

DATE 9/1/2024

GENERAL SCIENCE & ABILITY.

SECTION - II

QUESTION # 6

a)

Five years ago father was thrice the age of son. If son is 30 years old now. what is the current age of father?

$$\begin{aligned} \text{age of Father} &= u = y \\ \text{age of son} &= y = 30 \end{aligned}$$

Good for math portion
Increase length of theory portion
Add headings
Diagrams are fine

→ 5 years. age, father age

$$u - 5$$

and son age.

$$y - 5$$

$$30 - 5 = 25$$

Father age was thrice the age of son.

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

$$u - 5 = 75$$

$$u = 75 + 5$$

$$u = 80$$

The current age of father is $= u = 80$ year

b)

Mean of 10, 30, y , and 50 is 50.
what is the value of y ?

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

$$\text{mean} = 50$$

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

$$50 \times 4 = 10 + 30 + Y + 50$$

$$200 = 10 + 30 + Y + 50$$

$$200 - 10 - 30 - 50 = Y$$

$$110 = Y$$

$$\boxed{Y = 110}$$

c)

Find the missing terms:

i) 2, 6, 18, 54, _____.

ii) 3125, 256, _____, 4, 1.

i)

2, 6, 18, 54, 162

The missing no. is 162.

In this numeric series, each number is obtain multiply by 3.

ii) 3125, 256, 27, 4, 1.

The missing number is 27.The following numbers are arranged according to the rule, $5^5, 4^4, 3^3, 2^2, 1^1$.

d)

If the product of two numbers is 320 and their ratio is 1:5. what is the difference between the squares of these two numbers?

$$1 : 5 = 320.$$

According to the equation,

$$n \times 5n = 320.$$

$$5n^2 = 320.$$

$$n^2 = \frac{320}{5} = 64.$$

$$n^2 = 64.$$

$$n = (8)^2.$$

$$n = 8.$$

So, The difference between the squares of these two numbers.

$$= (5 \times 8)^2 - (8)^2$$

$$= (40)^2 - (8)^2$$

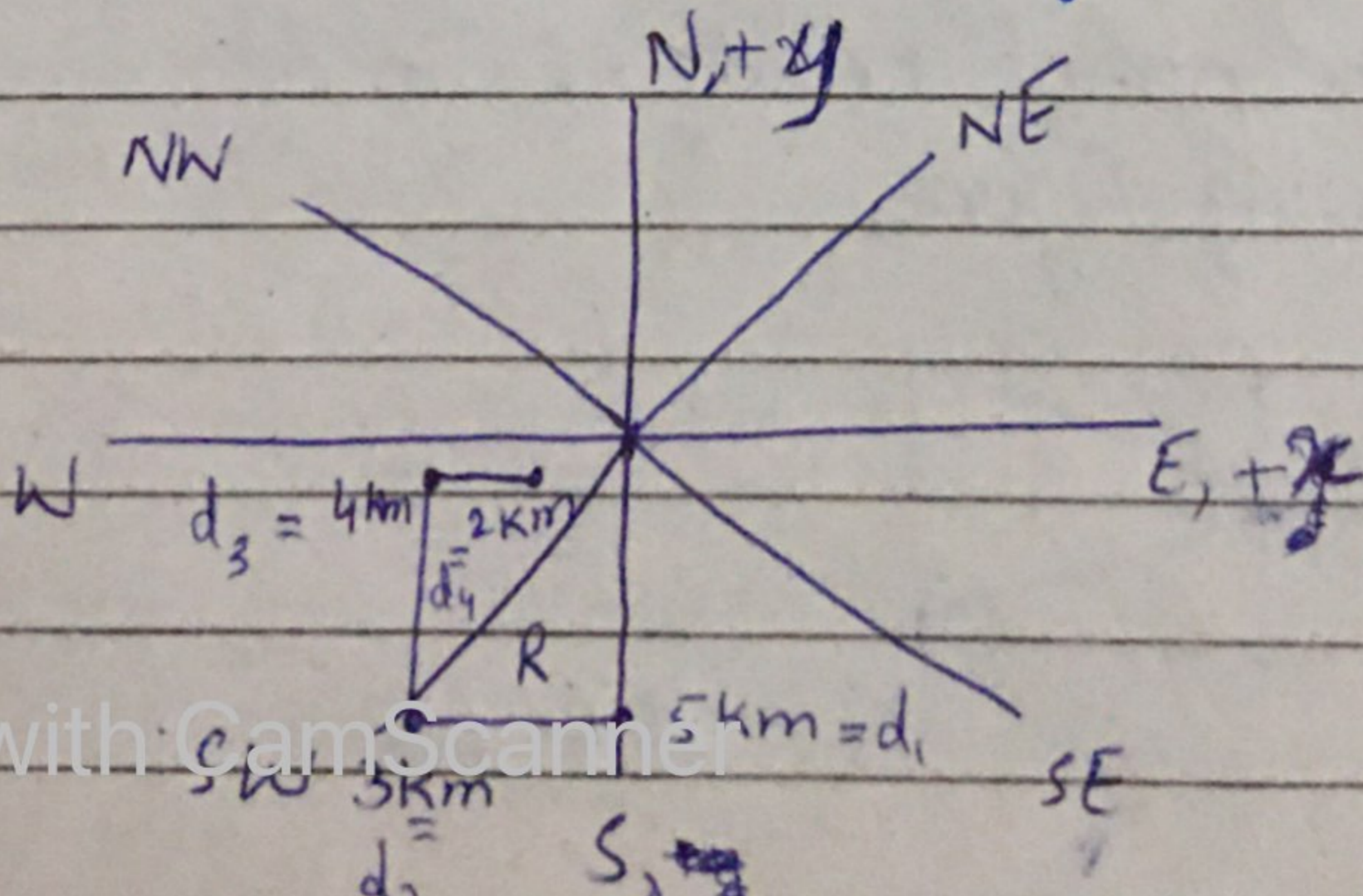
$$= 1600 - 64$$

$$= \underline{1536}.$$

QUESTION # 8

a)

A crow travels south 5km, and then 3km west, and then 4km north. Finally travels 2km south-east. How far is the crow from initial point?



$$(\text{hyp})^2 = (\text{Base})^2 + (\text{Per})^2$$

X	Y	
0	-5 km	d_1
-3 km	0	d_2
$+2 \text{ km} \cos 45^\circ$	$-2 \text{ km} \sin 45^\circ$	d_3
$= 1.41 \text{ km}$	$= -1.41 \text{ km}$	
0	+4 km	d_4
-1.59 km	-2.41 km	R

$$R = \sqrt{R_x^2 + R_y^2}$$

$$= \sqrt{(-1.59)^2 + (-2.41)^2}$$

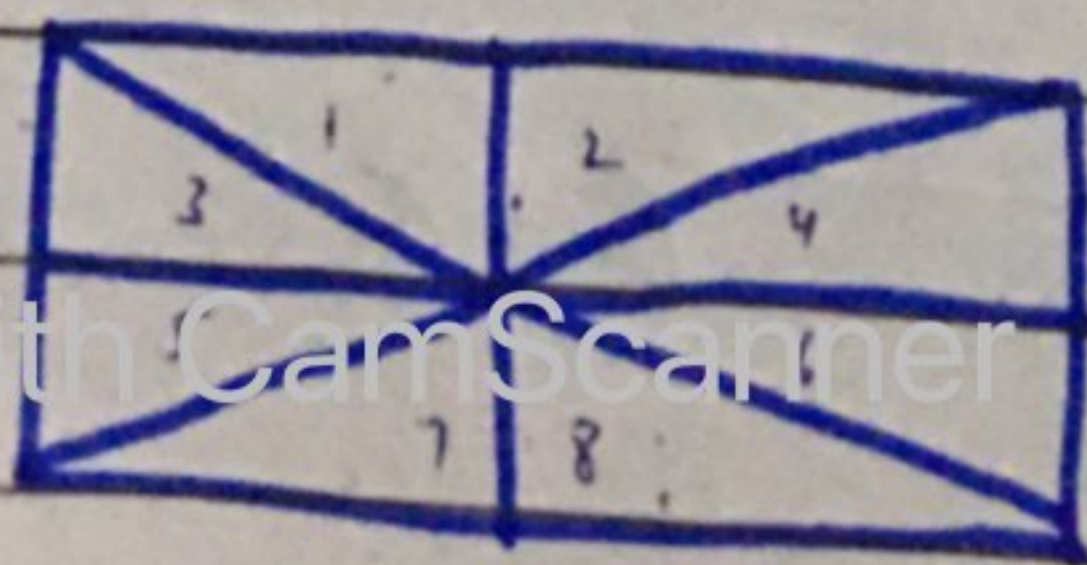
$$R = 2.63 \text{ km}$$

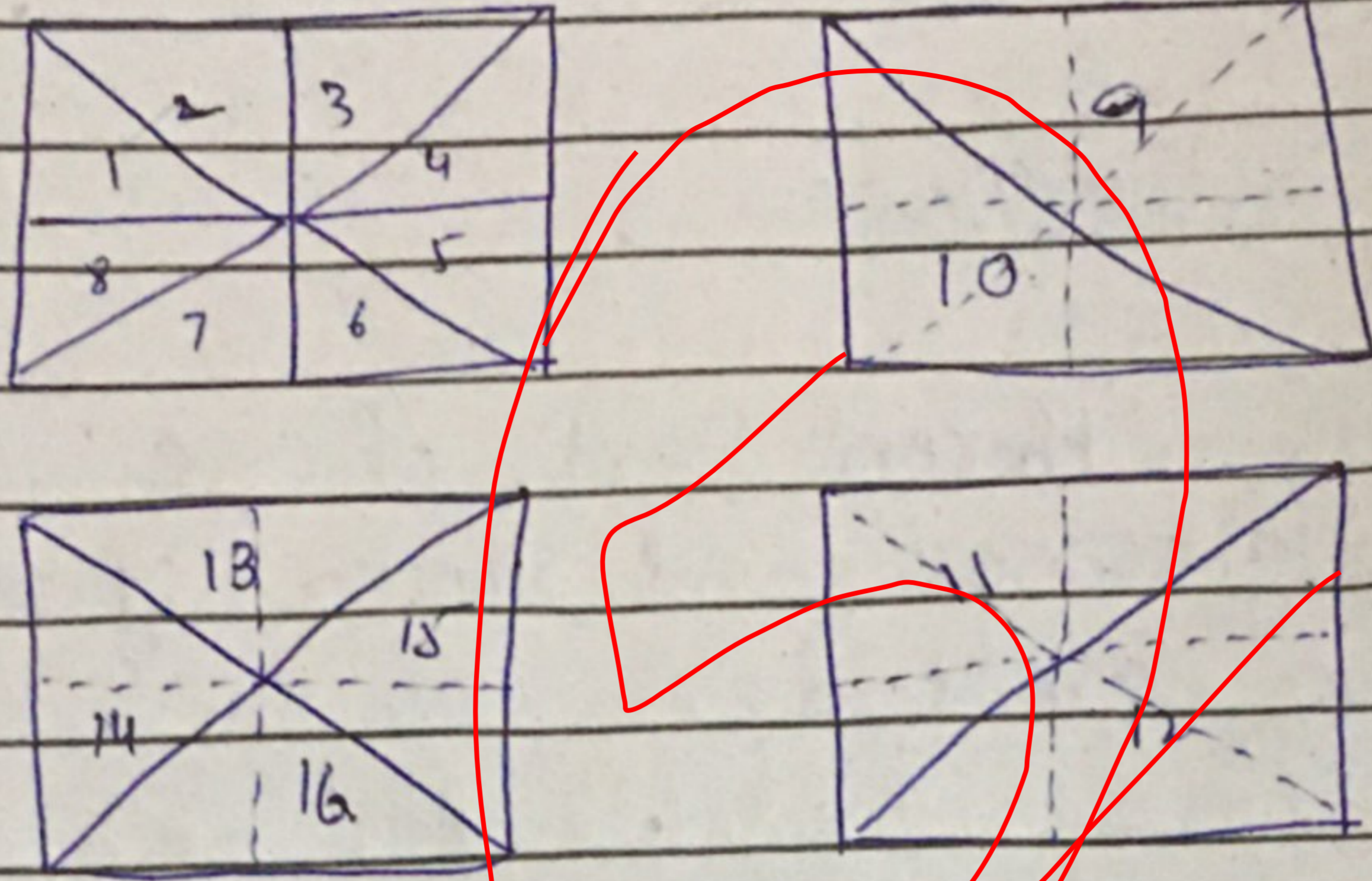
b) A Pizza slice is divided into 8 slices in which 3 slices contain raisin in it, shazia picks a slice, what is the probability that she will pick a slice with raisin?

Total slices = 8
 slices contain raisin = 3.

$$\text{Prob}_{\text{(slice with raisin)}} = \frac{3}{8}$$

c). Find the no. of triangles in the following figure:





There are 16 triangles in the following figure.

d)

Discuss the ~~figure~~ factors which can affect IQ.

The following factors can affect IQ-

- 1- Genetic factors play an important role in IQ.
- 2- Environmental factors such as nutrition, early childhood experiences, and exposure to toxins can also ~~have~~ impact.
- 3- Learning experiences.
- 4- Brain development.
- 5- Health and well-being

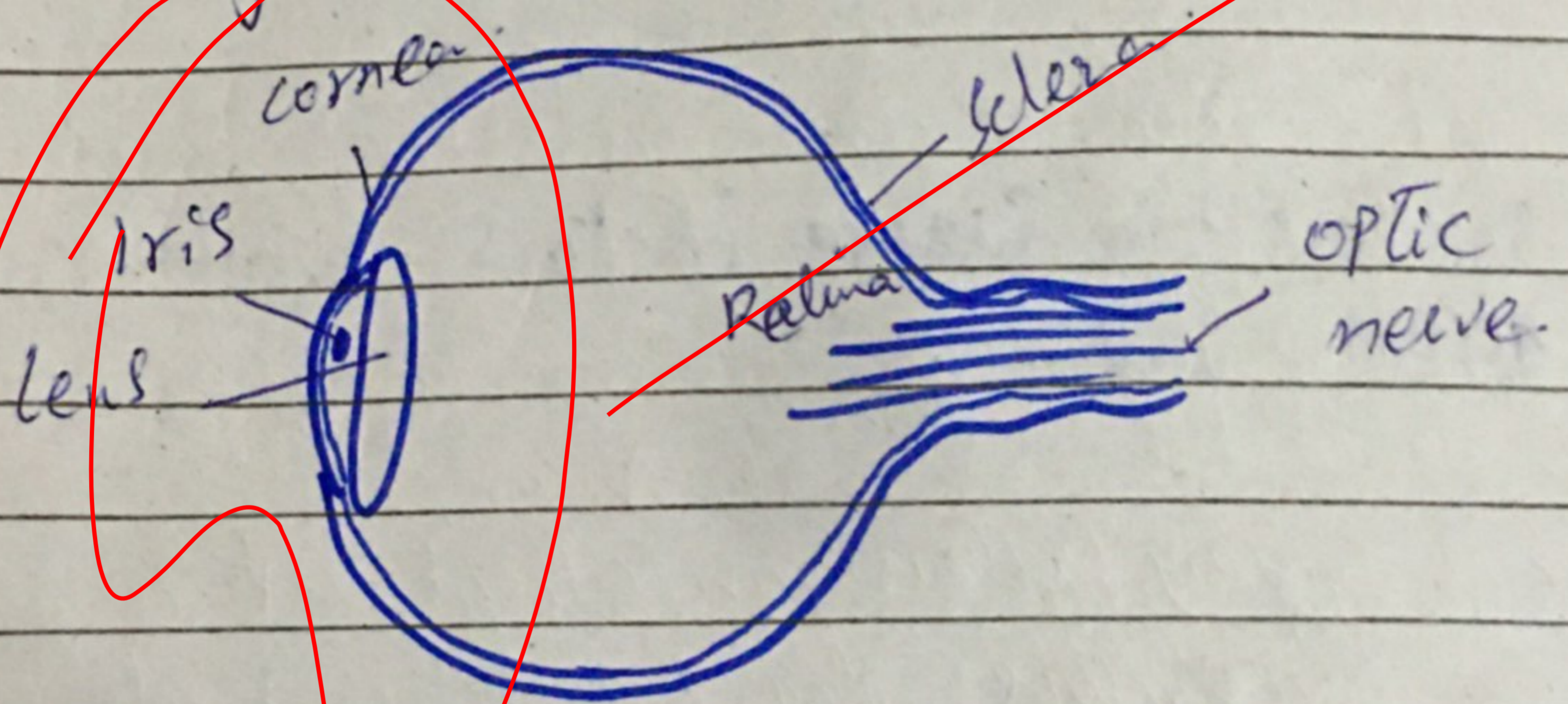
SECTION - I

QUESTION - 3

- a) DISCUSS different parts of eye. How far-sightedness and short-sightedness can be corrected?

HUMAN EYE

The sensory organ of human body is eye. which is responsible for sensory information.



Structure of Human Eye.

PARTS OF EYE:

1. Cornea:

It is the outermost transparent layer which interact light waves.

2. Pupil:

A small hole from where light enters into eye.

3. Lens:

It is the part of human eye

DATE: / /
which is used or responsible for focusing of light.

4. **Iris:**

It is the coloured part of an eye which control movement of pupil.

5. **Retina:**

The inner most layer of human eye which is most sensitive layer. In retina, light wave transformed into image with the help of cones and rods.

6. **Sclera:**

It protect the internal part of eye and it is the outer most layer of human eye.

7. **Optic nerve:**

It transmit the image. It is also a part of human eye.

8. **Chlorid:**

It is the thick & reddish part of an eye.

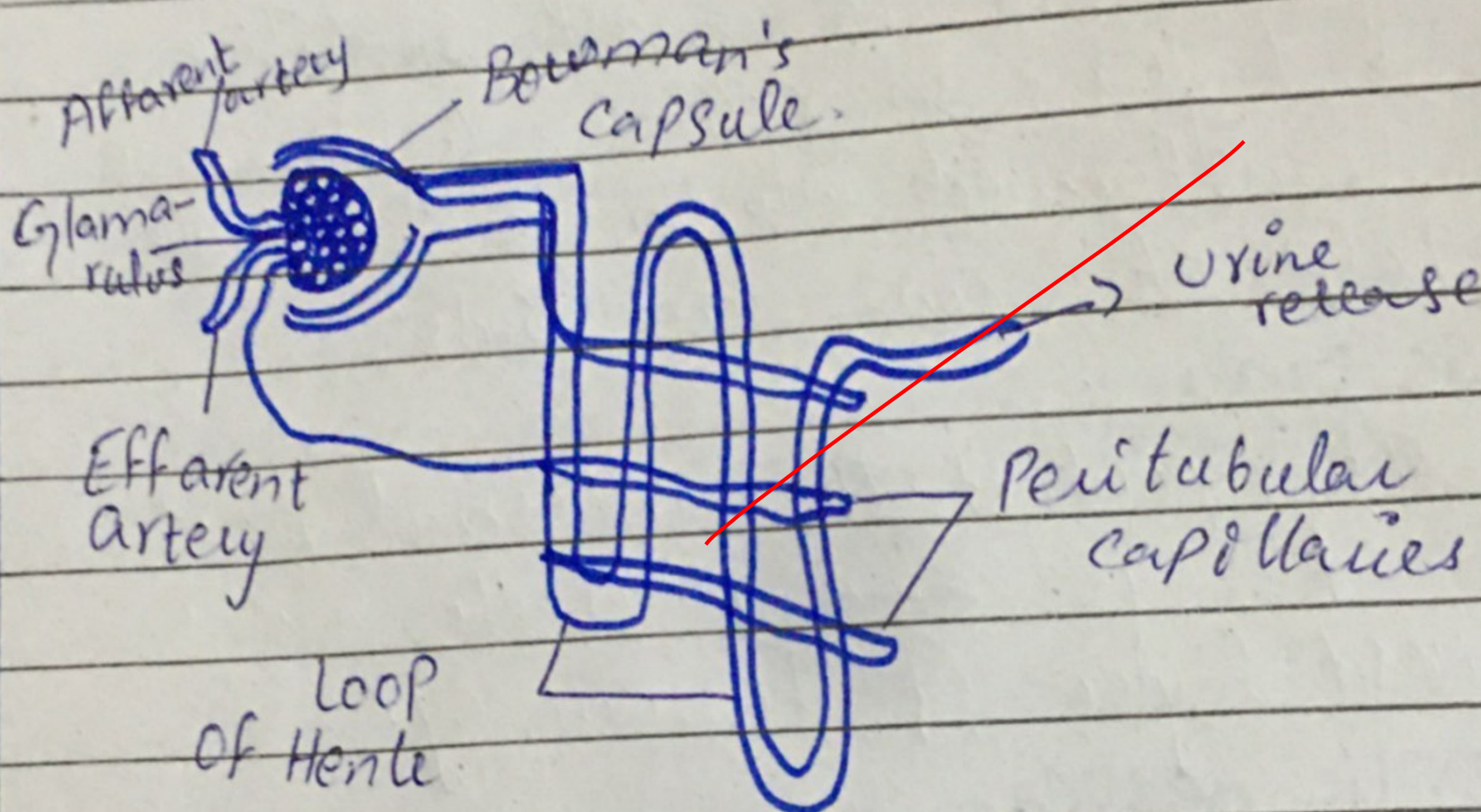
Far-sightedness and Short-sightedness can be corrected:

It can be corrected with corrective lenses, such as glasses or contact lenses. laser eye surgery can

b) How kidney does work? Explain with ~~example~~ diagram?

Kidney:

Kidney is the main organ of excretory system in human body. which is responsible for excretion.



STRUCTURE OF NEPHRON:

Working of Kidney:

Blood containing waste products enter into glomerulus. and then into the Bowman's capsule. and filterate. All the useful constituents of the filterate reabsorbed in loop of Henle. and other parts of the nephron. The inner part of the nephron also secretes waste products.

c) How Black holes are formed?

Black Holes

An object of high gravity pull, even light can't escape from it - known as Black hole.

Formation of Black hole:

When stars collapse the hole formed. Stars are normally spherical. When pressure develop through fusion and then energy which work through can be done and internal pressure imbalance which is the reason of stars collapse and the black hole formed.

d) what is isotopes, isobars and isotones? Give examples of isotopes of Hydrogen?

ISOTOPES:-

Atoms of the elements having same atomic number but different mass number.

e.g:- Hydrogen has 3 isotopes.

ISOBARS:

Atoms of different elements with the same atomic mass but different atomic numbers.

e.g.: 40Ca , 40K .

ISOTONES:

Elements with the same number of neutrons but different no. of protons.

e.g. = 4020Ca , 3919K .

Example of isotopes of Hydrogen

Protium : $(Z=1, A=1) = {}_1\text{H}^1$

Deuterium : $(Z=1, A=2) = {}_1\text{H}^2$

Tritium : $(Z=1, A=3) = {}_1\text{H}^3$

QUESTION # 4

c)

Distinguish Between solar and lunar Eclipses?

Solar Eclipses

- It occurs during a new moon
- when moon passes between Earth and the sun, and creating

Lunar Eclipse

- It occurs during a full moon
- when the sun, Earth and moon align so, that

- | | |
|--|--|
| <ul style="list-style-type: none"> • a shadow on the earth's surface. • Solar eclipses can be total, partial or annular. • It occurs once in 18 months. • It occurs for about 5-7 min. | <ul style="list-style-type: none"> • moon passes into earth's shadow. • lunar eclipse can be total. • It occurs twice a year. • It occurs for an hour. |
|--|--|

b)

What is Coriolis force? How Hurricanes Gen-?
Coriolis force:-

It is an apparent force caused by the earth's rotation. The Coriolis force is responsible for deflecting winds towards the right in the northern hemisphere and towards the left in the southern hemisphere.

Generating of Hurricanes:-

When warm water and thunderstorms fuel power-hungry hurricanes. They form over ocean, often beginning as a tropical wave - a low pressure area that moves through the moisture-rich tropics, possibly,