

GENERAL KNOWLEDGE - I

GENERAL SCIENCE AND

ABILITY

SECTION - II

QUESTION 6

∴ Part b ∴

Mean of 10, 30, y, 50 = 50

Find mean value of y.

$$\text{Mean} = \frac{A+B+C+D}{4}$$

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

Solve equation for y

Work on math portion
Enough length
Enough headings
Fine diagrams

$$\frac{90+y}{4} = 50$$

$$90+y = 50 \times 4$$

$$90+y = 200$$

$$y = 200 - 90$$

$$\boxed{y = 110}$$

value of $y = 110$

∴ Part a:-

Let's suppose the current age of
father = F and son = S

According to given equation

$$F - 5 = 3(S - 5)$$

Put the value of $S = 30$

$$F - 5 = 3(30 - 5)$$

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

$$F - 5 = 75$$

$$\boxed{F = 80}$$

current age of father = 80



Part C8-

(i)

find the missing term

2, 6, 18, 54, _____

If we notice the pattern of series we notice that numbers are increasing by multiple of 3.

$$2 \times 3 = 6$$

$$6 \times 3 = 18$$

$$18 \times 3 = 54$$

$$54 \times 3 = 162$$

or

Missing term is 162.

(ii)

3125, 256, _____, 27, 4, 1

If we notice the series the numbers are decreasing by the power decreasing by 1.

$$3125 = 5^5$$

$$256 = 4^4$$

$$27 = 3^3$$

$$4 = 2^2$$

$$1 = 1^1$$

Missing term is 27.

Part d:-

If the Product of 2 numbers = 320
 Ratio = 1:5

Let the two numbers be ~~xy~~ x and 5x.

According to given information:

~~(x)(y)~~ = 320 → (i)

$x \times 5x = 320$ → (ii)

$5x^2 = 320$

$x^2 = \frac{320}{5}$

$x^2 = 64$

Taking square root on both sides

$\sqrt{x^2} = \sqrt{64}$

$x = 8$

$5x \Rightarrow 5 \times 8$
 $= 40$

the two numbers are 40, 8

difference between squares = $8^2 - 40^2$
 $= 64 - 1600$
 $= -1536$

Difference between squares is 1536.

QUESTION 8

Part a:-

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

$$(x+2)^2 = (3)^2 + (1)^2$$

$$(x+2)^2 = 9+1$$

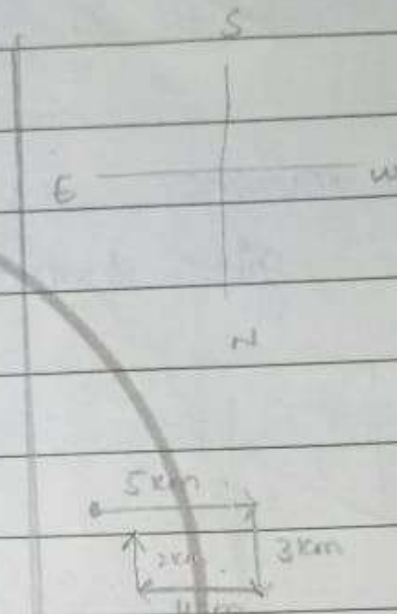
$$\sqrt{(x+2)^2} = \sqrt{10}$$

$$x+2 = 3.16$$

$$x = 3.16 - 2$$

$$x = 1.16$$

crow is 1.16 km away from initial point



Part b:-

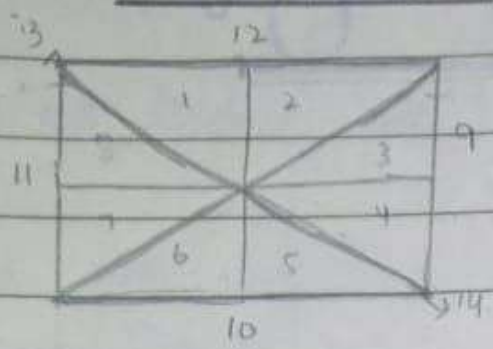
Pizza slices = 8

slice with raisin = 3

Probability shiza will pick a raisin slice is $\frac{3}{8}$
or 37.5% chances of picking up a
raisin slice.

$\frac{3}{8}$ is probability of shiza picking
a slice with raisin.

∴ Part C :-

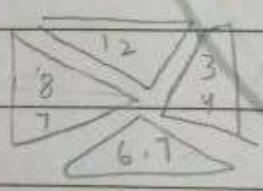


number of triangles in the given shape = 14



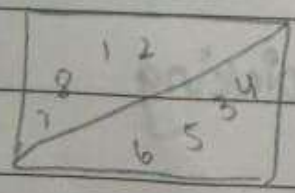
→ by cutting the shape diagonally we get 8 triangles

If we observe more closely 4 more triangles are formed by half shapes



so till now we have 12 triangles

Now divide the shape into two halves we get 2 more triangles



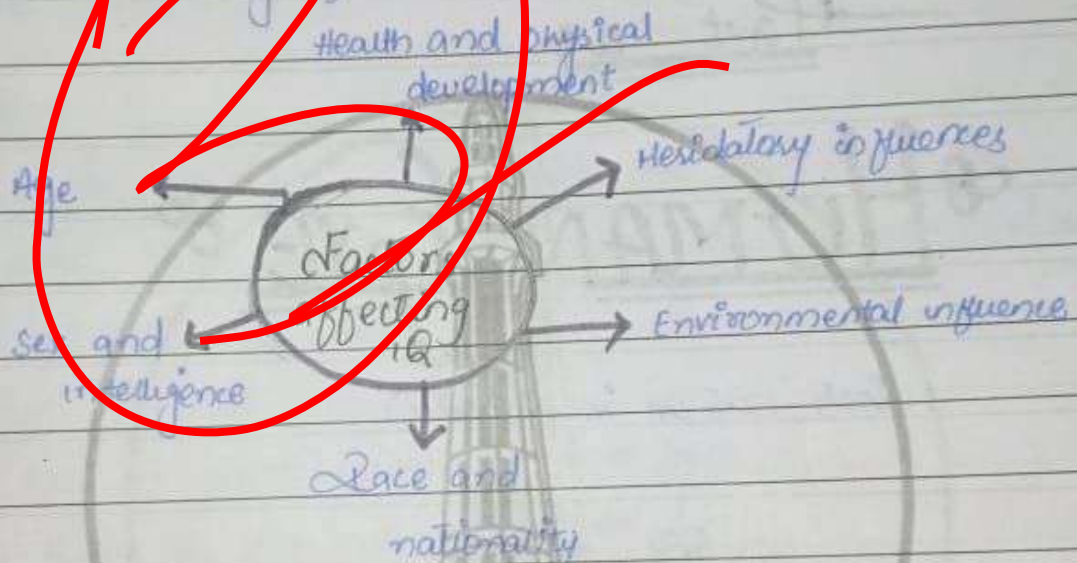
so in total there are 14 triangles in the given shape.



Part d:-

Discuss the factor which can effect IQ:

There are many factors that effect IQ of a person.



Intelligence can be enhanced or be weakened with the passage of time. IQ level can be effected by heritage or your environment in which environment you are being brought up. Then we have race and nationality which gives an impact on your brain and will definately on your IQ level. AGE has a big impact on your IQ. Kids younger people can remember more things than aged people.

SECTION 18

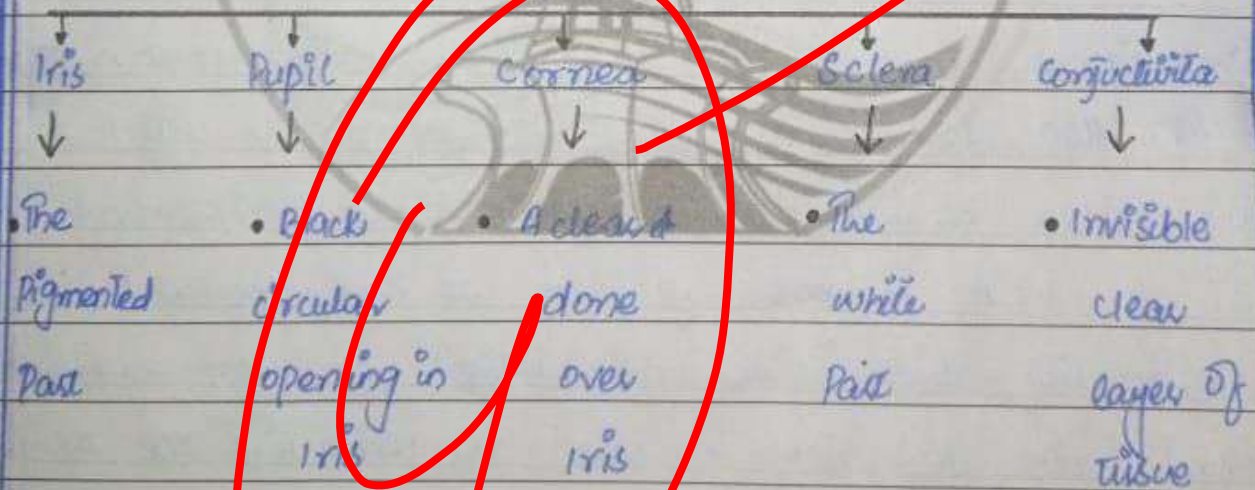
QUESTION 38

Part a8

HUMAN EYE

1 inch (2.5 cm in diameter)

Parts of eye:-



Iris :-

It is the colored part of eye it is important because it control size of pupil.

Cornea:-

clear covering over iris and pupil (most of the optic power).

This is the reason that contacts are dome shaped because they sit on over iris.

Pupil:-

It is the dark circle inside the center of eye. The dark hole is altered in shape by iris. affected by the amount of light it lets in.

if light is

- 1- low or dark outside → large
- 2- High or day outside → tiny

Sclera:-

white part of eye which is visible when we see in mirror.

The part of eye which serves as protection outer layer.

It is made of elastic and collagen.

Eye lid:-

it helps to hold eye in its place.

it is the first protective layer of eye.

Conjunctiva:-

Inner layer of eye lid
It covers the sclera and provide mucus, tears for eye protection.

It does not cover cornea.

:- Back of the eye :-

By looking on the anatomy of eye there are five more parts of eye which serves a very important function.

:- Parts of Back eye :-



Lens:-

Part of eye immediately after iris that is controlled by the ciliary muscles.

vitreous body:-

It is gel like transparent substance that support the sphere of eye ball. It shows the intravascular metabolism

Retina :-

It is the inner most layer of eye, it have photo receptor which react on the presence and intensity of light.

Macula :-

It is the most important part of eye, it is responsible for central and reading vision

optic nerve :-

It contain nerve fibre which takes information from retina and transfers to brain

Rods



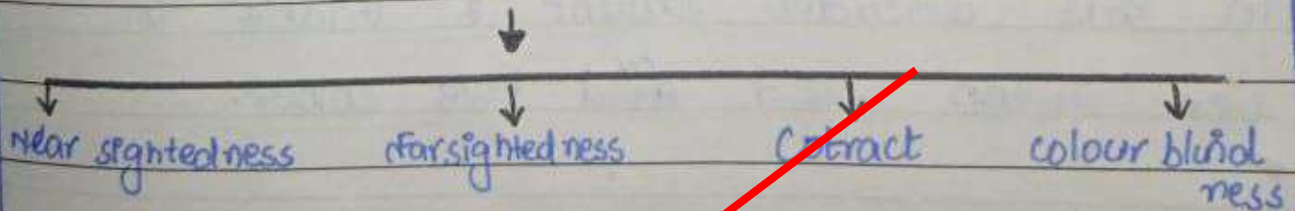
It helps preceiving colours and details

Cons



Helps in night vision, peripheral or side vision.

Disorders :-



near-sightedness :-

It is a disorder also known as myopia

In this disorder person is unable to see things of close clearly.

It can be cured by using concave lens.

far sightedness:-

A disorder also known as hyperopia which is individual eye problem seeing images far away.

It can be cured by using convex lens.

Cataract

A disorder in which eyes give blurry vision

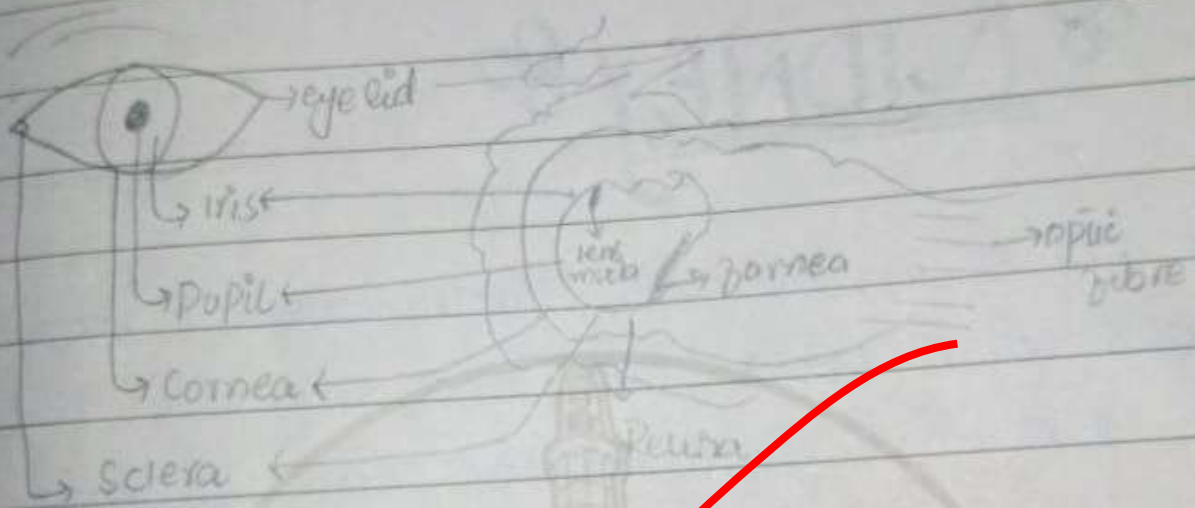
It can be cured by dense or opaque lens.

Colour blindness:-

Colour blindness is an inherited disorder in this disorder patient is unable to see green, red and blue colour.



Diagram:-



Part 68

KIDNEY

The kidney are dark-red, slightly flattened bean shaped organ about 10cm long, 5cm wide and 4cm thick and each weighing about 270 grams.

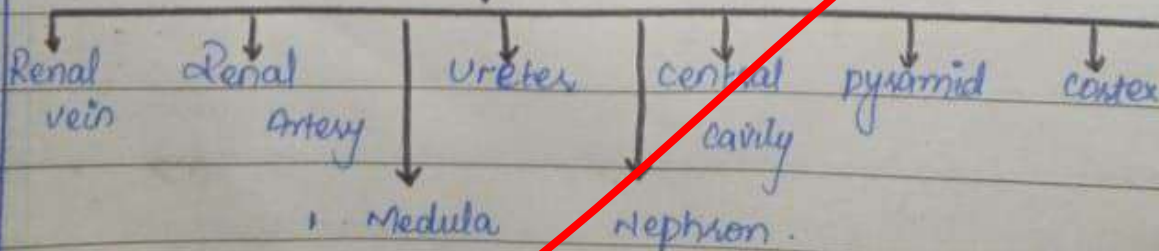
Position:-

They are placed against the back wall of abdominal cavity just below the diaphragm, one on the either side of the vertebral column.

They are protected by rib two ribs.

The kidney is covered by the peritoneum on the front and on the side and rest against the abdominal muscles. Their position is slightly asymmetrical; the left kidney is a little higher than right one.

Parts of kidney

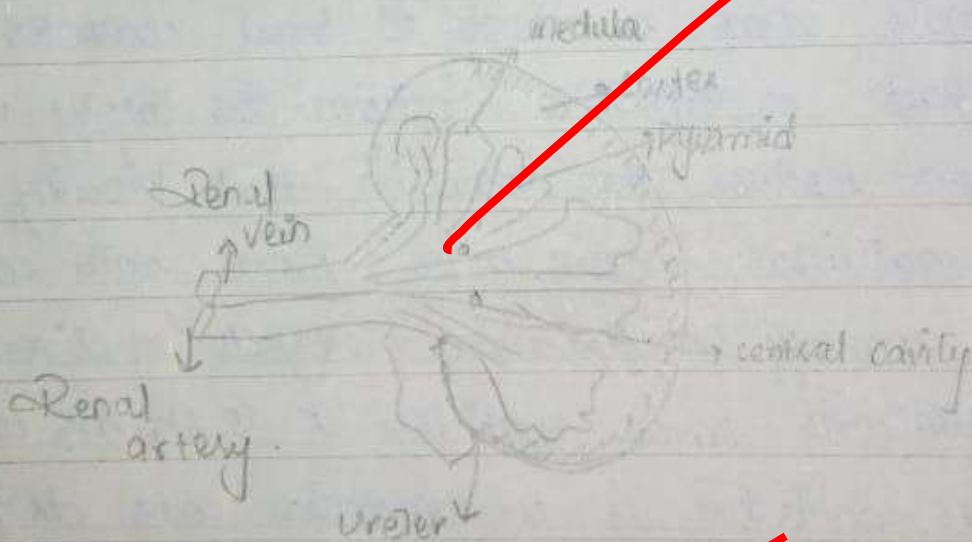


Each kidney is bean shaped. The outer surface is convex and the inner surface is concave. The inner surface has a deep notch called hilus. The renal artery, renal vein and nerves enter the kidney through hilus. Each kidney is made of many microscopic coiled tubules called nephron. The kidney is divided into two regions. The outer region is called renal cortex and the inner region termed as renal medulla.

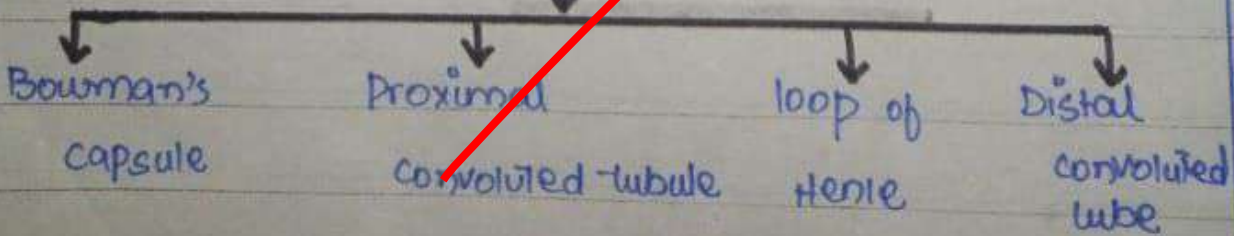
Renal medulla

renal pyramid

renal papilla



Structure of Nephron





Function of Nephron:-

The main function of the nephron are related to filtering, reabsorbing and secreting glutamate, carbohydrate and solutes. The glomerulus has two layer as well as a basement membrane that separates it from Bowman's capsule.

The blood after entering the nephron go from following steps:

Glomerulus:- Tiny cluster of capillaries. Tiny molecules pass through.



Bowman's capsule:- This cup-like structure surrounding glomerulus catches filtered fluid.



Proximal tubule:- The long winding tube. reabsorbs essential nutrients, sugar and water from filtrate.



Loop of Henle:- This U shaped loop gives turns water and salt level based on body need.



Distal tube:- Here hormones influence final adjustments. Some essential ions are absorbed.



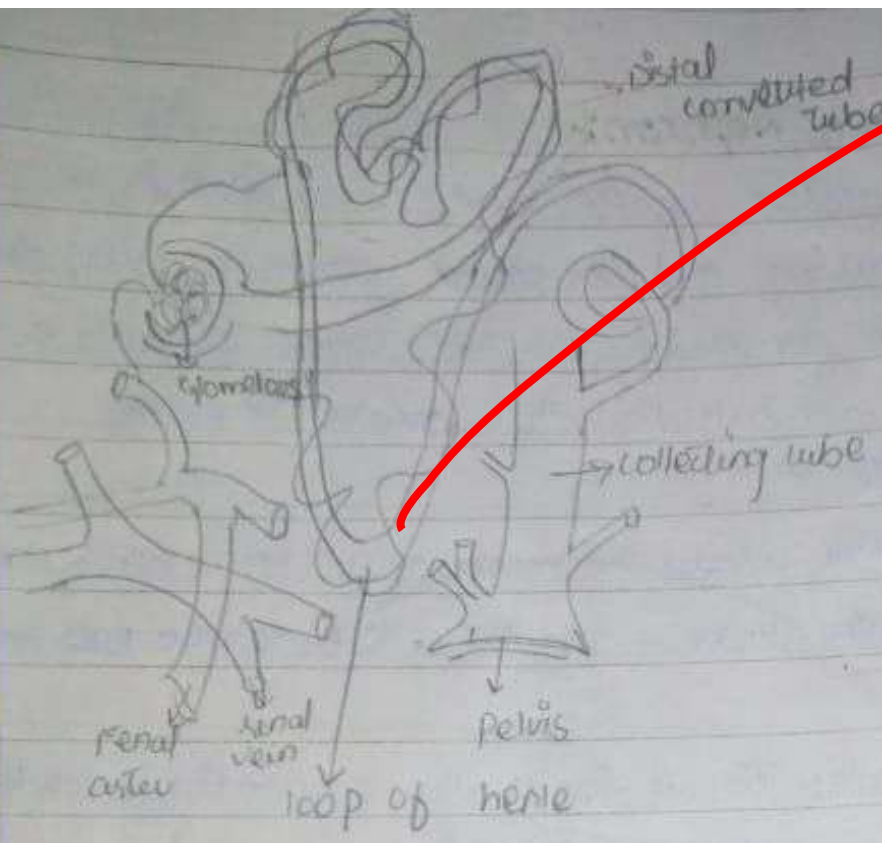
Collecting duct:- This tube collects the processed filtrate from multiple nephrons and form urine.



Ureter:- This tube funnels urine from kidney to the bladder.



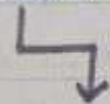
Bladder:- This stretchy sac stores urine until released through urethra.



Part C8

Black hole is formed in 4 stages:-

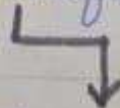
1- stellar evolution



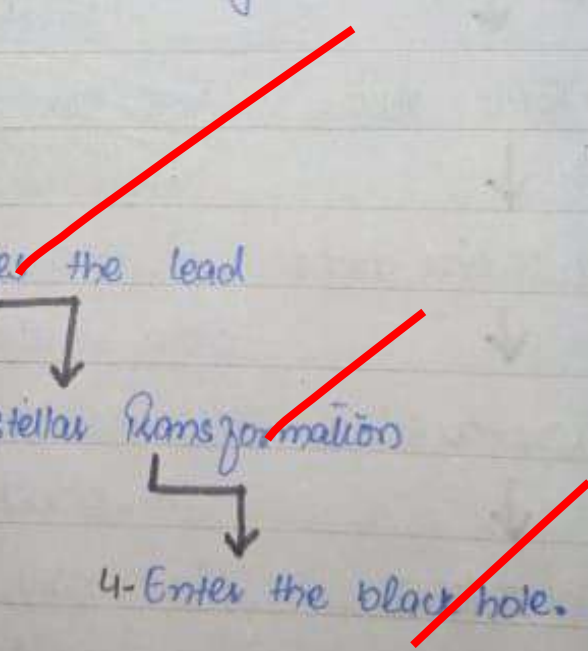
2- Gravity takes the lead



3- stellar transformation



4- Enter the black hole.



When a star several times bigger than size of sun ended up its process of fusion. When no fusion is occurring inside the sun and gravitational pull cannot be counteracted. The star begins to fall in itself. Now depending on the size of star two things can happen:-

Neutron star

If star is not massive enough its core compresses packing protons and neutrons together to form an ultra-dense ball called neutron star.

Black hole

For truly massive stars the collapse continues crushing the core beyond imagination until it reach point of no return - The Schwarzschild radius

This region of immense gravitational pull is where black hole is born.

Part 2

Isotopes :

Atoms of the element with same number of protons but different number of neutron. This difference in neutron alter their atomic masses making them distinct isotopes

Hydrogen has 3 isotopes :-

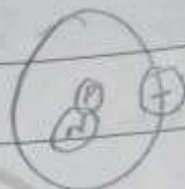
Protium: ${}^1\text{H}$

Most common isotope
with one proton and no
neutron.



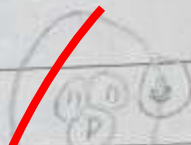
Deuterium :- ${}^2\text{H}$

Also called heavy hydrogen
it has one proton and
one neutron.



Tritium: ${}^3\text{H}$

A radioactive isotope
with one proton and two
neutrons.



Isobars:-

Atoms of different element with the same mass
number (protons + neutrons)

example = Calcium (40 (20 p, 20 n) and potassium (40
(19 protons - 21 neutrons))

Isotones :-

Atoms of different element with same number
of neutron.

Example = Sulphur - 36 (16 p, 20 n), chlorine (17 p, 20 n)