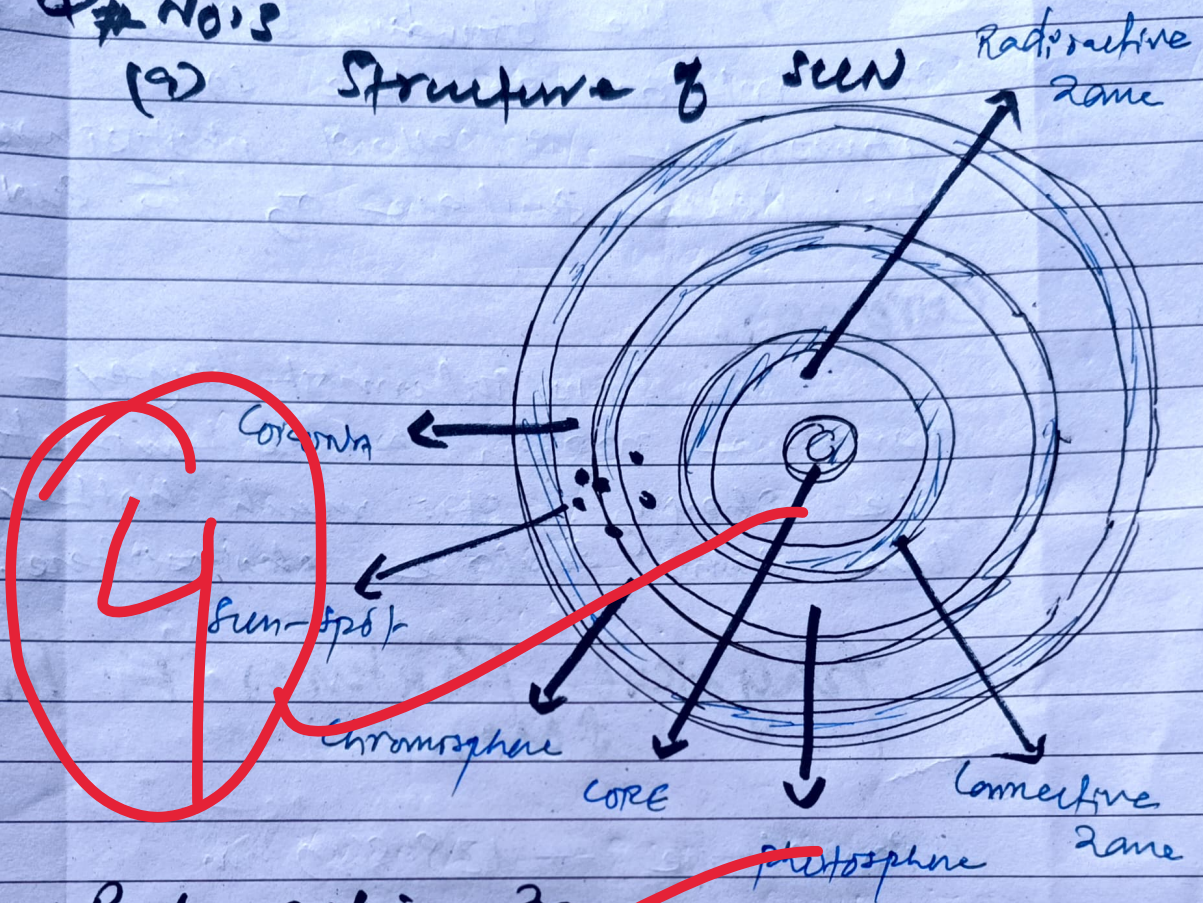


Section I

Q. No. 15
(9)

Structure of sun

~~Radio-active zone.~~

~~This zone is between the core and connective zone and roughly 10% of sun's energy.~~

~~Connective zone.~~

~~The layer of the sun is above the radiative zone. The temperature at the bottom of connective zone is above 2 million degree Centigrade.~~

Photosphere::

The boundary between the sun's interior and the solar atmosphere is called photosphere. It is visible surface of the sun.

Corona::

The sun's outermost layer - transition region, where temperature rise sharply. It is much hotter than sun's surface photosphere.

Physical Features of the Sun.

Diameter — 1381840 km

Mass — 1.895×10^{30} kg

Density —

Sun is composed of 74% H_2 , 24% Helium and 2% heavy metals on the basis of percentage of total mass.

Temperature at the core of the sun 15 million $^{\circ}C$ OR 27m F.
and temperature at the surface of the sun — 5500 $^{\circ}C$.

Q# 03
(R)

Tsunami.

The word Tsunami is derived from two words.

Tsu — Harbor
Nami — wave

Tsunami is a Japanese word which defines — large sea wave, which is caused by an under water earth — quake or volcanic eruption.

Characteristics

Wavelength — 200 — 100 km
cross — deep ocean.
Height up to — 30 meter

Causes:-

Earthquake
Landslides
Volcanic Eruption
Nuclear Experiment.

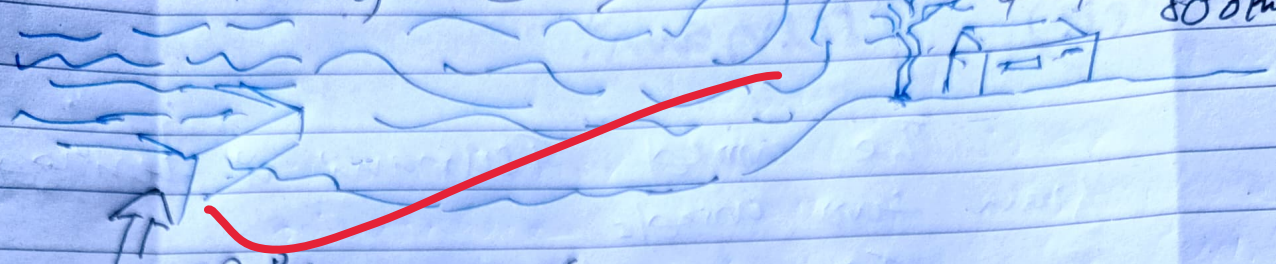
(i)

(ii) Large waves began

Date

(iii) Tsunami moved at speed of 800 km/h

Tsunami formed



The clicks occurred in a region where two of the tectonic plates push together

Events:

(i) North-Pacific Coast - Japan
 - 11 March, 2011.
 Claimed 1800 lives
 - magnitude - 9.0

(ii) Sumatra, Indonesia
 - magnitude
 - 26 Dec, 2004.

(iii) Alaska (landslides)
 - 1988

Q. 03

(c)

Environmental Pollution

Definition:-

pollution is derived from Latin word *polluere*, means

↳ *polluere*

to contaminate any features of environment.

Environmental pollution is defined as the unfavourable alteration of our surroundings.

It changes the quality of air, water and land.

Types.

1) Air pollution

2) Water pollution

3) Land - pollution

According to form in which they persist after release into the environment.

primary - pollutants - such as CO_2 , CO and SO_2

secondary - pollutants

Formed when react with primary pollutants.

H_2SO_4 and O_3 .

Some Harmful Effects.

(i) Air-pollution.

Causes:— Emissions from industries, vehicles, burning fuel.

Effects:

- Respiratory Issues
- Acid-Rain
- Climate change
- Ozone-layer depletion.

(ii) Water pollution.

Causes:— Industrial discharge, agricultural runoff, plastic waste.

Effects:

Damage Aquatic Ecosystem
Unsafe drinking water
Disease like cholera.

(iii) Land pollution.

Causes:— pesticides, deforestation

Effects:

Reduced Soil Fertility
Harmful crops
Ground-water Contaminants

Measures to Curb Pollution

i) Waste-Management:-

- promote recycling and composting
- adopting 3R principles
Reduce
Reuse and Recycling Methods

ii) Afforestation:-

- plant more trees
- Improve air-quality
- combat soil erosion.

iii) Enforce Regulation:-

Implement strict laws for industries to control emissions and waste disposal.

iv) public Awareness:-

- Educate people on the importance of reducing pollution
- Encourage community-led clean-up campaigns.

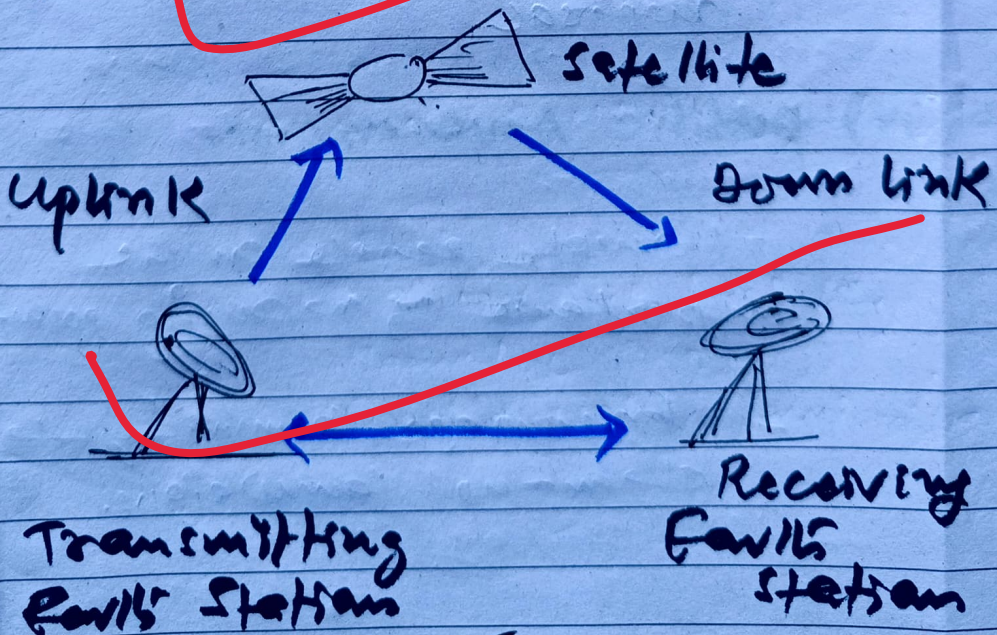
Q.01

Wireless Communication

Wireless Communication is the transmission of information over a distance without using wires or cables. Instead, it uses electromagnetic waves such as Radio, Infrared, Micro-wave signals to transfer data between links.

Working of Satellite.

A satellite acts as a relay station in wireless communication, receiving signals from a transmitter on Earth and forwarding them to a receiver at another location.



Q#05 CEU

Eukaryotic vs prokaryotic

Cells are often divided into particular groups based on major characteristics.

Separate cells into two groups: prokaryotic and Eukaryotic cells.

prokaryotic Cell.

prokaryotic cells are fundamentally different in their internal organization from eukaryotic cells.

prokaryotic cell, which includes all bacteria and archaea, are the simplest cellular organisms.

Eukaryotic Cell.

Eukaryotic cells contain a membrane-bound nucleus and numerous membrane-enclosed organelles, such as mitochondria, lysosomes, Golgi apparatus not found in prokaryotic cells.

Differences.

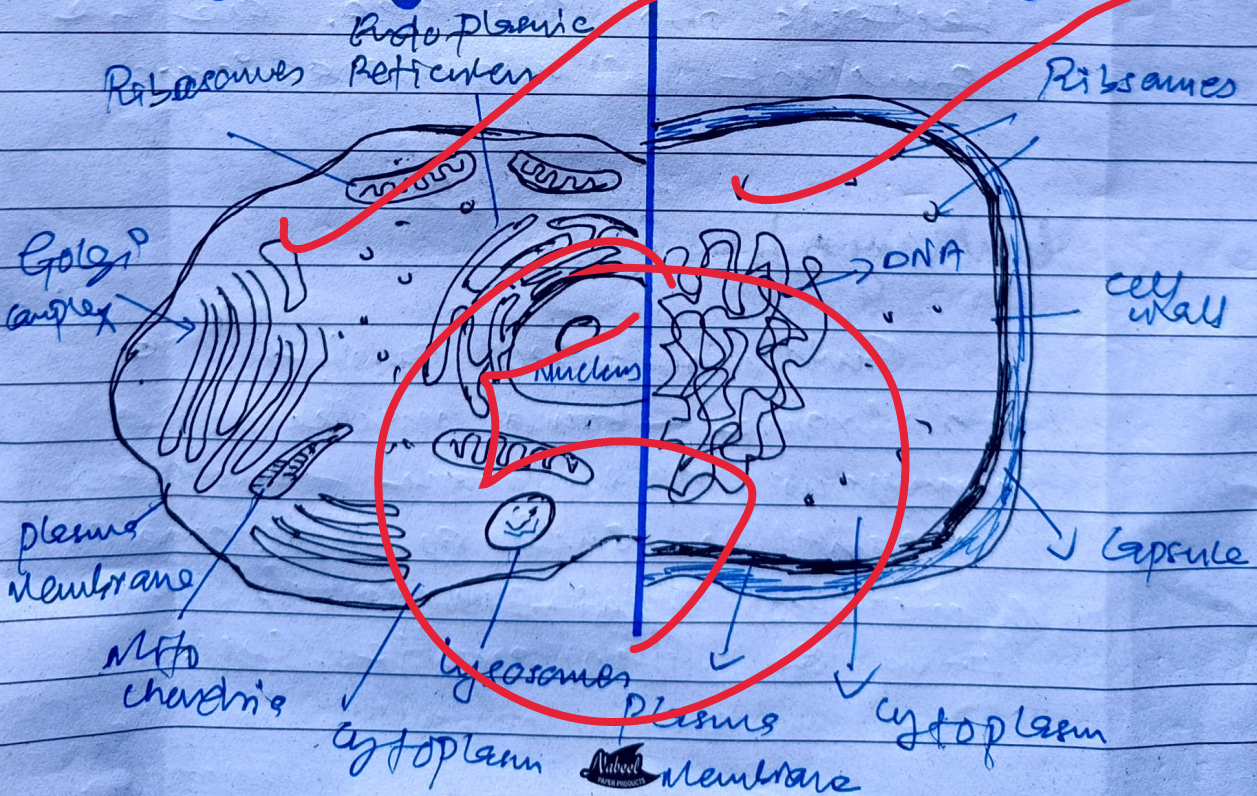
Prokaryotic

Eukaryotic

Definition	Cell without Nucleus	Cell with's Nucleus.
Size	Small 1-10 μm	Larger 10-100 μm
Nucleus	Absent	present
Organelles	NO membrane bound organelles	Membrane bound organelles, ER, Golgi
Cell-Division	Binary Fission	Mitosis and Meiosis
Structure & function	Free floating	Enclosed within nucleus.
DNA	in cytoplasm	
Ribosomes	Small (70s)	Larger (80s)
Examples	Bacteria's and Archaeas	plants, animals, Fungi, protists.

Eukaryotic

Prokaryotic



Q. No. 5
(B)

Global Warming

Global warming refers to the gradual increase in the Earth's average temperature due to accumulation of green house-gases (GHGs) like CO_2 , CH_4 and N_2O in the atmosphere.

These gases trap heat from the sun, leading to climate change.

Causes:-

- ⇒ ~~Burning of Fossil-Fuel~~
Release CO_2 from coal.
- ⇒ ~~Reforestation~~
Reduce carbon sequestration by trees.
- ⇒ ~~Industrial activities.~~
Burnt GHGs like CH_4 and N_2O .
- ⇒ ~~Agriculture.~~
Livestock and paddies release CH_4 .

Effects:-

- ~~Rising sea level~~
- ~~Extreme weather events~~
- ~~Loss of biodiversity and habitats - destruction~~
- ~~Impact on agriculture and water resources~~

Kyoto Protocol.

The Kyoto - protocol is an international treaty adopted in 1997 in Kyoto - Japan under the United Nations Framework Convention on Climate Change (UNFCCC).

It aims to reduce greenhouse-gases (GHGs) emissions and combat global-warming.

Features:-

- i) Binding Targets:- Developed nations committed to reduce (GHG) emissions by an average of 5% below 1990 levels during the first commitment period (2008-2012).
- ii) Flexible Mechanisms:-
 - 1) Carbon Trading:- Countries can trade emission allowances.
 - ii) Clean Development Mechanism (CDM). Investment in emission-reduction projects in developing countries
 - iii) Joint Implementation:- Collaboration between developed countries on emission reduction projects

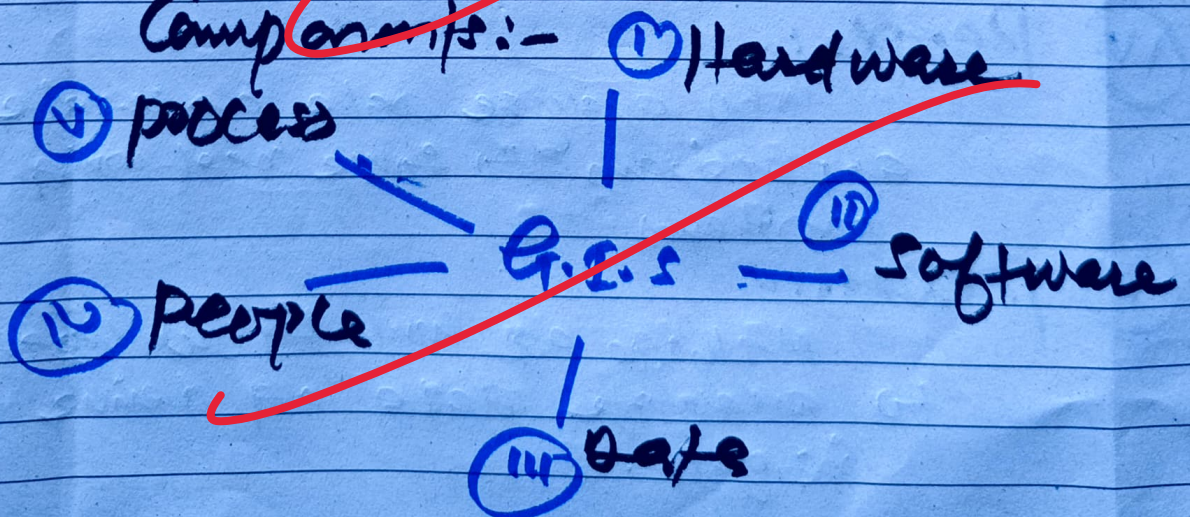
- iii) Second, Tenth Month period -
 Extended by the 20th
 Agreement (2013-2020), though
 not necessarily satisfied.

Q #05
 (C)

G.I.S

A Geographic Information System (GIS) is a framework for gathering, managing, analyzing and visualizing spatial data, and geographic data as well. It integrates data from various sources to provide insights into patterns, relationships, and trends across different geographical locations.

Components:-



(i) Hardware:-

Including Computer, GPS and other tools used for data storage, analysis and mapping.

(ii) Software:-

GIS like ArcGIS, QGIS or Google Earths for map creation.

(iii) Data:-

Comprising Spatial data (Location Based)

Attribute data

(Descriptive Information)

a) Raster data :-

Images (Satellite photos)

b) Vector data :-

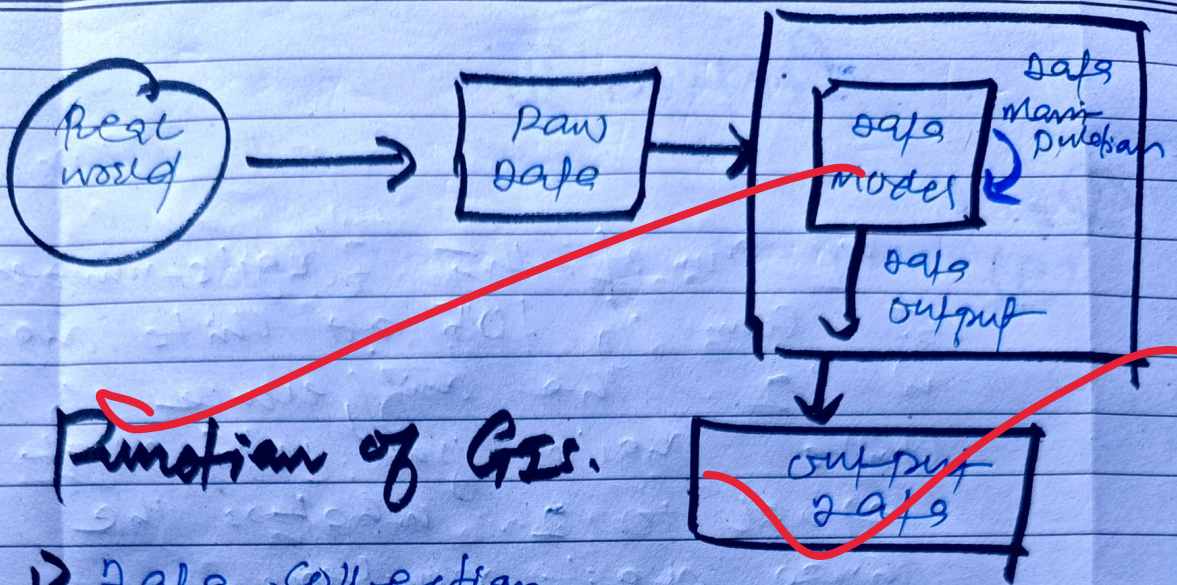
points, lines, and polygons representing features like cities, roads and boundaries.

(iv) People:-

who analyze data and create applications to solve real-world problems.

(v) Process:-

Methods and work-flow used to analyze data and derive insights.



Function of GIS.

- I) Data-collection
- II) Data-storage
- III) Data-analysis
- IV) visualization
- V) Decision-making

Application:-

- Urban-planning
- Environmental Management
- Disaster Management
- Transportation
- public health
- Agriculture

Write neatly

Section II

Q 206

(9)

If sum of the 3 digit's number is 15. Sum of 10th and units digits is 12. The difference of the units digits from 10th digit is equal to 2. What is the three digit number.

Three digit Number

$$\textcircled{i} A + B + C = 15$$

Hundreds
digit

Tens
digit

Unit digit

$$\textcircled{ii} B + C = 12$$

$$\textcircled{iii} B - C = 2$$

Now:

$$B - C = 2$$

$$B = C + 2$$

$$B + C = 12$$

$$C + 2 + C = 12$$

$$C = 5$$

$$\boxed{C = 5}$$

$$B = C + 2$$

$$B = 5 + 2 = 7$$

$$\boxed{B = 7}$$

we know that

$$A + B + C = 15$$

$$A + 7 + 5 = 15$$

$$A = 15 - 12$$

$$A = 3$$

$$\boxed{A = 3}$$

Three Digits Number.

375.

Q#06
(B)

Ratio of their slices - 2:3:4

Total slices - 18

weight of each slice - 40 gram

price of small size - 220

let

The Number of Small, Medium and Large slices.

$2x, 3x, 4x$

$$2x + 3x + 4x = 18$$

$$9x = 18$$

$$x = \frac{18}{9} = \boxed{x = 2}$$

Small — $2x = 2 \times 2 = 4$

Medium — $3x, 3 \times 2 = 6$

Large — $4x, 4 \times 2 = 8$

Weight:-

Small — $4 \times 40 = 160$ gram

Medium — $6 \times 40 = 240$ gram

Large — $8 \times 40 = 320$ gram.

Total weight:-

$$160 + 240 + 320 = 720 \text{ gm.}$$

Prices:-

Small — $\frac{320}{160} = 2$ per gram.

Medium — 40×2 cost per gram.

Medium — 40×2

480

Large — 320×2

640

Q76

(c) Diameter of circle is 6cm
Find circumference and area
of circle.

Solution

~~we know that~~

~~$$C = 2\pi r$$~~

$$\therefore D = 2r$$

~~$$A_{\text{circle}} = \pi r^2$$~~

~~Circumference = $2\pi r$~~

~~$$\Rightarrow 2 \times 3.14 \times 3$$~~

~~$$C = 18.84 \text{ cm}$$~~

~~$$A_{\text{circle}} = \pi r^2$$~~

~~$$\Rightarrow 3.14 \times (3)^2$$~~

~~$$\Rightarrow 3.14 \times 9$$~~

~~$$A = 28.27 \text{ cm}^2$$~~

Q706

(a) Identify the missing

i) 13, 24, 46, 90, 178 — — — ?

ii) 5, 6, 9, 14, 21 — — ?

i) 13, 24, 46, 90, 178

Solution:

$24 - 13 = 11$

$46 - 24 = 22$

$90 - 46 = 44$

$178 - 90 = 88$

The difference approximately
double each time

predict the next difference

$88 \times 2 = 176$

add this difference to the last
term, (178)

$178 + 176 = 354$

Q#06

(15)

ii) 5, 6, 9, 14, 21...?

Solution:

$$6 - 5 = 1$$

$$9 - 6 = 3$$

$$14 - 9 = 5$$

$$21 - 14 = 7$$

The difference increase by (+2)
each - time

So.

$$7 + 2 = 9$$

Add this difference to the
last term term (21)

Write neatly

Work on paper presentation and
time management

$$21 + 9 = 30$$

So, the missing term is 30.

Include diagrams and flowcharts
for competitive edge.

Discuss practical applications of
scientific concepts.

Show all steps and working for
calculations.

Use diagrams and graphs

Maths question method is correct
but its neat which makes bad
impression. Write neat and clean to
get full by full Mark's in maths

Q708.

(9)

Info:

Length of room = 15 ft
 width of the room = 60% of the length

$$\begin{aligned} \text{So, width of the room} &= 0.60 \times \text{length} \\ &= 0.60 \times 15 = 9 \text{ ft} \end{aligned}$$

Room's dimensions.

$$\begin{aligned} \text{length} &= 15 \text{ ft} \\ \text{width} &= 9 \text{ ft} \end{aligned}$$

Q708

(5)

We know that

$$\text{Hyp}^2 = \text{Roo}^2 + \text{Perp}^2$$

$$\text{Hyp}^2 = (48)^2 + (20)^2$$

$$\Rightarrow \sqrt{2304 + 400}$$

$$= \sqrt{2704}$$

$$\Rightarrow 52 \text{ ft}$$

So, if Keene had run straight to the water station, she would have run 52 ft.

Q. 08
(c)

$$\text{Average} = \frac{\text{Total}}{\text{No.}}$$

$$\text{Initial marks} = \text{Average} \times \text{No. of students}$$

$$\Rightarrow 52.15 \times 40$$

$$\Rightarrow 2086$$

Marks of one student were taken as instead of 85.

50/

$$\text{Corrected marks} = 2086 - 49 + 85$$

$$\Rightarrow 2122$$

$$\text{Corrected Average} = \frac{\text{Total marks}}{\text{No. of students}}$$

$$\Rightarrow \frac{2122}{40}$$

$$\Rightarrow 53.05$$

The corrected average marks of the class is

53.05.