Good for math portion
Increase length of theory portion
Add headings and points

PART - II
(SECTION - A)
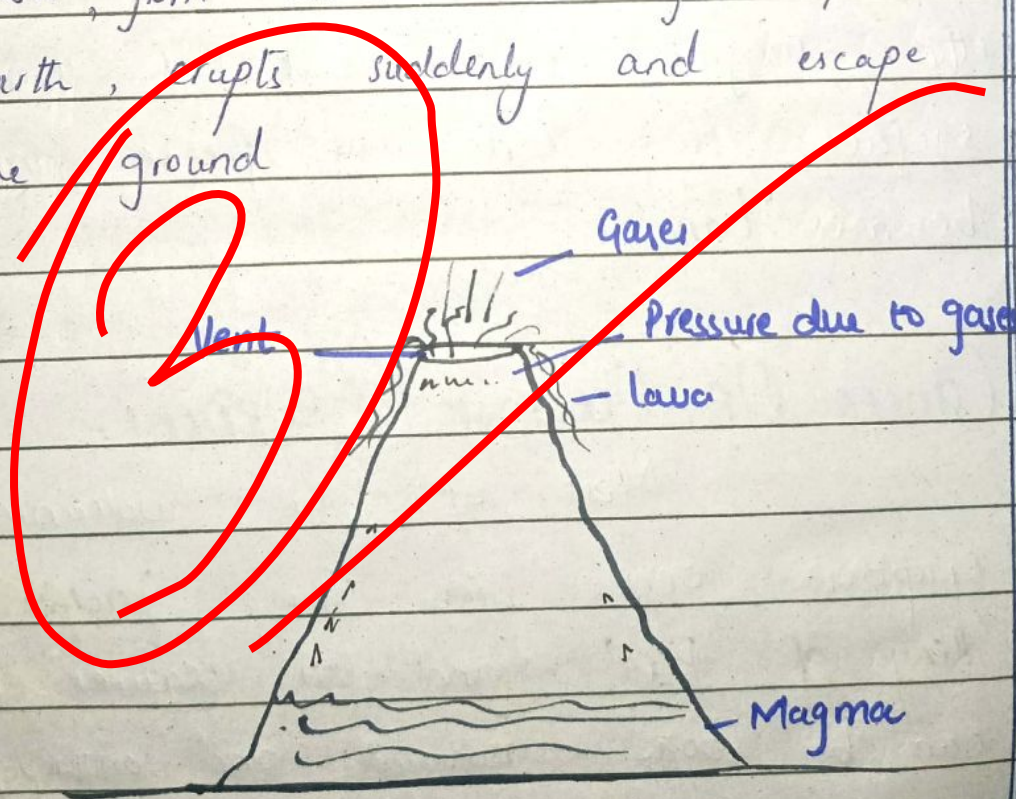
Q. NO. 2
(a)
Eruption of Volcanoes

VOLCANO:

Volcano is a natural disaster in which magma and other hot gases, from under the surface of the earth, erupts suddenly and escape the ground

Gases
Pressure due to gases
Vent
lava
Magma

Eruption Of Volcano:

In the core of earth's surface, there lies a liquid fire like substance called 'Magma'. It is so hot in temperature, and slowly and gradually it rises to the surface of the earth where due to the gases, the pressure starts to build up. And when this pressure increases beyond an extent, It suddenly erupts. However, when the magma erupts out of the surface it starts to freeze and becomes 'Lava'.

Causes Of Volcanic Eruption:

Most of the volcanic eruptions occur in the Pacific Ring of Fire and its causes can be both natural and anthropogenic

Natural Causes	Anthropogenic Cause:
1) Earthquakes	
2) Fall of meteor	1) Mining
3) Magma composition	2) Aircraft incident

18ᵗʰ DECEMBER VOLCANIC ERUPTION:

On 18ᵗʰ December, 2023 volcano was erupted in Iceland due to earthquake. During earthquake the tectonic Plates move and when they hit each other at boundaries they causes the accumulated gases to escape the ground via external vent.
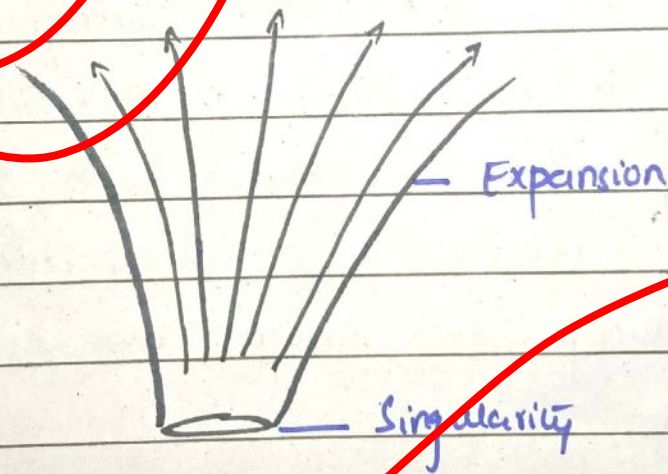
(b)

Big Bang and Big Crunch
'Age of Universe'

BIG BANG:

Big Bang or Big Bang

theory is a simple explanation of the formation of this universe. According to the big bang, the universe was just a singularity to almost 14.7 billion years ago. When that singularity suddenly burst, it started to expand and it gave rise to the time and matter

— Expansion

— Singularity

WAYS TO DETERMINE THE AGE OF UNIVERSE:

The age of the universe can be determined in the following ways.

A- Observation of Cosmic Background Radiations :

Cosmic Background wave Radiations are those radiation which were created during big Bang. By observing those radiations and the pattern of 'Red shift' one can know the age of the universe.

B- Hubble's law.

Hubble law is the determination of the recessional velocity of galaxies and their relation to the distance from us. This distance also indicates the age of universe. as it is constantly expanding.

C- Observation of Globular Clusters:

Globular Clusters are group of dense ancient stars. Their observation or age also

tells the age of the universe.

D. Stellar Evolution:

By knowing the age or evolution of the oldest known stars in the galaxy or milky way, the age of the universe can be detected.

(C)
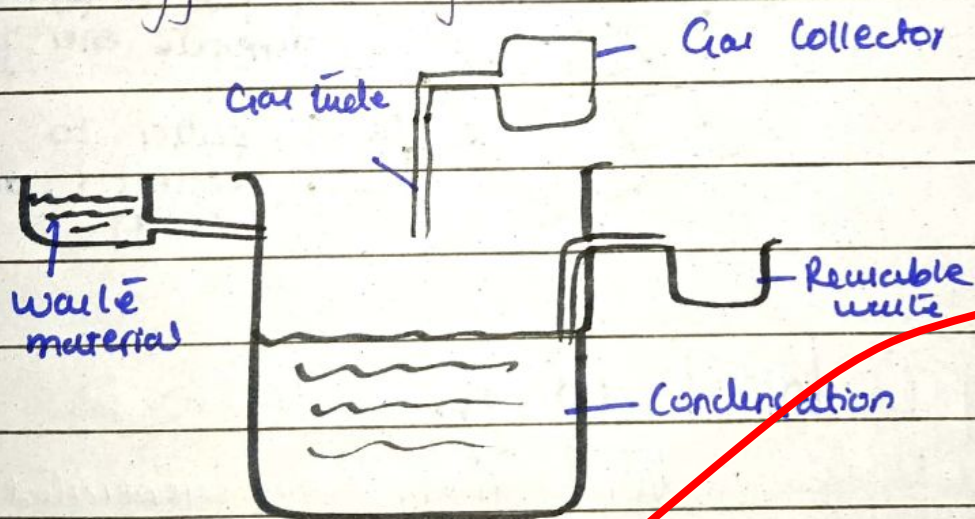## Sources of Renewable Energy

DEFINING RENEWABLE ENERGY:

Renewable energy is the type of energy that can be generated again and again over a long period of time without harming the source or the environment.

SOURCES OF RENEWABLE ENERGY

Following are the sources of Renewable energy:

A. Bioenergy or Biofuels.

Bioenergy can be generated by heating up the biological waste material of food and animals. This process is being done in condensor where bioenergy is generated.

Gas tube

— Gas Collector
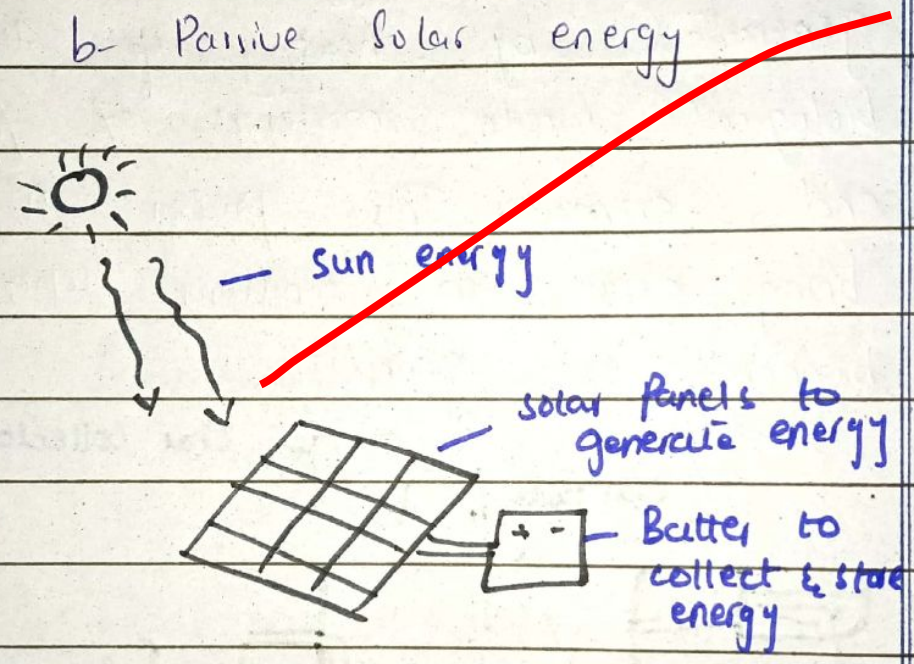
Waste material

— Reusable waste

— Condensation

B. Solar Energy:

Solar energy, as the name indicates is generated

using the direct heat from the sun. The rays of the sun provided that energy. It can be of two types:

  a- Active Solar energy
  b- Passive Solar energy

— sun energy

— solar panels to generate energy

— Batter to collect & store energy

C- Wind Energy.

Wind energy is generated by using the power of wind for run turbines. It is most suitably generated at open places where the pressure of the wind is high.

D. Hydro power:

Hydropower is generated using the power or energy stored in water. It is generated at vast water bodies like dams and lakes.

E. Thermal energy:

Thermal or Geo energy can be generated using the power stored under the earth.

(d)
Working of Optical Fibers

OPTICAL FIBERS:

Optical fibres are a wire like telecommunication devices which are use to send signals over long distances at high speed.
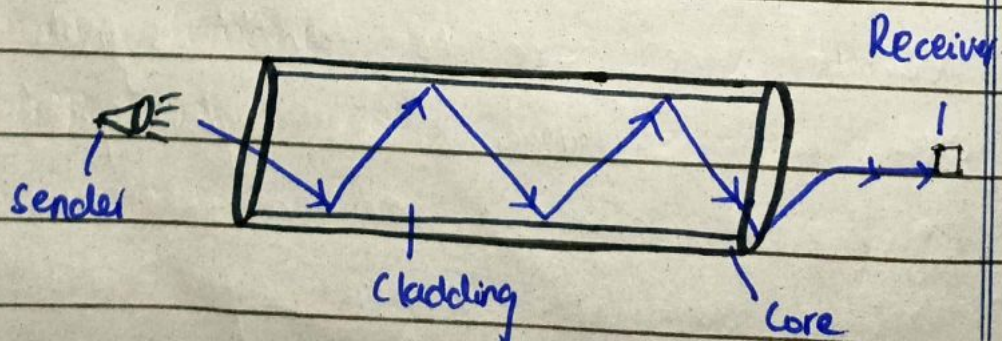
WORKING OF OPTICAL FIBERS:

Optical fibers work on the principle of total internal reflection.

→ Total Internal Reflection:

Total Internal Reflection is a mechanism that occurs when a wave signal hit the signal it makes an angle, while reflection, smaller that required to escape the surface. Hence, it is completely reflected back into the surface.

In the case of optical fibre the optimum angle is 42°.

Sender

Cladding

Core

Receiver

Scanned with CamScanner

Q. No. 3

(a)

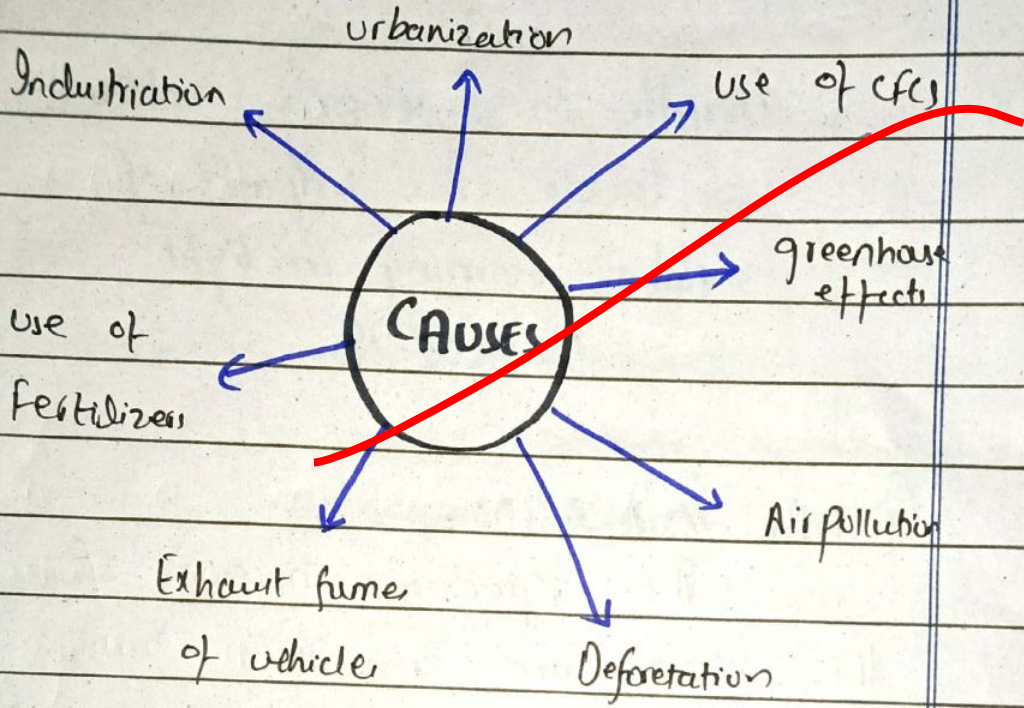Hurdles in Developing Countries to tackle the impacts of Global Warming in light of CoP-28

GLOBAL WARMING:

The gradual increase of the temperature of the earth due to green house effect and other cause is known as global warming.

According to Asian Development Bank, the world has broke all the previous records of recorded temperatures because 2023 was recorded as the hottest year so far.

Causes Of Global Warming:

Industriation

urbanization

Use of CFCs

CAUSES

greenhouse effects

Use of Fertilizers

Air pollution

Exhaust fume of vehicle

Deforetation

Major Hurdles In Developing States To Tackle The Impacts Of Global Warming In Light Of Cop-28:

Cop-28 has been the most important environmental conference of world leaders after Paris Summit in 2015. It was important not only because it was attended by 97000 delegates

but also that it highlighted the following issues faced by developing states to tackle the impacts of global warming.

A- Issue of Environmental Funds:

In the form of funds shortage for environment, developing countries have been facing a major hurdle. Their GDP and budget do not allow any funds for environmental policies and their implementations.

B- Huidle of Environmental losses:

Poor and developing countries are the most vulnerable ones when it comes to climate change. Floods in Pakistan, Nepal, Bangladesh are the clear demonstration of the fact. Hence,

COP-28 visualized loss and damage fund which was already approved in COP-27.

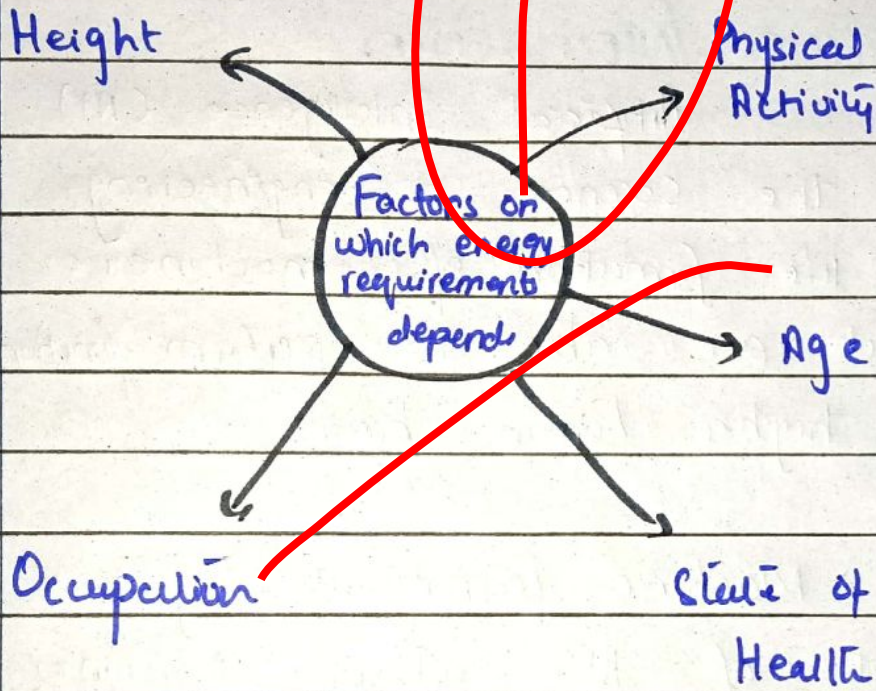### C- Hurdle in the form of Re newable energy:

The shift from the non to renewable energy sources requires money and technological advancements. It is the domain where developing countries definitely lack. So, it was recognized as a hurdle and policies were formed to help adopt this shift for developing countries.

(b)
Balanced Diet

BALANCED DIET:

Balanced diet mean eating the right amount of food to

fulfil body's nutrient need along with considering energy requirements of the body.

Height ← Factors on which energy requirements depends → Physical Activity

→ Age

Occupation State of Health

COMPONENTS OF BALANCED DIET:

Following are the major components of balanced diet.

a- Carbohydrates

b- Proteins

c- Vitamins

d- Lipid & fats

e- Minerals.

(C)

Revolution in the today's World due to AI

ARTIFICIAL INTELLIGENCE:

Artificial Intelligence (AI) is the science or engineering of the formation of machines which are able to perform functions of higher human brains.

Machine learning is just a subset of AI where Machine become able to take ove human beings' functions.

REVOLUTION IN TODAY'S WORLD:

The creation and the proliferation of AI is considered as the Big Bang of 21st century because it has the ability to revolutionize today's world. It is because.

to of it ability to influence every part of human life.

A- AI in Medical Science:

In the medical sciences AI can completely alter the health care systems. the creation of Robo Surgeons has already created a huge influence in it.

B- AI in Education:

In the field of education as well, AI has changed the ways people teach and learn today. Software like Chat GPT and Canva have made student's lives easy while use of AI surveilence over students has put them to threat.

C- AI in Food and Agriculture:

The artificial production of food is a hope for the future of food security. Moreover, the production of lab grown chicken, and meat also saves environment from harmful methane.

D- AI in Military Advancement:

Today, due to AI, countries are not directly at war but instead they are fighting information warfare using various AI tools.

E- AI and the State Security.

AI has made the State security more powerful due to surveillance cameras, drones, auto piloted missiles etc.

(d)
RAM and Rom

RAM	Rom
1— RAM stands for 'Random Access Memory'	Rom stands for 'Read Only Memory'
2— It is the temporary memory	It is the permanent memory
3— It is volatile in nature which means that it is lost without the supply of power.	It is non-volatile in nature hence does not need constant energy supply.
4— It is modifeedable	It cannot be modified
5— Examples: a— SRAM b) DRAM	Examples: a) PROM b) EPROM

(SECTION - B)

Q. NO. 8

(a)

Given:

Sum of three consecutive odd

numbers = 273

To Find:

Three odd numbers = ?

Solution:

let, those three numbers be

first odd number = x

Second odd no. = $x + 2$

Third odd no. = $x + 4$

So, as per Question Statement

The sum of three no. = 273

Hence,

$(x) + (x + 2) + (x + 4) = 273$

$$n + n + 2 + n + 4 = 273$$
$$3n + 6 = 273$$
$$3n = 273 - 6$$
$$3n = 267$$
$$n = \frac{267}{3} \quad 89$$

$$n \quad 89$$

$$1^{st} \quad odd \quad no. = 89 = n$$
$$2^{nd} \quad odd \quad no. = n + 2 = 89 + 2$$
$$= 91$$
$$3^{rd} \quad odd \quad no. = n + 4 = 89 + 4$$
$$= 93$$

Hence, the three consecutive odd numbers are **89**, **91**, and **93** who gives a 273 when added.

(b)
Missing Numbers.

(i). 4, 16, 36, 64, ___ , 144

$4 + 12 = 16$

$16 + 20 = 36$

$36 + 28 = 64$

$64 + 36 = \boxed{100}$

$100 + 44 = 144$

It shows the sequence which is followed by the numbers given. Hence, according to this sequence the missing number is 144 100

(ii). 30, 29, 27, ___ , 20, 15

$30 - 1 = 29$ $24 - 4 = 20$

$29 - 2 = 27$ $20 - 5 = 15$

$27 - 3 = \boxed{24}$

According to to this sequence, the missing number is 24.

(iii). 1, 7, 15, 25, ___, 51

$$1 + 6 = 7$$
$$7 + 8 = 15$$
$$15 + 10 = 25$$
$$25 + 12 = \boxed{37}$$
$$37 + 14 = 51$$

As per this sequence, the missing number is 37

(iv). 0, 2, 6, 12, 20, 30, ___

$$0 + 2 = 2$$
$$2 + 4 = 6$$
$$6 + 6 = 12$$
$$12 + 8 = 20$$
$$20 + 10 = 30$$
$$30 + 12 = \boxed{42}$$

(c)
Jumbled Words

Jumbled Words	Correct Words
THRSI	SHIRT
GNDREA	DANGER
SCHAMOT	
ONLNDO	LONDON
HIODALY	HOLIDAY

(d)
'Age'

Given:

Present Age of Sara's mother = 6 times of Sara

Present Age of Sara's Brother = 2 times of Sara

After three years,

Sum of their ages = 72

To Find:

Current ages of Sara, Mother, and Ali

Solution:

let,

   Current age of Sara = x

So,

   Current age of mother = $6x$

   Current age of Ali = $2x$

After three years,

   Sara's age will be = $x+3$

   Mother's age will be = $6x+3$

   Ali's age will be = $2x+3$

Sum of their ages after three years, as per statement will be 72 . So,

$$(x+3)+(6x+3)+(2x+3) = 72$$

$$x+3 + 6x+3 + 2x+3 = 72$$

$$9x + 9 = 72$$

$$9x = 72-9$$

$$x = 63$$

$$x = \frac{63}{9} \quad ; \quad \boxed{x = 7}$$

Hence

Sara's current age = $\boxed{7 \text{ years.}}$

Mother's " " = 7×6

= $\boxed{42 \text{ years.}}$

Al's current age = 7×2

= $\boxed{14 \text{ years.}}$

Q. NO. 6
(a)

Given:

Votes received by three contestants are 15000, 10000 and 8000.

To Find:

Percentage of total votes of winning candidate.

Solution:

To find the Percentage of votes of winning candidates,

The sum of total voter is required.
So,

$$15000 + 10000 + 8000 = 33000$$

Total vote = 33000

Percentage of winning candidate:

$$\text{Voter} = \frac{\text{voter received by him}}{\text{Total voter}} \times 100$$

$$= \frac{15000}{33000} \times 100$$

$$= 45.5\%$$

Hence, the total voter received by the winning candidate are 45.5% of total voter.
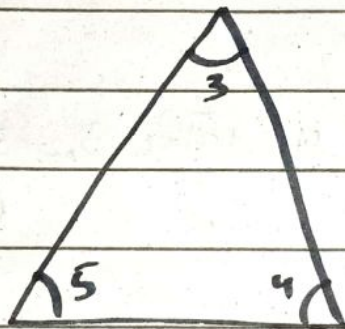
(b)

Given:

Ration of angle of triangle = 3:4:5

To Find :

The value of each angle

Solution :

let, this be the triangle with the angle ratios of 3 : 4 : 5.

As we know that, all types of triangles make 180° on adding up their angles.
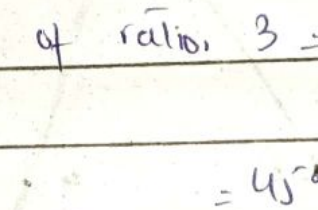So, the sum of the angles of this triangle will also be 180°

Sum of The ratios = 3 + 4 + 5

$$= 12$$

the total parti of 180° are

12 in this triangle.

So,

first angle of ratio, 3 $= \dfrac{3}{12} \times \dfrac{180}{12}$

$$= 45°$$

Second angle of ratio 4 $= \dfrac{4 \times 180}{12}$

$$= 60°$$

Third angle of ratio 5 $= \dfrac{5 \times 180}{12}$

$$= 75$$

Their sum $= 45 + 60 + 75$

$$= 180°$$

Hence, The values of angler are

45°, 60°, and 75°

(C)

Given:

Available no. of girls = 102

Each group = 4 boys & 6 girls.

To Find:

Required No. of boys = ?

Solution:

For making group 4 boys and 6 girls are required.

as The no. of girls are 102. It means that each group with have 6 girls. By divind them, total of 17 groups will be formed.

$$\frac{102}{6} = \boxed{17}$$

If each group will must have 4 boys, so,

$$17 \times 4 = 68$$

68 boys are required to form groups with 6 girls and 4 boys in each one.

(d)

Given:

Ratio of Present ages of A & B.

A : B = 6 : 7

After 5 years, ration would be 7 : 8

To Find:

Present ages of A & B.

Solution:

Current ages give the following ration

$$\frac{A}{B} = \frac{6}{7}$$

Let, their current ages be 6n and 7n respectively.

So, ratio will be.

$$\frac{A}{B} = \frac{6n}{7u}$$

After 5 years,

$$\frac{A}{B} = \frac{7}{8}$$

$$\frac{6n+5}{7n+5} = \frac{7}{8}$$

$$(6n+5)8 = 7(7x+5)$$
$$48x + 40 = 49x + 35$$
$$48x - 49x = 35 - 40$$
$$-1x = -5$$
$$n = 5$$

So, their present ages are.

$$A = 6n = 6 \times 5 = 30$$
$$B = 7x = 7 \times 5 = 35$$