MEGA

ResoFAST 2025

Resonance Future Achievers Scholarship Test

TEST PAPER

Duration
1 Hour

Currently Studying in
Class - VII

Max. Marks
160

Important Instructions to the Students

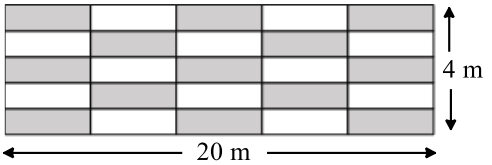
1. The question paper contains a total of **40 Multiple Choice Questions**, numbered from **Q1 to Q40**.
2. **Pattern & Marking Scheme of each section:**

Parts	Subject	No. of questions	Questions Range	Marks
Part-A	Physics	07	Q1 to Q7	28 M
Part-B	Chemistry	07	Q8 to Q14	28 M
Part-C	Biology	07	Q15 to Q21	28 M
Part-D	Mathematics	14	Q22 to Q35	56 M
Part-E	Mental Ability	05	Q36 to Q40	20 M
	Total	**40**	**Q1 to Q40**	**160 M**

3. Attempt all questions, each having only one correct answer.
4. Each question carries **4 marks**.
5. Candidates must ensure that the **OMR Sheet is not folded or damaged** in any way. Avoid making any **stray marks** on the OMR sheet. **Do not** write your **Roll Number** anywhere except in the designated space provided in the OMR Sheet.
6. The use of **white correction fluid** is **strictly prohibited** on the OMR Sheet.
7. The use of **blank papers, clipboards, log tables, slide rules, calculators, mobile phones**, or **any other electronic gadgets** is **strictly not permitted** inside the examination hall.
8. There is an empty page left at the end of this question paper for **rough work.**

PART A – PHYSICS

1. The Geometry Race Challenge!



Three friends, Ria, Siya, and Tina, divided a 20m × 4m rectangular track into 5 equal sections both lengthwise and breadthwise, creating a grid.

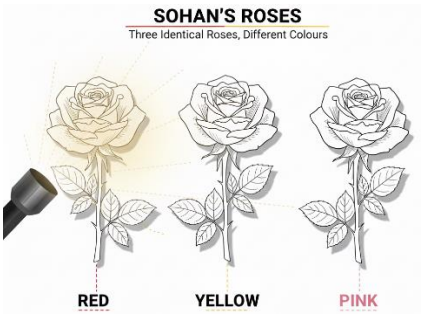
(i) What is the total distance covered by each runner on the largest possible track?

(ii) What is the length of the shortest path each runner runs on a smaller rectangle to return to the starting point?

(iii) What is the area of the largest rectangle in cm^2 ?

	i	ii	iii
(A)	48 m	9.6 m	800000 cm^2
(B)	47 m	11 m	80000 cm^2
(C)	46 m	12 m	8000 cm^2
(D)	48 m	13 m	800 cm^2

2. Decode the Shadow Secrets!



Sohan has three identical roses of different colours; red, yellow and pink. He shines a torch on the three roses one-by-one and gets a shadow on the wall in each case. Richa who is observing the shadows formed on the wall can:

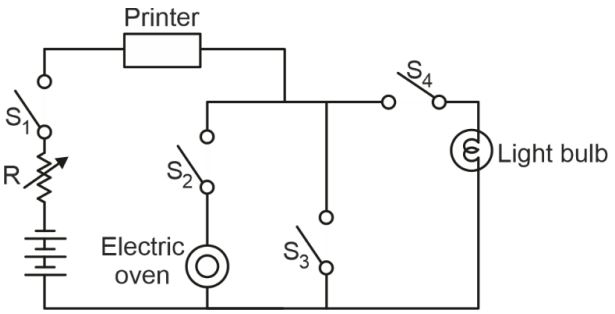
(A) Distinguish shadow of the red rose only

(B) Distinguish shadows of the red and yellow roses only

(C) Distinguish shadows of all the three roses

(D) Never distinguish the shadows of the three roses.

3. Switches ON... But Who Works?



The diagram shows a printer, an electric oven and a light bulb connected in parallel circuit with switches. Which of the following is **incorrect**?

(A) If S_1 and S_3 are closed then printer will work.

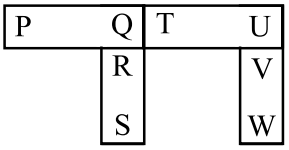
(B) If S_1 and S_3 are open while S_2 and S_4 are closed, then printer will not work but electric oven and light bulb will work.

(C) If S_1 and S_2 are closed but S_3 and S_4 are open, then only printer and electric oven will work.

(D) If S_1 and S_4 are closed but S_2 and S_3 are open, then only printer and light bulb will work

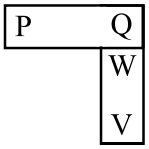
4. The Magnetic Pairing Riddle!

Study the given diagram that shows arrangement of four magnets.

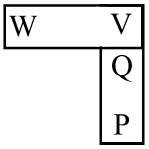


Which of the following is a possible arrangement of two of these magnets?

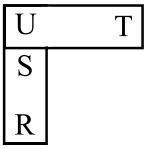
(A)



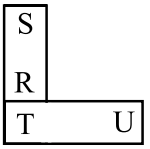
(B)



(C)

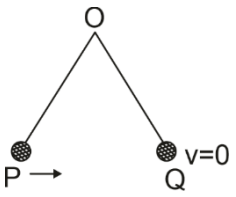


(D)



5. Swinging Through Time

The bob of a pendulum is released from point P and it comes to rest at point Q as shown in the given figure. The time taken by bob to move from point P to point Q is 0.8 second. The time taken by the same bob to make 14 oscillations is

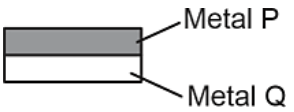


(A) 16 s (B) 22.4 s

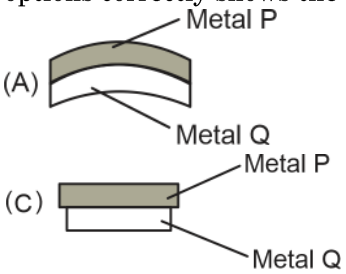
(C) 9.6 s (D) 8.0 s

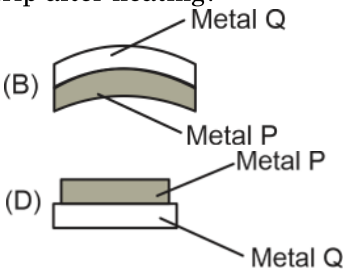
6. The Bimetallic Bend Mystery!

Metal strips **P** and **Q** are joined together to form a bimetallic strip as shown in the figure.



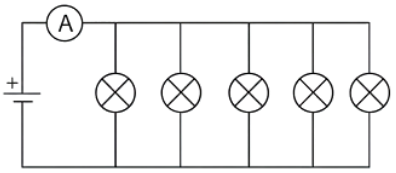
If metal **P** expands more than metal **Q** on heating, then which of the following options correctly shows the shape of bimetallic strip after heating?





7. When Two Lamps Die...

Five similar lamps are connected in parallel to a battery, and the ammeter measures the current. If the filament of two lamps breaks, what happens to the ammeter reading and the brightness of the remaining lamps? (ideal ammeter)

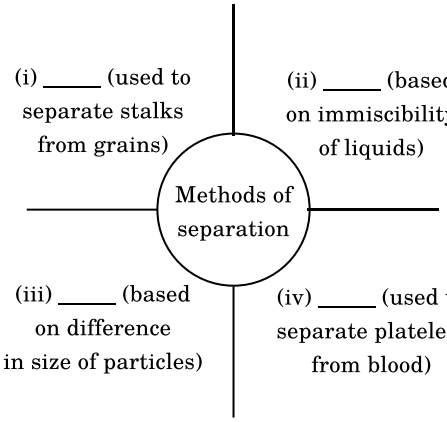


	Ammeter reading	Lamp brightness
(A)	Increases	Decreases
(B)	Decreases	Remains unchanged
(C)	Remains unchanged	Remains unchanged
(D)	Increases	Increases

PART B – CHEMISTRY

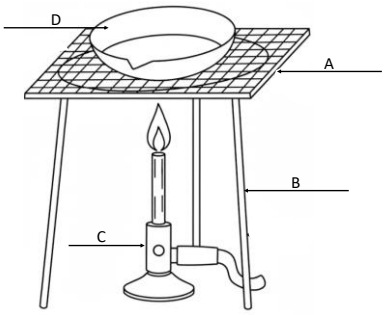
8. Masters of Mixtures

Fill in the blanks by selecting an appropriate option.



	(i)	(ii)	(iii)	(iv)
(A)	Threshing	Separating funnel	Sieving	Centrifugation
(B)	Winnowing	Filtration	Centrifugation	Distillation
(C)	Sieving	Threshing	Separating funnel	Threshing
(D)	Threshing	Separating funnel	Winnowing	Filtration

9. Apparatus Setup for Evaporation Process



Identify the apparatus components **A**, **B**, **C**, and **D** in the setup used for the evaporation of a liquid solution, based on the theory you have learned.

(A) **A-** Wire gauze, **B**-Tripod stand, **C**- Bunsen burner, **D**- Evaporation dish

(B) **A-** Wire gauze, **B**- Evaporation dish, **C**- Bunsen burner, **D**-Tripod stand

(C) **A-**Flask, **B**-Alcohol burner, **C**-Gas jet, **D**-Tripod

(D) **A-**Evaporation dish, **B**-Spirit lamp, **C**-Wire gauze, **D**-Gas control valve

10. Who Understands Rusting?

During a group discussion on the topic, "Rusting", Four students Neha, Kritika, Avantika and Sachin gave the following statements.

Neha: The salty water makes the process of rusting faster.

Kritika: The process of depositing a layer of carbon on iron is known as galvanisation.

Avantika: Applying a coat of paint on an iron article cannot prevent rusting.

Sachin: For rusting, the presence of both oxygen and water any form is essential.

The correct statements were given by

(A) Neha and Sachin (B) Sachin and Avantika

(C) Kritika and Avantika (D) Neha and Kritika

11. Guess the Sour Agents

A brief description about four substances **R**, **E**, **S** and **O** is given as:

R : Colourless in acidic solution

E : Main component of vitamin C

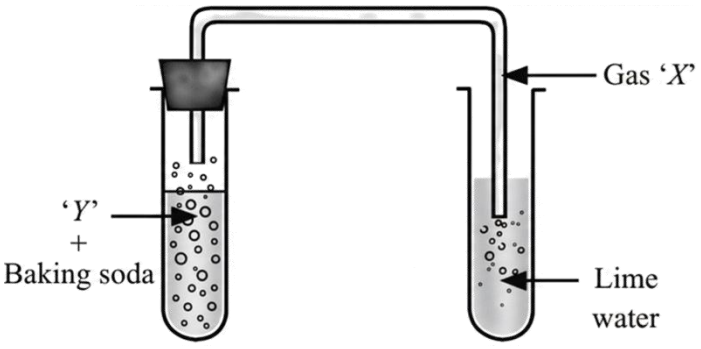
S : Used in lead storage batteries

O : Gives tamarind its sour taste

Which of the following best represents **R**, **E**, **S** and **O**?

	R	**E**	**S**	**O**
(A)	Methyl orange	Citric acid	Sulphuric acid	Tartaric acid
(B)	Phenolphthalein	Ascorbic acid	Sulphuric acid	Tartaric acid
(C)	Phenolphthalein	Citric acid	Hydrochloric acid	Ascorbic acid
(D)	Methyl orange	Ascorbic acid	Hydrochloric acid	Citric acid

12. Baking Soda's Bubble Test



Observe the following figure carefully and select the **incorrect** statements.

Statement C : Y must be an acid like acetic acid.

Statement H : Gas X is hydrogen and it turns lime water milky.

Statement E : The milkiness of lime water after passing gas X is due to the formation of calcium hydrogen carbonate, which is insoluble in water.

Statement M : The process involves a chemical change as only the colour and state of the original substances have changed.

(A) **C** and **E** only (B) **E** and **M** only (C) **H**, **E** and **M** only (D) **C** and **H** only

13. Identifying Fiber Sources and Processing Methods

Select the option that correctly fills the blanks in the given sentences.

(a) __(W)__ of a flax plant provides fibers

(b) __(I)__ is the cheapest natural fiber and often called as the "golden fiber".

(c) The process of separating cotton fibers from cotton seeds is called __(N)__.

	W	I	N
(A)	Seed	Jute	Retting
(B)	Stem	Cotton	Retting
(C)	Seed	Cotton	Ginning
(D)	Stem	Jute	Ginning

14. The Aquifer Truth Files

Which of the following is correctly defines an aquifer?

(A) Water percolates into the soil and remains there as moisture

(B) Clouds bring fresh water as rain to the land

(C) The ground water is stored in between layers of porous rocks

(D) Rain water is used to recharge ground water

PART C – BIOLOGY

15. Hidden Word Hunt

Which of the following can be found in the given word grid?

P	E	T	A	L	X
Q	W	R	Y	U	I
O	Z	H	J	B	C
M	N	V	K	Z	S
L	Q	R	M	Y	U
A	S	D	F	G	H

(A) Part of a flower that attracts pollinators

(B) Tiny openings on the surface of leaves

(C) Parts that anchor the plant in soil

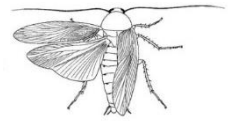
(D) The process by which plants make food

16. Creepy Crawly Confusion

Refer to the given figures **S**, **K** and **Y**.

S

K



Y

Select the ***incorrect*** statement regarding them.

(A) **K** moves by contracting and relaxing its body muscles to produce a wave-like motion.

(B) **S** moves with the help of tiny bristles (setae) present on its body.

(C) **Y** has three pairs of jointed legs that help it walk on land.

(D) **Y** moves by pressing its muscular foot against the ground to glide forward.

17. Truth or Tall Tale?

Read the given statements and select the option stating which ones are true (T) and which ones are false (F).

N Penguins have a thick layer of fat called blubber, which helps them stay warm and also increases their swimming speed.

E Animals living in tropical rainforests often have sharp claws and strong limbs to climb trees and escape predators.

C The climate of a place is determined by its temperature and rainfall recorded over a period of at least one year.

T Polar bears have white fur only for camouflage; it does not provide any insulation against cold.

A Camels have wide, padded feet to prevent them from sinking into hot desert sand.

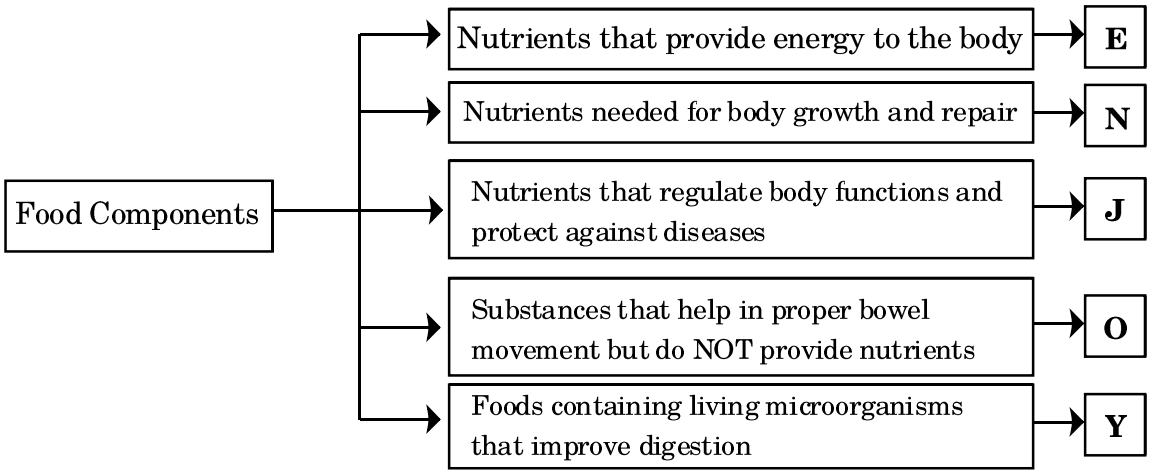
R Places near the equator have low temperatures throughout the year due to heavy cloud cover.

	N	E	C	T	A	R
(A)	T	T	F	F	T	T
(B)	F	T	F	F	T	F
(C)	T	T	T	T	T	F
(D)	F	T	T	F	F	F

18. Food Chain Detective

Study the given flowchart and select the correct option.

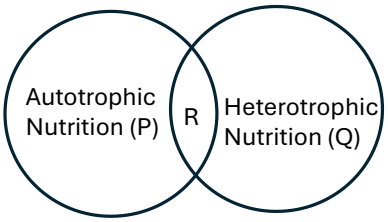
Flowchart: Types of Food Components



	E	N	J	O	Y
(A)	Rice, Ghee	Eggs, Pulses	Lemon, Amla	Wheat Bran, Cabbage	Curd
(B)	Potato, Honey	Milk, Fish	Meat, Butter	Spinach, Lettuce	Cheese, Paneer
(C)	Butter, Oil	Bread, Cheese	Tomato, Carrot	Rice Flour, Maida	Buttermilk, Vinegar
(D)	Sugar, Chips	Almonds, Soybean	Salt, Water	Fruits, Nuts	Bread, Idli

19. Nutritional Mix-up

Study the Venn diagram given below.



Which of the following **incorrectly matches** an item with its correct region in the Venn diagram?

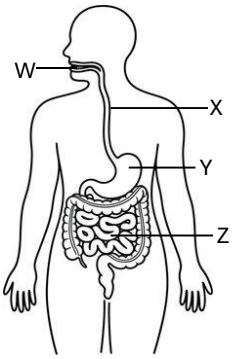
(A) *Requires chlorophyll* → **P**

(B) *Uses carbon dioxide for food synthesis* → **P**

(C) *Occurs in some plants such as Cuscuta plant* → **Q**

(D) *Both involve absorption of raw materials from surroundings* → **R**

20. The Function Finder Challenge



Which of the following labelled organs **(W, X, Y and Z)** is matched **correctly** with its function?

(A) **W** – It initiates both mechanical digestion and chemical digestion of proteins.

(B) **X** – It mixes food with gastric juice and converts it into chyme.

(C) **Y** – It is the main site for absorption of digested nutrients into blood and lymph.

(D) **Z** – Site of complete digestion and absorption.

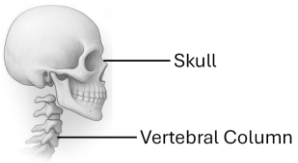
21. Joint Genius Test

Which of the following joints show the given characteristics?

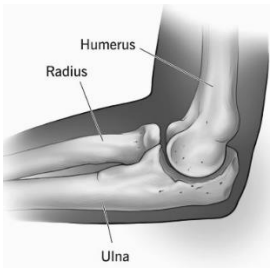
(i) It allows rotation around a central axis.

(ii) It enables a person to turn the head from side to side without moving the rest of the body.

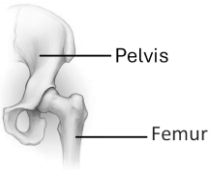
(iii) Only one bone rotates while the other remains fixed.



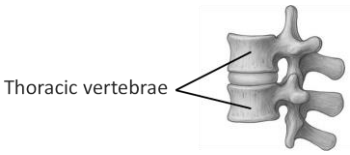
Joint A



Joint B



Joint C



Joint D

(A) Joint A (B) Joint B (C) Joint C (D) Joint D

PART D – MATHEMATICS

22. Rhythm Reunion Time

Two musical rhythms loop simultaneously:

Beat A repeats every **18 seconds**

Beat B repeats every **24 seconds**

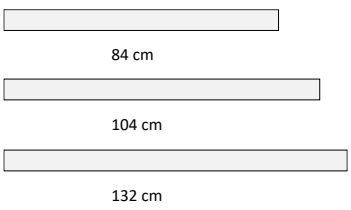
A dancer begins at time 0.

Determine the amount of time, in seconds, after which both rhythms **strike together again**.

(A) 12 seconds (B) 36 seconds (C) 72 seconds (D) 144 seconds

23. Slice It Right!

A factory cuts metal rods of lengths **84 cm**, **108 cm**, and **132 cm**. All rods must be cut into **equal longest possible pieces** with **no wastage**. What should be the length of each piece?

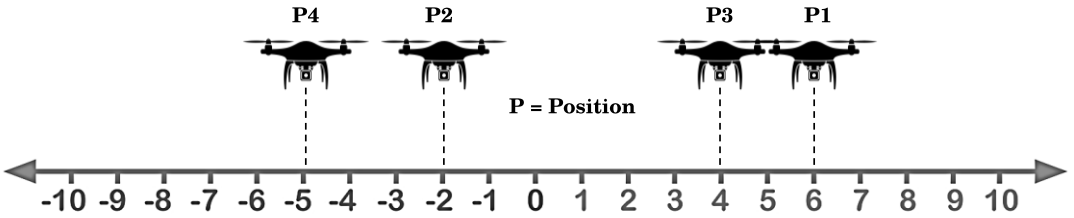


(A) 6 cm (B) 12 cm

(C) 18 cm (D) 24 cm

24. The Tunnel Travel Mystery

A drone flies along a straight underground tunnel mapped as a number line. It begins at **+6**, moves to **–2**, then to **+4**, and finally to **–5**. What is the **total distance** the drone travels?



(Distance = absolute movement, ignoring direction.)

(A) 13 units (B) 31 units (C) 17 units (D) 29 units

25. The Median Reactor Trick

A scientific research institute is tracking the energy consumption of two new experimental micro-reactors. The energy is measured in Gigajoules (GJ).

Reactor A consumes 370 GJ per week.

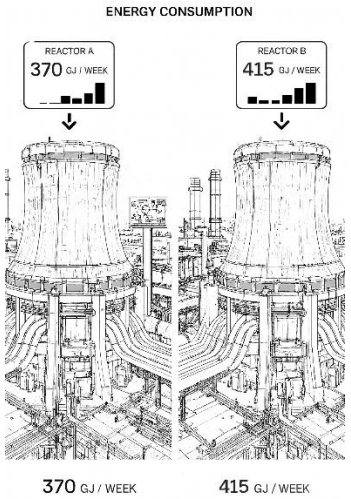
Reactor B consumes 415 GJ per week.

A safety protocol requires the team to report a single number that is greater than A and less than B, representing a **median estimate**.

Which of the following numbers is the "median estimate" of the two reactors' consumption, "rounded to the nearest 10"?

(A) 390 GJ (B) 395 GJ

(C) 400 GJ (D) 380 GJ



26. The Forbidden Operation

A special computer is programmed to only accept whole numbers. A sequence of inputs is given: $N_1 = 5$, $N_2 = 12$, $N_3 = 0$. Which of the following operations on these inputs will result in a value that is **NOT** a whole number?

(A) $(N_1 \times N_2) + N_3$ (B) $(N_2 - N_3) \div N_2$ (C) $(N_2 \div N_1) + N_3$ (D) $(N_1 + N_2) \times N_3$

27. Where Does V Stand?

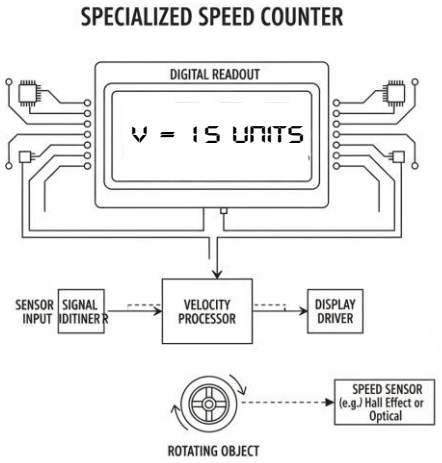
A special counter is programmed to display the numerical value of an object's speed, V. Since V is always non-negative, the counter uses whole numbers. If the current speed is $V = 15\ units$, and a technician observes the display on a **Number Line** representation, which of the following is an accurate statement about V's representation?

(A) V is represented by the 15th mark to the left of the origin.

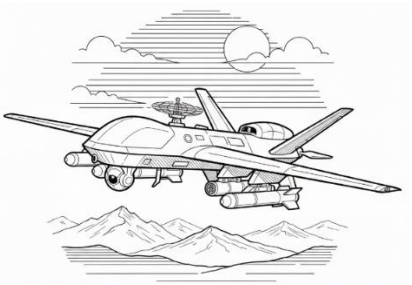
(B) V is represented by the 15th mark to the right of the origin.

(C) V is represented exactly halfway between 14 and 15.

(D) V is represented by a mark 15 units from the origin, regardless of direction.



28. Self-Destruct Number Hunt



A special military drone has a self-destruct sequence that is activated if a number follows all the following three Divisibility Rules:
The number is **NOT** divisible by 2.
The number is **NOT** divisible by 3.
The number is **NOT** divisible by 5.
Which of the following numbers, if entered, would **activate the self-destruct sequence**?

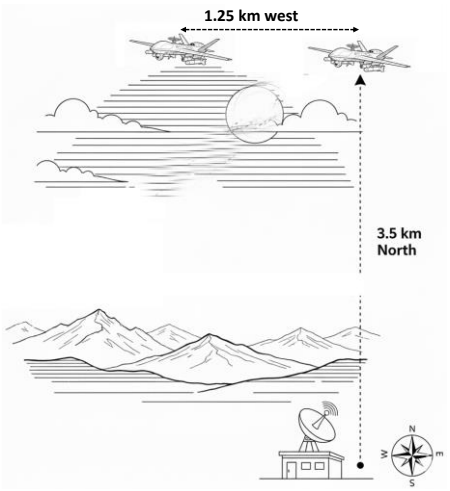
(A) 450 (B) 312 (C) 521 (D) 175

29. The Ancient Calendar Puzzle

A special calendar for an ancient mathematical society uses months that have a number of days defined by a factor. The first month has 24 days. If the number of days in the second month must be a common factor of **24** and **40**, which of the following is the **largest possible** number of days for the second month?

(A) 4 (B) 8 (C) 12 (D) 6

30. Drone Distance Decoded



A drone is flying 3.5 kilometres North from its base.
It then turns and flies 1.25 kilometres West.
Which of the following describes the total distance flown as a fraction and what is the difference between the two distances as a decimal?

(A) $4\frac{3}{4}$ km total; 2.25 km difference.
(B) $3\frac{5}{8}$ km total; 3.25 km difference.
(C) $2\frac{1}{4}$ km total; 1.25 km difference.
(D) $1\frac{1}{4}$ km total; 2.75 km difference

31. Which Difference Wins?

A financial analyst needs to perform two separate calculations on a complex dataset involving the numbers 4.5 and 1.2.

1. Calculate the sum of the numbers.
2. Calculate the product of the numbers.

What is the difference between the calculated product and the calculated sum?

(A) 0.9 (B) 1.0 (C) 0.3 (D) 0.7

32. The Engineer's Quest

A civil engineer is calculating the required length L of a special tension cable for a bridge support system. The required length must satisfy the equation: $\frac{L}{5} + 1 = 15$

What is the required length L in metres?

(A) 70 (B) 65 (C) 80 (D) 75

33. The Linear Pair Mystery

In a geometric sculpture, two angles A and B, form a Linear Pair. Angle A is defined as $x°$ and angle B is defined as $(2x + 30)°$. What is the measure of the smaller angle A?

(A) 50° (B) 30° (C) 60° (D) 70°

34. The Laser Angle Enigma

In a parallel arrangement of laser beams (lines $L_1 || L_2$), a safety beam (transversal T) intersects them. The intersection creates eight angles. One of the alternate interior angles is measured as $4x - 10°$. The other alternate interior angle is $2x + 50°$. What is the sum of the consecutive interior angles?

(A) 180° (B) 170° (C) 160° (D) 150°

35. The Crystal Triangle Secret

The three interior angles of a special triangular crystal facet are defined as ∠A, ∠B, and ∠C. The angles have the following relationship: ∠A = 2∠B and ∠C = 3∠B. What is the measure of the largest interior angle, ∠C ?

(A) 30° (B) 60° (C) 90° (D) 120°

PART E – MENTAL ABILITY

36. Heal to Heat Mystery

Arrange the words given below in a meaningful sequence.

1. Heal 2. Head 3. Health 4. Heap
5. Heat

(A) 2, 1, 3, 4, 5 (B) 4, 3, 1, 2, 5 (C) 4, 1, 3, 5, 22 (D) 3, 4, 5, 1, 2

37. The EXCITEMENT Shuffle

All the letters which occur at odd places in the word EXCITEMENT are placed at odd places such as first letter is placed at third place, third letter at fifth place and so on. Similarly, the letters at even places are placed. Last two letters i.e., letter at odd place is placed at first place and letter at even place is placed at second place. Now, which of the following letters will be seventh from the right end in the new arrangement?

(A) T (B) E (C) X (D) M

38. The Shrinking Series Puzzle

Look at this series:

664, 332, 340, 170, ____ , 89

What number should fill the blank?

(A) 85 (B) 97 (C) 109 (D) 178

39. Find the Wrong Visitor

Find the wrong term in the series:

1, 5, 6, 11, 17, 27, 45, 73

(A) 27 (B) 45 (C) 17 (D) 11

40. When One Term Misbehaves

Find the wrong term in the series:

15, 16, 22, 29, 45, 70

(A) 22 (B) 70 (C) 29 (D) 16