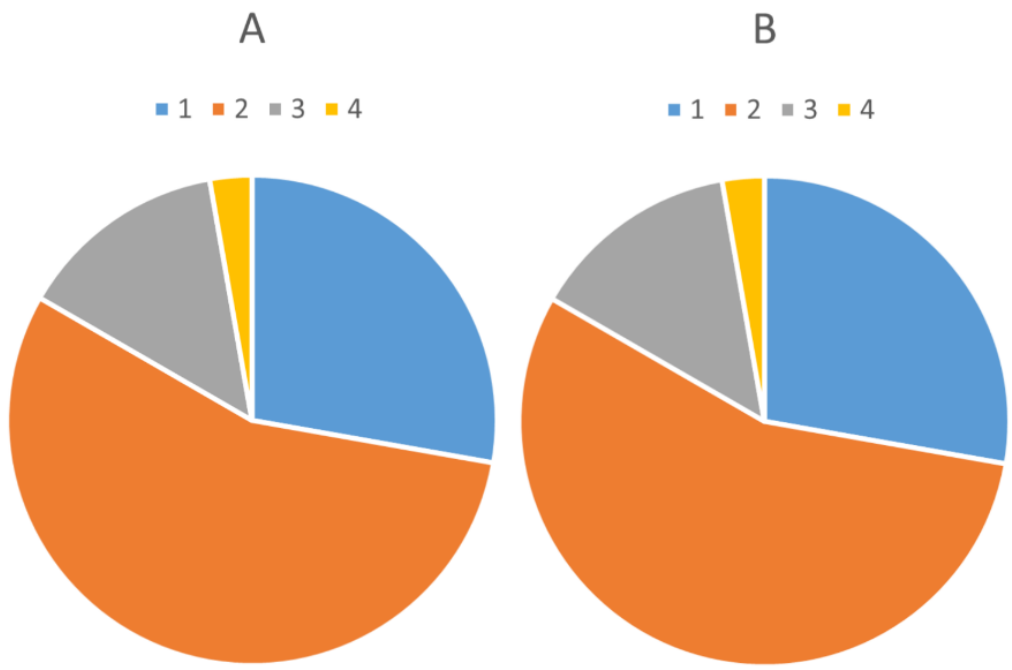
Which of the following methods is most appropriate for handling missing data in a dataset where values are missing at random?

a) Deleting rows with missing values
b) Filling with random numbers
c) Imputing using the mean or median
d) Leaving them as they are

A histogram is most useful for:

a) Displaying the relationship between two variables
b) Showing the distribution of a single variable
c) Analyzing categorical data
d) Comparing percentages in different categories

Consider the following two graphs from two different datasets i.e. A and B containing variables 1, 2, 3 and 4. Read the observations a, b, c, and d.

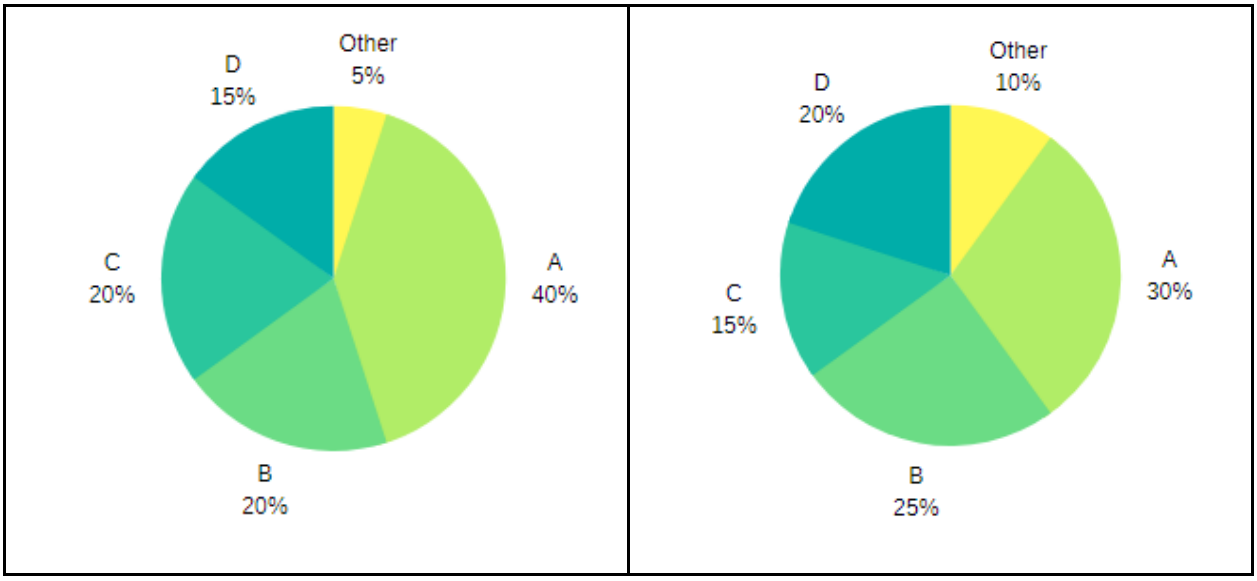


a. The two datasets could have different absolute values
b. The absolute value of variable 1 in both the datasets is same
c. The relative proportions of the data in both the datasets is the same
d. There is not enough information to arrive at any conclusions

Choose the option that is correct:

a) Both a and b are correct
b) Both b and c are correct
c) Both a and d are incorrect
d) Both b and d are incorrect

The two pie charts below show the percentage contribution of different energy sources (A, B, C, D and Others) to the total energy mix of a country in 2023 (left) and 2024 (right). Total energy output for 2023 = 150 TWh, Total energy output for 2024 = 375 TWh



Select the correct statement:

a) Energy source D produced 22.5 TWh in 2023 and 80 TWh in 2024
b) Energy source C produced 30 TWh in 2023 and 55.25 TWh in 2024
c) Energy source B produced 30 Twh in 2023 and 89.75 TWh in 2024
d) Energy source A produced 60 TWh in 2023 and 112.5 TWh in 2024

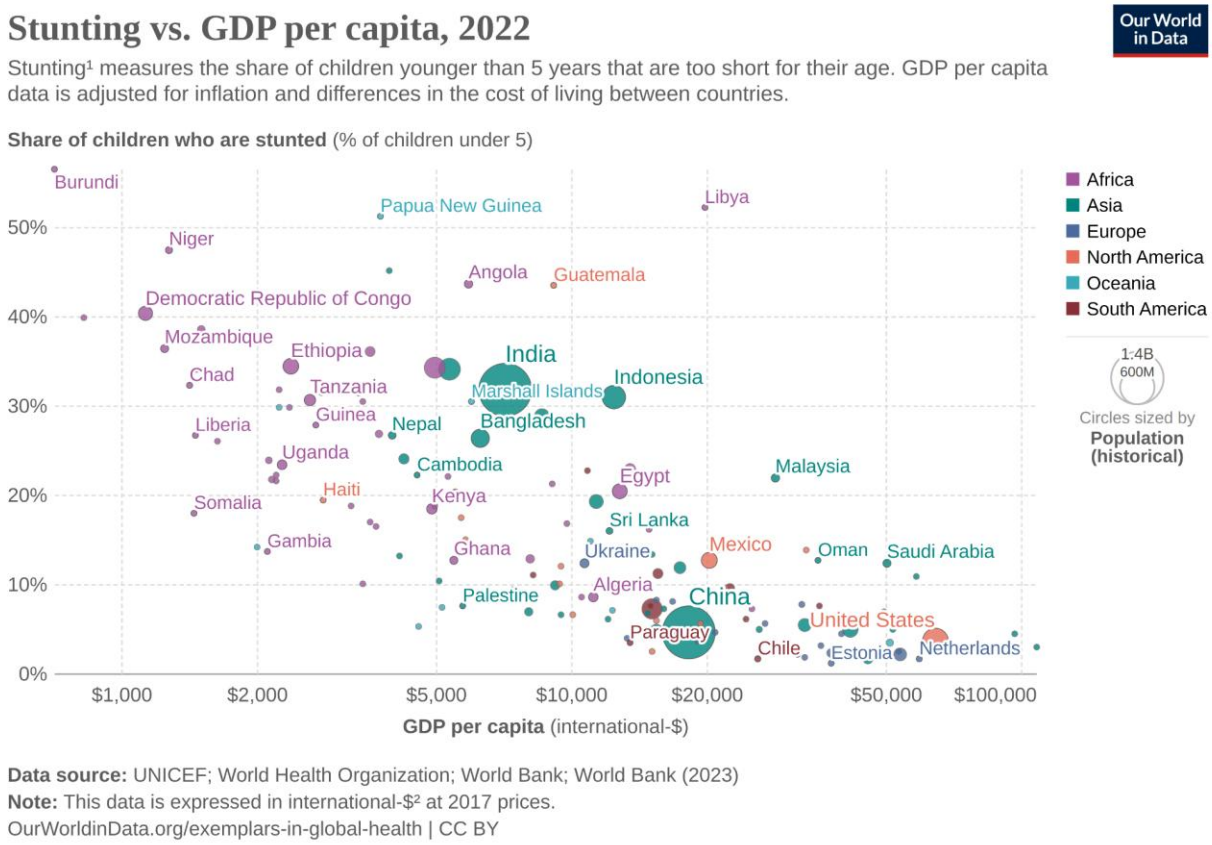
If each energy source increases its contribution to the total energy mix by 10%, what is the percentage growth of the total energy output of the country?

a) 10%
b) 20%
c) 30%
d) 8%

If the total energy output of the country is doubled for both 2023 and 2024, what would be the ratio of the contribution of Energy Source D in 2024 to its contribution in 2023?

a) 2:1
b) 4:3
c) 15:8
d) 10:3

10. Read the following graph and choose the correct answer from below:



a) Although Libya is economically poorer than India, it has managed to keep its child stunting rate much lower.
b) Libya has experienced greater social and political turmoil compared to India over the last two decades.
c) Libya has a higher per capita GDP than India and its rate of child stunting is also higher compared to India.
d) Malaysia has a higher GDP per capita than Indonesia, it still couldn't manage to keep its child stunting rate much lower than Indonesia.

Assertion (A): Aluminium can be infinitely recycled without losing its quality.

Reason (R): Aluminium recycling involves melting the metal, which does not degrade its physical properties.

a) Both A and R are true, and R explains A
b) Both A and R are true, but R does not explain A.
c) A is true, but R is false.
d) A is false, but R is true.

Assertion (A): The increase in atmospheric carbon dioxide results in ocean acidification, negatively impacting marine ecosystems.

Reason (R): When carbon dioxide dissolves in seawater, it reacts with water to form sulfuric acid, which lowers the ocean's pH and dissolves marine organisms' shells.

a) Both A and R are true, and R explains A.
b) Both A and R are true, but R does not explain A.
c) A is true, but R is false.
d) A is false, but R is true.

Assertion (A): Climate sensitivity is primarily influenced by cloud albedo feedback.

Reason (R): Cloud albedo feedback increases the absorption of infrared radiation, trapping more heat in the atmosphere and raising global temperatures.

a) Both A and R are true, and R explains A.
b) Both A and R are true, but R does not explain A.

c) A is true, but R is false.
d) A is false, but R is true.

What is the best definition of sustainability based on the given description?

a) A method of conserving resources to ensure economic growth.
b) An approach to life that causes the least possible harm to the natural world or living organisms.
c) A system designed to exploit natural resources for human benefit.
d) A policy aimed at supporting industrial development regardless of environmental impact.

Which of the following best represents the **three pillars of sustainability**?

a) Economic growth, technological innovation, and resource extraction.
b) Environmental conservation, economic growth, and social equity.
c) Renewable energy, carbon trading, and climate action.
d) Environmental policies, financial investments, and industrial development.

What are the Sustainable Development Goals (SDGs)?

1. A set of goals aimed at addressing the world's most important challenges by 2030.
2. Goals focused solely on economic growth and industrialization.
3. Goals related to ending poverty, providing education, protecting life, addressing inequalities, and tackling climate change.
4. A framework to support unlimited exploitation of natural resources.

Choose the best option:

a) Both 1 and 2
b) only 4
c) only 3
d) Both 1 and 3

Choose the options that correctly differentiate between ESG and sustainability?

1. ESG stands for environment, social, and governance and is specific and measurable.
2. Sustainability is a broader and less tangible concept compared to ESG.
3. ESG focuses only on environmental issues, while sustainability includes social and economic factors.
4. Companies use ESG criteria to make measurable decisions to become greener, more ethical, and better governed.

a) 1 and 2
b) 2 and 3
c) 1, 3 and 4
d) 1, 2 and 4

Which of the following correctly matches the climate agreements with their descriptions?

Name	Description
1. Paris Agreement	A. Treaty to phase out substances depleting the ozone layer.

2.	Kyoto Protocol	B. Agreement from 2009 focusing on climate financing and emissions targets.
3.	Montreal Protocol	C. Agreement to limit global warming to below 2°C.
4.	Copenhagen Accord	D. First treaty with binding emissions reduction targets.
5.	Glasgow Climate Pact	E. Pact from COP26 focusing on climate action commitments.

a) 1-B, 2-A, 3-C, 4-D, 5-E
b) 1-A, 2-C, 3-D, 4-E, 5-B
c) 1-C, 2-D, 3-A, 4-B, 5-E
d) 1-E, 2-B, 3-A, 4-C, 5-D

Which of the following correctly matches the sustainability-related terms with their descriptions?

1. Natural Capital	A. Evaluation of environmental impacts before project approval.
2. Social License to Operate (SLO)	B. Approval from communities for ethical practices.
3. Just Transition	C. Capital comprising natural resources and ecosystems.

4. Integrated Water Resources Management (IWRM)	D. Sustainable management of water resources.
5. Sustainable Supply Chain Management	E. Fair transformation for workers during sustainability shifts.
6. Carbon Sequestration	F. Agricultural practices that integrate ecological principles.
7. Environmental Impact Assessment (EIA)	G. Capturing atmospheric carbon to combat climate change.
8. Agroecology	H. Managing supply chains to enhance sustainability.

a) 1-D, 2-B, 3-F, 4-C, 5-H, 6-G, 7-A, 8-E
b) 1-C, 2-A, 3-B, 4-D, 5-F, 6-E, 7-G, 8-H
c) 1-C, 2-B, 3-E, 4-D, 5-H, 6-G, 7-A, 8-F
d) 1-F, 2-E, 3-C, 4-B, 5-D, 6-H, 7-G, 8-A

Which of the following correctly matches the Sustainable Development Goals (SDGs) with their corresponding goals?

SDG Name	Goal

1.	SDG 1	A. Life Below Water
2.	SDG 6	B. Affordable and Clean Energy
3.	SDG 7	C. Clean Water and Sanitation
4.	SDG 11	D. Climate Action
5.	SDG 13	E. Sustainable Cities and Communities
6.	SDG 14	F. No Poverty
7.	SDG 15	G. Life on Land
8.	SDG 17	H. Partnerships for the Goals

a) 1-A, 2-F, 3-C, 4-B, 5-D, 6-G, 7-H, 8-E
b) 1-D, 2-E, 3-B, 4-F, 5-C, 6-G, 7-A, 8-H
c) 1-F, 2-C, 3-B, 4-E, 5-D, 6-A, 7-G, 8-H
d) 1-G, 2-A, 3-D, 4-E, 5-F, 6-H, 7-C, 8-B

Question 11

Which of the following correctly matches the climate-related terms with their descriptions?

Terms	Descriptions
1. Radiative forcing	A. A system for trading carbon emission allowances to reduce industrial carbon footprints
2. Carbon sequestration	B. The change in energy balance in the Earth's atmosphere due to greenhouse gases
3. Cap-and-trade system	C. A scientific body that assesses climate change and provides global policymakers with regular reports.
4. IPCC (Intergovernmental Panel on Climate Change)	D. The process of capturing and storing atmospheric CO2 to mitigate climate change

a) 1-B, 2-D, 3-A, 4-C
b) 1-D, 2-B, 3-C, 4-A
c) 1-A, 2-C, 3-B, 4-D
d) 1-C, 2-A, 3-D, 4-B

India's Panchamrit strategy, announced at COP26, includes multiple commitments. Which of the following is NOT one of the five elements of this strategy?

a) Installing 500 GW of non-fossil fuel energy capacity by 2030
b) Reducing total greenhouse gas emissions by 30% by 2035
c) Meeting 50% of electricity needs from renewable energy sources by 2030
d) Reducing carbon emissions by 1 billion tonnes by 2030

Which of the following best explains why methane (CH_4) is a more potent greenhouse gas than carbon dioxide (CO_2) in the short term?

a) Methane has a higher atmospheric concentration than CO_2.
b) Methane has a higher global warming potential (GWP) over a 20-year timescale.
c) Methane absorbs infrared radiation across a broader range of wavelengths than CO_2.
d) Methane has a longer atmospheric lifetime than CO_2.

Which process contributes the most to anthropogenic nitrous oxide (N_2O) emissions globally?

a. Fossil fuel combustion
b. Industrial chemical production
c. Agricultural soil management
d. Biomass burning

The radiative forcing of a greenhouse gas is determined by several factors. Which of the following contributes the most to the radiative forcing of CO_2 in the modern era?

a. The rate at which CO_2 is absorbed by the ocean
b. The logarithmic relationship between CO_2 concentration and forcing
c. The residence time of CO_2 in the atmosphere
d. The ability of CO_2 to absorb shortwave solar radiation

The Earth's carbon-climate feedback mechanisms amplify global warming through several processes. Which of the following is an example of a positive carbon-climate feedback?

a. Increased vegetation growth leading to higher carbon sequestration
b. Permafrost thawing leading to methane release
c. Higher CO_2 levels enhancing ocean alkalinity and increasing CO_2 uptake
d. Increased oceanic CO_2 dissolution with rising temperatures

Which of the following statements about greenhouse gas emissions and their impact on ocean chemistry is correct?

a. Increased CO_2 levels in the atmosphere cause ocean alkalinity to rise, reducing acidification.
b. The absorption of CO_2 by oceans leads to a decrease in carbonate ion concentration, threatening marine calcifiers.
c. Methane (CH_4) emissions contribute significantly to ocean acidification.

d. The ocean has an unlimited capacity to absorb atmospheric CO_2 without altering its pH.

Which of the following statements best describes India's Net Zero target under its Long-Term Low Emissions Development Strategy (LT-LEDS) submitted to the UNFCCC?

a. India aims to achieve Net Zero carbon emissions by 2047 to mark 100 years of independence.
b. India has committed to achieving Net Zero by 2070 while ensuring energy security and equity.
c. India has pledged to achieve Net Zero by 2060 in alignment with China's commitment.
d. India's Net Zero target is conditional upon financial and technological support from developed nations, with no specific timeline.

According to India's updated Nationally Determined Contribution (NDC) submitted in 2022, what is the targeted reduction in emissions intensity of GDP by 2030 compared to 2005 levels?

a. 33-35%
b. 40-42%
c. 45%
d. 50%

Which of the following policies or initiatives is NOT directly aligned with India's Net Zero pathway?

a. Green Hydrogen Mission
b. Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME)
c. Perform, Achieve, and Trade (PAT) Scheme
d. National Adaptation Fund for Climate Change (NAFCC)

Quantitative Skills Questions (20 Questions)

A researcher conducts an experiment where the probability of event A occurring is 0.4 and the probability of event B occurring is 0.3. If A and B are independent, what is the probability that neither A nor B occurs?

a) 0.12
b) 0.42
c) 0.52
d) 0.58

If X is a random variable with E(X)=5 and Var(X)=9, what is Var(3X+4)?

a) 9
b) 27
c) 81
d) 36

Which of the following statements about the Central Limit Theorem (CLT) is **false**?

a) The CLT states that the distribution of the sample mean approaches normality as the sample size increases.
b) The CLT applies regardless of the distribution of the population.
c) The CLT holds only when the population distribution is normal.
d) The variance of the sample mean decreases as the sample size increases.

Which of the following is **not** a valid interpretation of a correlation coefficient $r=-0.9$ between two variables X and Y?

a) X and Y have a strong inverse relationship.
b) As X increases, Y tends to decrease.
c) The relationship between X and Y is causal.
d) A linear model would be a good fit for the data.

A hypothesis test is conducted at a significance level of 5% ($\alpha=0.05$). If the p-value of the test is 0.03, what is the most appropriate conclusion?

a) Fail to reject the null hypothesis.
b) Reject the null hypothesis.
c) Increase the sample size to confirm the result.
d) The test is inconclusive.

A dataset consists of the values: 2, 3, 5, 5, 7, 10, 15. What is the median of the dataset?

a) 5
b) 6
c) 7
d) 5.5

Which of the following transformations does **not** change the standard deviation of a dataset?

a) Multiplying each value by 2
b) Adding 10 to each value
c) Squaring each value
d) Dividing each value by 2

A dataset has a first quartile (Q1) of 20, a third quartile (Q3) of 50, and an interquartile range (IQR) of 30. Which of the following values would be considered a mild outlier?

a) 75
b) 70
c) 65
d) 60

A distribution has a mean of 50, a median of 60, and a mode of 70. What can be inferred about the shape of the distribution?

a) Symmetric
b) Positively skewed
c) Negatively skewed
d) Uniform distribution

Two datasets have the following statistics:

- Dataset A: Mean = 100, Standard Deviation = 10
- Dataset B: Mean = 50, Standard Deviation = 8

Which dataset has a higher relative dispersion in terms of coefficient of variation (CV)?

a) Dataset A
b) Dataset B
c) Both have the same CV
d) Cannot be determined

A product originally priced at ₹5000 is first discounted by 20% and then the discounted price is further reduced by 10%. What is the final price?

a) ₹3400
b) ₹3600
c) ₹3500
d) ₹4000

If x satisfies the equation $x^2 - 6x + 8 = 0$, what is the sum of the reciprocals of its roots?

a) ¾
b) 2/3
c) 4/5
d) 1/2

A fair die is rolled twice. What is the probability that the sum of the numbers rolled is at least 10?

a) 1 / 6
b) 1 / 21
c) 1 / 4
d) 1 / 9

Find the next number in the sequence: **3, 7, 15, 31, 63, ?**

a) 127
b) 126
c) 130
d) 124

If $\log_2 x=5$, what is the value of x?

a) 25
b) 32
c) 64
d) 10

A train 200 m long crosses a bridge of length 400 m in 30 seconds. What is the speed of the train in m/s?

a) 15 m/s
b) 20 m/s
c) 25 m/s
d) 10 m/s

The average of 5 numbers is **20**. If one number is removed and the new average becomes **18**, what is the number that was removed?

a) 25
b) 28
c) 30
d) 32

A rectangle has a length 3 times its width. If its perimeter is 48 cm, what is its area?

a) 108 cm^2
b) 96 cm^2
c) 120 cm^2
d) 144 cm^2

Which number does **not** belong in the series? **1, 4, 9, 16, 25, 37, 49**

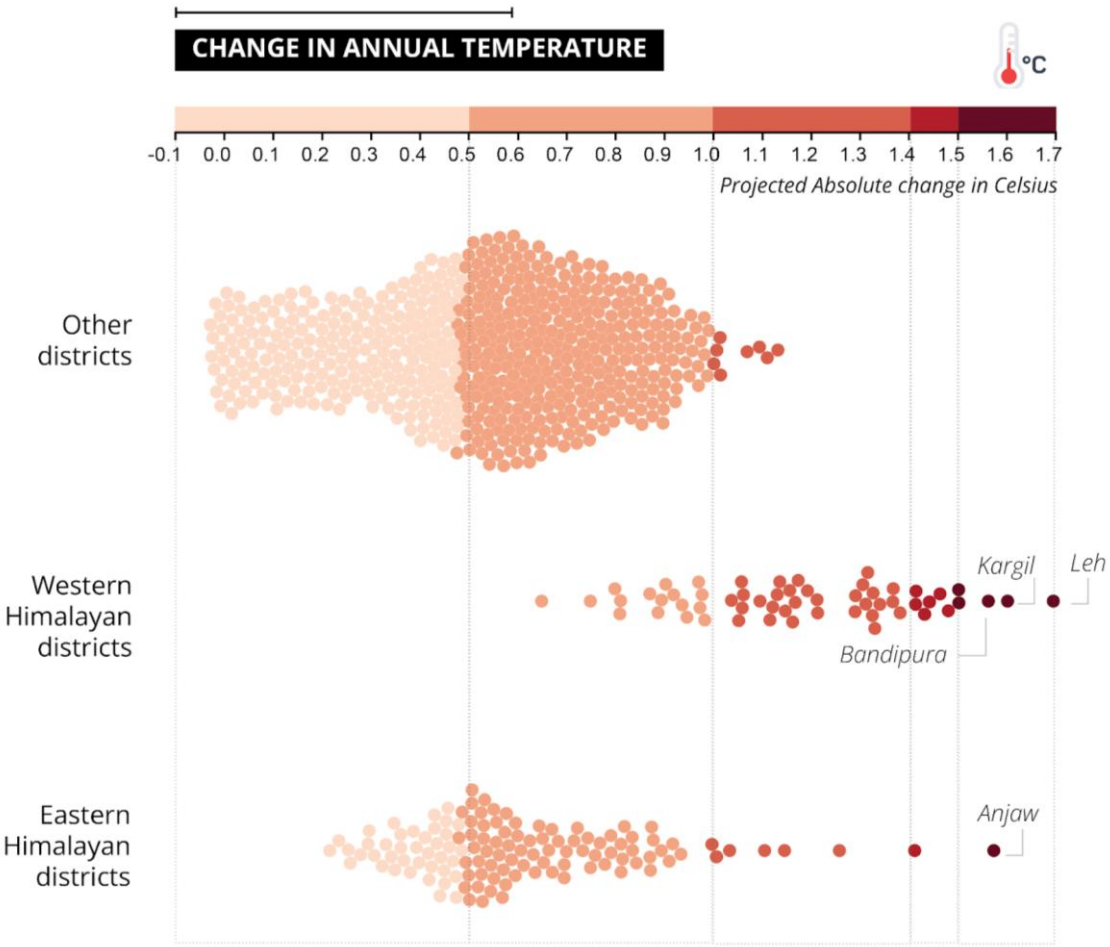
a) 9
b) 25
c) 37
d) 49

A mixture contains milk and water in the ratio 5:2. If 14 liters of water are added, the new ratio becomes 5:4. What was the original quantity of milk?

a) 30 litres
b) 28 litres
c) 35 litres
d) 25 litres

Data Literacy Questions (10 Questions)

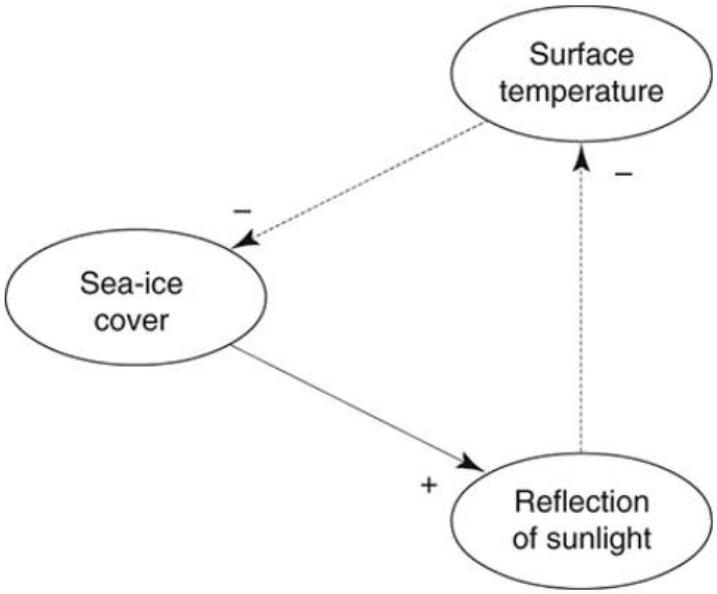
The following chart shows the projected changes in Annual Temperature for all the Indian districts under a certain IPCC scenario (SSP245). Read the chart and answer the following question:



Which of the following statements is NOT correct

a) The number of districts in the Western Himalayas expected to experience an annual temperature rise of 1.4°C or more is higher than in the rest of India.
b) Himalayan districts are projected to witness the most significant increases in annual temperature compared to other regions of the country.
c) The number of districts in the Eastern Himalayas projected to experience an annual temperature increase of 1°C or more is approximately half that of the Western Himalayan districts.
d) All districts in the Western Himalayas will experience at least a 0.5°C rise in annual temperature.

The following chart shows a causal-loop diagram of surface temperature, sea-ice cover and reflection of sunlight. Choose the correct statement from below.



a) Increasing surface temperature will increase the sea-ice cover and hence increase the reflection of sunlight.
b) Increasing reflection of sunlight with increase the temperature and hence decrease the sea-ice cover.
c) Increasing surface temperature will decrease the sea-ice cover and hence decrease the reflection of sunlight.
d) Decreasing surface temperature will decrease the sea-ice cover and hence decrease the reflection of sunlight.

Which of the following best describes the purpose of data normalization?

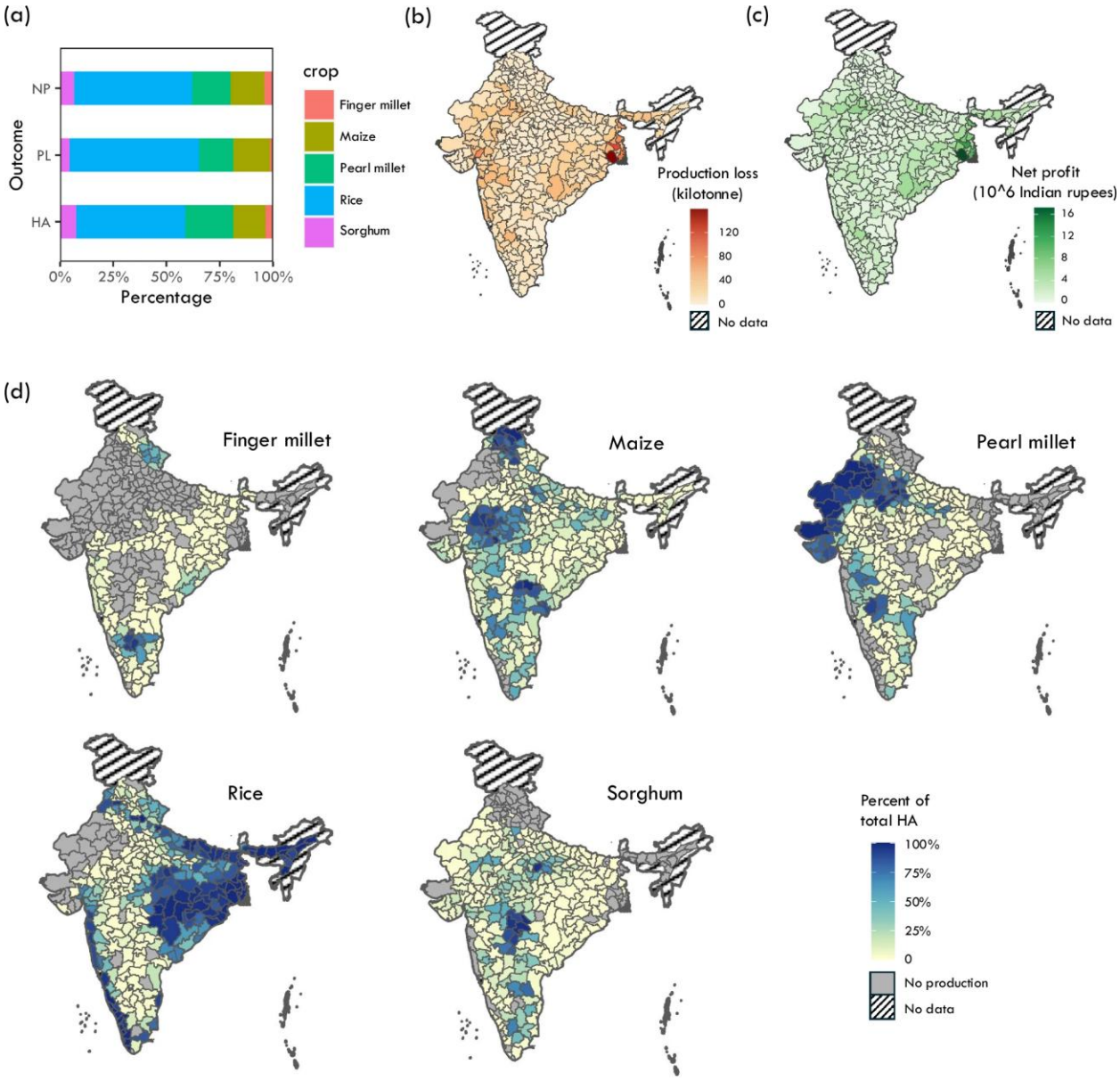
a) To reduce the size of the dataset
b) To make data fit within a specific range or scale
c) To identify and remove outliers
d) To convert categorical data into numerical data

In a scatterplot showing the relationship between two variables, a point far from the rest of the data is called:

a) A correlation
b) A residual
c) A trendline
d) An outlier

Which of the following methods is most appropriate for handling missing data in a dataset where values are missing at random?

a) Deleting rows with missing values
b) Filling with random numbers
c) Imputing using the mean or median
d) Leaving them as they are



The image presents data related to crop production and losses in India, focusing on five specific crops: finger millet, maize, pearl millet, rice, and sorghum. It includes the following figures:

(a) Stacked Bar Chart: Shows the percentage of different crops in three categories: NP (likely "Not Planted" or "Negative Production"), PL (likely "Production Loss"), and HA (likely "Harvested Area").

(b) Map of India (Production Loss): Displays production loss in kilotonnes across different regions of India using a color gradient.

(c) Map of India (Net Profit): Shows net profit in 10^6 Indian rupees across different regions of India using a color gradient.

(d) Maps of India (Harvested Area Percentage): Shows the percentage of total harvested area for each of the five crops across different regions of India using a color gradient.

Based on the stacked bar chart (a), which crop shows the highest percentage in the 'Harvested Area' (HA) category?

a) Finger millet
b) Maize
c) Rice
d) Sorghum

According to the production loss map (b), which region of India appears to have experienced the highest production loss in kilotonnes?

a) Northern India
b) Southern India
c) Eastern India
d) Central India

In the net profit map (c), which color gradient indicates the highest net profit in 10^6 Indian rupees?

a) Dark green
b) Light green
c) Orange
d) Red

Considering the harvested area percentage maps (d), which crop appears to have the most widespread cultivation (highest percentage of total HA) across India?

a) Finger millet
b) Maize
c) Pearl millet
d) Rice

Which of the following statements is NOT supported by the information presented in the maps?

a) Regions with high production loss generally show lower net profit.
b) Rice cultivation is concentrated in specific areas of India.
c) Finger millet has the highest net profit among all crops.
d) Some regions in India have no data for both production loss and net profit.