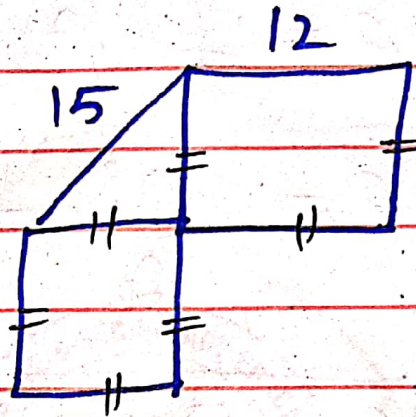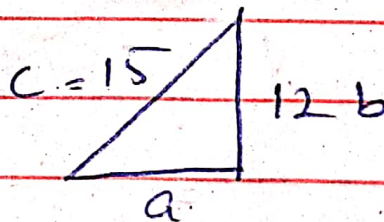Section - II

Que # 08 (c)

Solution

Apply Pathogerus Theorem
on Triangle

$$c^2 = a^2 + b^2$$

$$(15)^2 = a^2 + (12)^2$$

$$225 - 144 = a^2$$

$$\boxed{a = 9}$$

Now, area of triangle

$$a = \frac{1}{2}(bh)$$

$$a = \frac{1}{2}(12 \times 9)$$

$$a = \frac{108}{2} = 54 \, cm^2$$

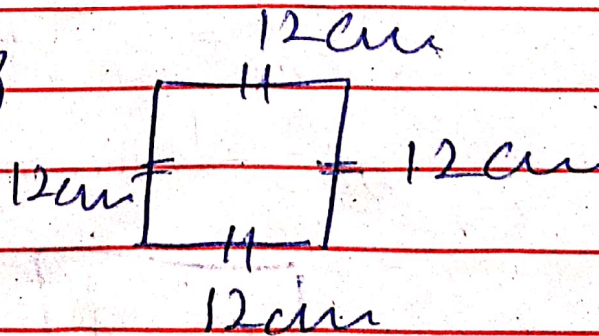$$\boxed{a_1 = 54 \, cm^2}$$

Perimeter of triangle

$$P = a + b + c$$

$$P = 9 + 12 + 15$$

$$\boxed{P_1 = 36 \, cm}$$

Area of

$$a = \text{Side} \times \text{Side}$$

$$a = 12 \times 12$$
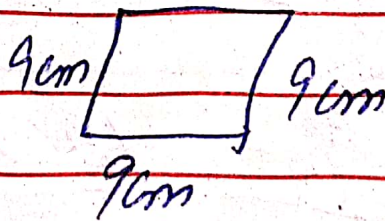
$$\boxed{a_2 = 144\ cm^2}$$

Perimeter

$$P = 2(\text{length} + \text{width})$$

$$P = 2(12 + 12)$$

$$P = 2(24)$$

$$\boxed{P_2 = 48}$$

Now area of last square

9cm
9cm [ ] 9cm
9cm

$$a = 9 \times 9 = 81cm^2$$

$$\boxed{a_3 = 81cm^2}$$

$$P = 2(L + W)$$

$$P = 2(9 + 9)$$

$$\boxed{P_3 = 36 \text{ cm}}$$

Now, total area of figure

$$a_T = a_1 + a_2 + a_3$$

$$a_T = 54 + 144 + 81$$

$$\boxed{a_T = 279 \text{ cm}}$$

5

Total perimeter of figure

$$P_T = P_1 + P_2 + P_3$$

$$P_T = 36 + 48 + 36$$

$$\boxed{P_T = 120 \text{ cm}}$$

Qno # 8 (a)

Solution

The sequence of brother is changed in reverse direction along with reversing the alphabet with decreasing order as:

BROTHER is written as:

QDGSNQA

So, SISTER is written as:

| ODGRHR |

QNO # 8(b)

Solution

Formula of Probability is

$$P(A) = \frac{n}{N}$$

$$= \frac{\text{Favourable Cases}}{\text{Possible Cases}}$$

So, Probability of getting

i - (8) is $= \frac{1}{12}$

iii - a Perfect square is $= \frac{2}{12} = \frac{1}{6}$

ii - Even number is $= \frac{6}{12} = \frac{1}{2}$

IV- a Negative number is

$$= \frac{0}{12} = 0$$

V- A number less than

13 is $= \frac{12}{12} = 1$

Qno # 8(d)

Solution:

Group of nine students having ages:
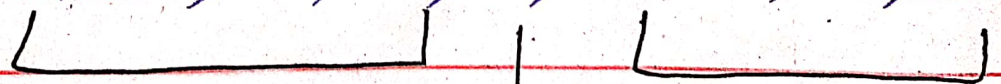
15, 15, 16, 16, 16, 17, 17, 18, 19

Mean of students =

$$\frac{15+15+16+16+16+17+17+18+19}{9}$$

$$= \frac{149}{9} = 16.55$$

Mean = 16.55

Medium of students is

15, 15, 16, 16, 16, 17, 17, 18, 18

Medium is = 16

mode of group of students =

15, 15, 16, 16, 16, 17, 17, 18, 19

Most repeatative is 16,
so,
mode is 16

Range of group of students :

$$Range = \frac{Maximum}{age} - \frac{Minimum}{age}$$

$$= 19 - 15$$

$$= 04$$

QNo # 07 (a)

Solution

$$T = 400 \text{ seats}$$

$$O = 325 \text{ occupied}$$

Attendance at a % capacity

Absent / Vacent $= 400 - 325 = 75$

Vacent in % $= \dfrac{75}{400} \times 100$

$$= 18.75$$

So attendance in terms of Percent capacity is

$$= 100 - 18.75$$

$$= \boxed{81.25 \%}$$

Give the final answer in the form of statement

Qno # 07 (b)

Solution :

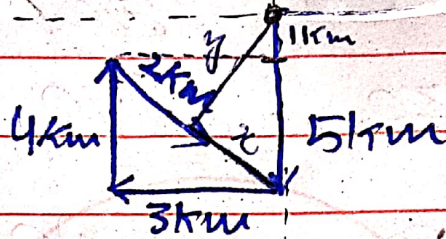| Persons	Weight of sugar	Days
↓ 30	↑ 40	↑ 10
↓ 80	320	x

$$\frac{x}{10} = \frac{30}{80} \times \frac{320}{40}$$

$$x = 10 \times (3)$$

$$x = 30 \text{ days}$$

Thus, 80 persons use 320kg of sugar 30 days.

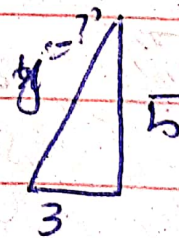# Qno # 07 (c)

Solution:

Apply Pathagorus Theorem

$$(2+x)^2 = \sqrt{(4)^2} + (3)^2$$

$$2+x = \sqrt{16+9}$$

$$2+x = \sqrt{25} = 5$$

$$\boxed{x = 3}$$

$$y^2 = (3)^2 + (5)^2 = 9 + 25$$

$$y = \sqrt{36} \Rightarrow 6$$

Thus Crow is 6km away from its original position.

Q.no # 07 (d)

Solution

$$R = 10 cm$$
$$h = 36 cm$$
$$V = ??$$

Volume of Cylinder $= \pi r^2 h$

$$V = \pi \times (10)^2 \times 36$$

$$V = \pi \ 100 \times 36$$

$$V = 3600 \pi \ cm^3$$

$$V = 3600 \times 3.14 \ cm^3$$

$$\boxed{V = 11,309.7 \ cm^3}$$

Q.NO# 04 (c)

Types of Waves Used in:

RADAR:
Radar uses Radio-waves to determine distance and angle of objects

SONAR:
Sonar uses Ultrasonic waves for its objects

LIDAR:
Lidar uses Visible or light or radiation to detect

the object.

Mobile Phone :
Mobile phone uses Radio Waves for transmitting its signals.

Thermistors :
It is a Thermally sensitive resistors that changes value with the temperature.

PART-II
SECTION-I

Q. No. 2
   a. Pakistan suffered a loss of $40bn due to heavy floods of 2022; in this context climate finance is the central question for developing countries. Discuss in the light of COP-28 going to start in UAE.
   b. Distinguish water-soluble and fat-soluble vitamins. Give examples of diets containing different vitamins.
   c. Explain the structure of Eye.
   d. Draw a flow chart of different parts of Brain.

Q. No. 3
   a. Global warming is a wild beast and we all are poking at it which sticks, justify.
   b. What is the origin of universe, how age of universe can be calculated?
   c. Write a short note on semi-conductors.
   d. What is eclipse? Distinguish between solar and lunar eclipse.

Q. No. 4
   a. Define the following:
       Pesticides, Herbicides, Insecticides, Ceramics, and Green House Effect.
   b. Explain the bonding in water molecule.
   c. What types of waves are used in RADAR, SONAR, LIDAR, Mobile Phone and Thermistors?
   d. What are advantages and disadvantages of AI?

Q. No. 5
   a. Draw a block diagram of input and output devices of Computer.
   b. Define optics. How does an optical fiber work?
   c. Discuss different methods of Solid Waste Management.
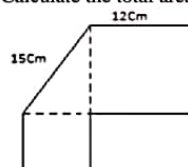   d. Distinguish GPS & GIS.

SECTION-II

Q. No. 6
   a. A farmer cuts a 300 ft. fence into two pieces of different sizes. The longer piece should be four times as long as the shorter piece. How long are the two pieces?
   b. If a rectangle has a length that is three more than twice the width and the perimeter is 20-inches, what are the dimensions of the rectangle?
   c. A cricket team won 60% of the total matches it played during the year. If it lost 24 matches in all and no matches were drawn, find the number of matches played during the year.
   d. Two numbers are in the ratio 3: 2. If 2 is added to the first and 6 is added to the second number, they are in the ratio 4: 5. Find the numbers.

Q. No. 7
   a. A concert hall 400 seats of which 325 are occupied. Express the attendance at a percent of capacity.
   b. If 30-persons use 40kg of sugar in 10 days. Find in how many days 80-persons will use 320kg of sugar?
   c. 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?
   d. If radius of a cylinder is 10cm and height is 36cm. Find the volume of cylinder.

Q. No. 8
   a. If in a certain language, BROTHER is written as QDGSNQA, then in the same language, SISTER would be written as --------?
   b. A card is drawn at random from a box containing 12 cards numbered 1,2,3,4,5,....,12. Find the probability of drawing (i) '8', (ii) an even number, (iii) a perfect square, (iv) a negative number and (v) a number less than 13.
   c. Calculate the total area and perimeter of the given shape.

   d. There are nine students in a group having ages 15, 15, 16, 16, 16, 17, 17, 18, 19. Calculate **mean, medium, mode and range** of their ages, also define the above mentioned terms.