

DATE: \_\_\_/\_\_\_/\_\_\_

# Mock #04 (GSA)

## Section-II

### QNO #07

(a) Let the number is 'x'  
According to given condition

$$\frac{x}{6} + 50 = 60$$

$$\frac{x}{6} = 60 - 50$$

$$\frac{x}{6} = 10$$

$$x = 10 \times 6$$

$$x = 60$$

The number is 60.

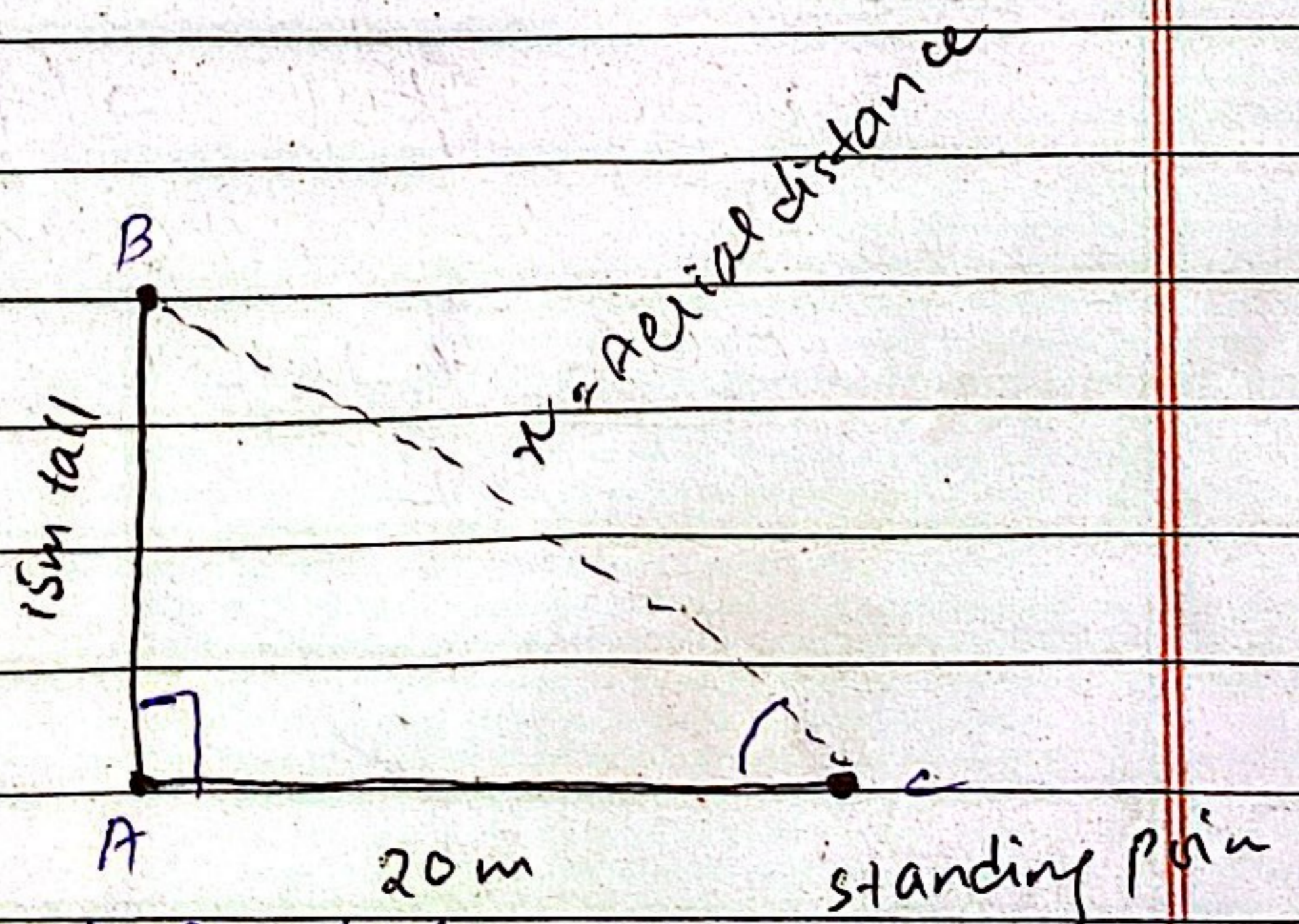
(b) odd one out

8, 16, 24, 34, 40, 48

The odd number is 34, because all the rest numbers are multiple of 8 and 4, but 34 is not.

(c)

Tower



Let the Aerial distance from the top of tower to standing point is 'x'

DATE: \_\_\_\_\_

Using Pythagorean Theorem  
on given condition

$$(\text{Hyp})^2 = (\text{Base})^2 + (\text{Perp})^2$$

$$\text{Hyp}^2 = 20^2 + 15^2$$

$$\text{Hyp}^2 = 400 + 225$$

$$\text{Hyp}^2 = 625$$

$$\text{Hyp} = \sqrt{625}$$

$$\boxed{\text{Hyp} = 25}$$

So, the distance from the top  
of tower to standing position  
is 25 m.

d. Given that,

Tariff for odd date = Rs. 1000

Tariff for even date = Rs. 2000

Total paid = Rs. 30,000

First day is 5<sup>th</sup> day of month  
which means first day is  
odd

solution

Tariff for alternative days  
is 1000, 2000 for average

$\frac{1000 + 2000}{2} = 1500$  is tariff  
for each day

DATE: \_\_\_/\_\_\_/\_\_\_

1120  
850  
---  
270

(3)

To find the total number of days, we can divide the total amount paid by the average daily tariff:

$$\text{Number of days} = \frac{\text{Total amount paid}}{\text{Average daily tariff}}$$
$$= \frac{30,000}{1500}$$

$$= 20$$

Therefore, the man stayed in the hotel for 20 days.

### Q No # 06

- (a) According to given condition,  
Enrollment in January 2022 = 850 pupils  
Enrollment in January 2023 = 1120 pupils  
percentage increase = ?

solution

$$\text{Percentage Increase} = \frac{E_{2023} - E_{2022}}{E_{2022}} \times 100$$

$$= \frac{1120 - 850}{850} \times 100$$

$$= \frac{270}{850} \times 100$$

$$= \frac{54}{17}$$

$$\approx 3.176$$

so, the percentage increase for the enrollment is 3.18%

(b) Given that

	present age	past age
Father	$5x$	$5x-2$
Son	$x$	$x-2$

solution

$$(5x-2)^2 + (x-2)^2 = 114$$

$$25x^2 - 20x + 4 + x^2 - 4x + 4 = 114$$

$$26x^2 - 24x + 8 = 114$$

$$26x^2 - 24x + 8 - 114 = 0$$

$$26x^2 - 24x - 106 = 0$$

$$2(13x^2 - 12x - 53) = 0$$

$$13x^2 - 12x - 53 = 0$$

using quadratic equation

$$a = 13, b = -12, c = -53$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-12) \pm \sqrt{(-12)^2 - 4(13)(-53)}}{2(13)}$$

$$x = \frac{12 \pm \sqrt{144 + 2756}}{26}$$

$$x = \frac{12 \pm \sqrt{2900}}{26}$$

$$x = \frac{12 \pm \sqrt{29 \times 100}}{26}$$

$$x = \frac{12 \pm 10\sqrt{29}}{26}$$

$$x =$$

$$\begin{array}{r} 53 \\ 13 \\ \hline 159 \\ 13x \\ \hline 689 \\ 689 \\ \hline 689 \\ 689 \\ \hline 2756 \\ 144 \\ \hline 2900 \end{array}$$

How to solve  
without  
calculator

?

DATE: \_\_\_/\_\_\_/\_\_\_

(C)

Given that

$$\text{No. of Head} = 48$$

$$\text{No. of feet} = 140$$

$$\text{find no. of Hen} = x$$

Solution

As we know that Hen and cow have one head and let hen is denoted by 'x' and cow is denoted by 'y'

$$\text{so } x + y = 48 \quad \text{--- (i)}$$

and Hen has 2 feet while cow has 4. Therefore,

$$2x + 4y = 140 \quad \text{--- (ii)}$$

let subtract equation (ii) from i

$$2x + 4y = 140 \quad \text{--- (ii)}$$

$$x + y = 48 \quad \text{--- (i)}$$

Multiply eq (i) by ~~(ii)~~ (2)

$$2x + 4y = 140$$

$$2x + 2y = 96$$

$$2x + 4y = 140$$

$$2x + 2y = 96$$

$$2y = 44$$

$$y = 24/2$$

$$y = 22$$

$$x + y = 48 \quad \text{(i)}$$

$$\text{put } y = 22$$

$$x + 22 = 48$$

$$x = 26$$

so, number of Hen is 26.

DATE: \_\_\_/\_\_\_/\_\_\_

(a)

Given that

$$\text{speed in first half} = 40 \text{ km/h}$$

$$\text{speed in second half} = 60 \text{ km/h}$$

$$\text{Average speed of car} = x$$

let first half is denoted by 'x' and so for 2<sup>nd</sup> half is 'y'

solution

Formula for distance, average speed is

$$\text{Average speed} = \frac{2xy}{x+y}$$

$$= \frac{2(40)(60)}{40+60}$$

$$= \frac{80 \times 60}{100}$$

$$= 48$$

so, Average speed of car is 48 km/h

## Section - I

Q No, #04

(b) Differentiate STAR and PLANET

## STAR

## PLANET

- Star is astronomical object.

- Planet is round body in space that orbits a star.

- Star is composed of hot gases that emits electromagnetic radiations, especially light.

- Planet do not produce light.

- Star revolve around the center of galaxy.

- Planet revolve around star.

- Example of star are sun, Luna, Pistol star etc.

- Example of Planet are Earth, Venus, Mars etc.

How star becomes Black Hole

Black Hole is an object of extreme density and very strong gravitational

DATE: \_\_\_/\_\_\_/\_\_\_

force pull even light cannot escape from it. Star become Black hole. Star are considered to be spherical in shape. Star is composed of Helium. These helium become Fusion which generate energy and ability of body to do work. Star has internal pressure and gravitation of star. These opposite forces balance star, But when there is imbalance between these two factors, star will collapse. The imbalance is due to down of fusion reaction create formation of Black Hole.



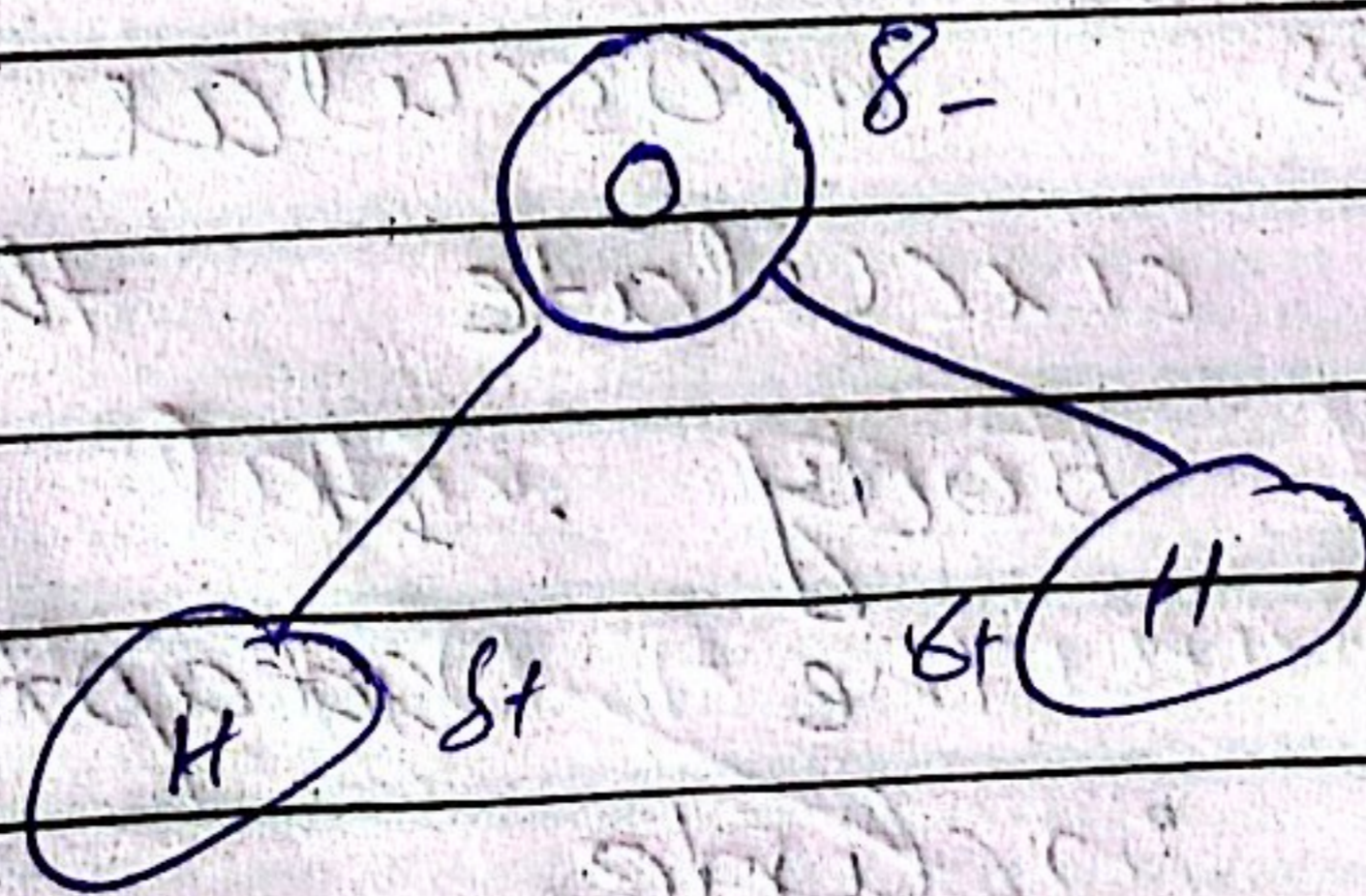
DATE: \_\_\_/\_\_\_/\_\_\_

Atoms form chemical bonds to achieve stable electron configuration. Most atoms are stable when their outermost electron shell, called valence shell is filled. In order to achieve this, atoms can either:

- Gain electron : forms negative ions
- Lose electron : forms positive ions
- Share electron : forms covalent bond

### Structure of water ( $H_2O$ )

Water is a molecule composed of two hydrogen atoms bonded to one oxygen atom ( $H_2O$ ). The molecule has a bent shape, not linear, due to the presence of two lone pairs of electrons on the oxygen atom.



## QNO 3a

Q. Double circulation is a circulatory system where blood passes through the heart twice in one complete cycle. It involves two distinct circuits:

- Pulmonary circulation: Blood is pumped from the heart to the lungs for oxygenation, and then returns to the heart.

- Systematic circulation: oxygenated blood is pumped from the heart to the body tissues, and deoxygenated blood returns to the heart.

### Adaption of heart for Double circulation

Heart is muscular organ which circulate the Blood in the body. It has four chambers. The adaption of Heart include

- It ensures complete separation.

DATE: \_\_\_/\_\_\_/\_\_\_

of oxygenated and deoxygenated blood.

It also allows for the powerful pumping of blood to the entire body.

It also prevent the backflow of blood ensuring unidirectional flow through valves

These adaption enable the heart to efficiently pump blood through both the pulmonary and systematic circuits, supporting the high metabolic demands of mammal and birds.

DATE: \_\_\_/\_\_\_/\_\_\_

3(b) Liver is a chief chemist.

The liver is indeed a complex biochemical factory performing hundreds of vital functions. Its role in the body is similar to a chemist's laboratory, where various substances are produced, transformed and synthesized.

The breakdown of its chemical processes

Detoxification: The liver acts as a filter, breaking down harmful substances like alcohol, drugs, and toxins into less harmful compounds for excretion.

Protein synthesis: The liver produces essential proteins like albumin, which maintains blood pressure and clotting factors for blood coagulation.

Storage: It stores vital nutrients like vitamins A, D, E, K and B12.

There are vast arrays of chemical reactions occurring in the liver, which is why it is termed as 'Chief Chemist'.