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Mock-7

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Batch:- 342

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Part - II

Section - II

Q6

(a)

Total length of ^{fence} piece = 300 ft

Given,

longer piece = 4 times the shorter piece

Let length of shorter piece be x .

So length of longer piece = $4x$

Given total length of fence = 300 ft

Also total length of fence = Sum of length of two pieces

Thus total length of fence = $x + 4x = 300$

$$5x = 300 \text{ ft}$$

$$x = 60 \text{ ft}$$

$$4x = 240 \text{ ft}$$

Hence

length of shorter piece = 60 ft

length of longer piece = 240 ft

(b)

Given;

length of rectangle = Three more than twice the width

Perimeter of rectangle = 20 in.

Suppose width of rectangle = x Then length of rectangle = $2x+3$ Since Perimeter of rectangle = $2(L+b) = 20$ in. (1)where L is length ($L=2x+3$) b is breadth (width) ($w=b=x$)Put values of L and b in eq-(1)

$$2(2x+3+x) = 20$$

$$2(3x+3) = 20$$

$$3x+3 = 10$$

$$3x = 7$$

$$x = \frac{7}{3} \text{ in.} = \text{width of rectangle}$$

So, length of rectangle = $2\left(\frac{7}{3}\right) + 3$

$$\text{length of rectangle} = \frac{23}{3} \text{ in.} \quad \underline{\text{Ans}}$$

(c)

Given,

Matches lost = 24

Matches drawn = 0

Also, Matches won = 60% of total

So, Matches lost = 40% of total

(because no matches were drawn)

Suppose total number of matches played = x

Now matches lost = 24 = 40% of total

$$24 = 40\% \text{ of } x$$

Mathematically,

$$\frac{40}{100} \times x = 24$$

$$\therefore x = \frac{24 \times 100}{40}$$

$$\boxed{x = 60}$$

Thus, total number of matches played = $\boxed{60}$ Ans

(d)

Given;

ratio of two numbers = 3 : 2

Let the numbers be x and y respectively

Now, since $x : y = 3 : 2$ — (1)

and $x + 2 : y + 6 = 4 : 5$ — (2)

Eq - (1) and Eq - (2) may be written as

$$\frac{x}{y} = \frac{3}{2} \text{ — (3)}$$

$$\frac{x+2}{y+6} = \frac{4}{5} \text{ — (4)}$$

From eq - (3), $2x = 3y$

$x = \frac{3y}{2}$ — Put in eq - (4)

$$\frac{\frac{3y}{2} + 2}{y + 6} = \frac{4}{5}$$

$$\frac{3y+4}{2(y+6)} = \frac{4}{5}$$

$$15y+20 = 8(y+6)$$

$$15y+20 = 8y+48$$

$$7y = 28$$

$$\boxed{y = 4} \quad \underline{\underline{\text{Ans}}}$$

Since $x = \frac{3}{2}y = \frac{3}{2}(4) = \boxed{6} \quad \underline{\underline{\text{Ans}}}$

Q7

(a)

Total seats in the concert hall = 400

Occupied seats = 325

Since $\text{percentage attendance} = \frac{\text{Occupied seats}}{\text{Total capacity}} \times 100$

$$\text{percentage att.} = \frac{325}{400} \times 100$$

$$= \boxed{81.25\%} \quad \underline{\underline{\text{Ans}}}$$

(b)

Given:

30 persons use 40 kg sugar in 10 days

So,

30 persons use 4 kg sugar in 1 day.

Also,

1 person uses $\frac{4}{30}$ kg sugar in 1 day.

Now,

Days required to use 320 kg sugar for

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$$\begin{aligned} 1 \text{ person} &= \frac{\text{Kilograms of sugar}}{\text{Daily consumption}} \\ &= \frac{320}{\frac{4}{30}} \\ &= \boxed{2400 \text{ days}} \end{aligned}$$

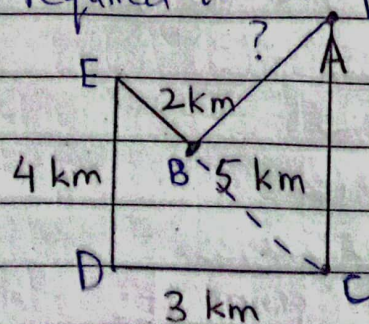
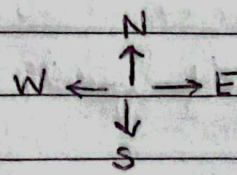
Similarly, days required for 80 persons to use 320 kg sugar

$$\begin{aligned} &= \frac{\text{Quantity of sugar}}{\text{Daily consumption of 1 person} \times \text{Number of persons}} \\ &= \frac{320}{\frac{4}{30} \times 80} \\ &= \boxed{30 \text{ days}} \quad \underline{\underline{\text{Ans}}} \end{aligned}$$

(c)

Journey of the crow in pictorial form is given below:-

A is starting point
B is ending point
AB is required to be found.



(Not to scale)

We find CE

Since EDC is rt. angle Δ

By Pythagoras' theorem

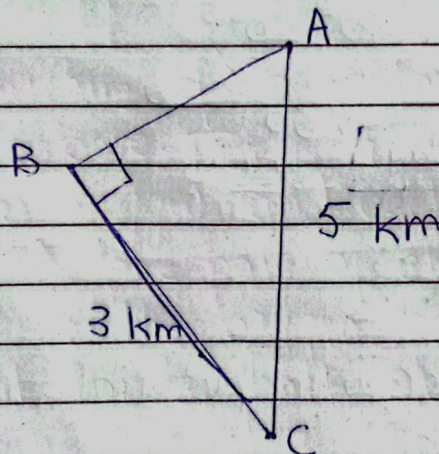
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$$(H)^2 = (B)^2 + (P)^2$$
$$(CE)^2 = (CD)^2 + (DE)^2$$
$$CE = \sqrt{(3)^2 + 4^2}$$
$$\boxed{CE = 5 \text{ km}}$$

Since $BE = 2 \text{ km}$

$$BC = CE - BE$$
$$= 5 - 2$$
$$\boxed{BC = 3 \text{ km}}$$

Consider $\triangle ABC$



$\triangle ABC$ is rt. angled

By Pythagoras' theorem $H^2 = B^2 + P^2$

$$(AC)^2 = (BC)^2 + (AB)^2$$
$$(AB)^2 = (AC)^2 - (BC)^2$$
$$(AB)^2 = (5)^2 - (3)^2$$

$$AB = \sqrt{25 - 9}$$

$$\boxed{AB = 4 \text{ km}}$$

The crow is $\boxed{4 \text{ km}}$ from its starting point.

Ans

(d)

Given ;

Radius of cylinder = 10 cm

Height of cylinder = 36 cm

Also, Volume of cylinder = $V = \pi r^2 h$

$$V = \pi r^2 h$$

Where r is radius

h = height of cylinder

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

~~$$V = \frac{22}{7} (10)^2 (36)$$~~

$$V = 3600 \pi \text{ cm}^3 \quad \underline{\underline{\text{Ans}}}$$

where π is $\frac{22}{7}$ Section-IQ4

(a)

Pesticides :- Chemicals that are used to kill pests are called pesticides

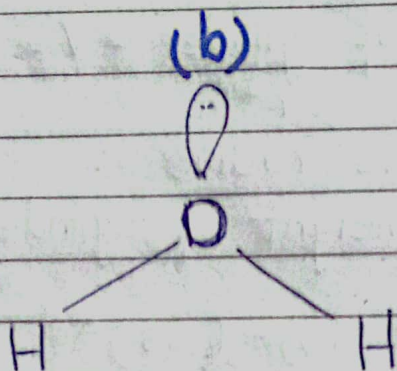
Herbicides :- Chemicals that are used to eradicate unwanted weeds from a farmland are called herbicides

Insecticides :- Chemicals used to kill insects are called insecticides.

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Ceramics:- These are compounds made up of one metal and one non-metal.

Greenhouse effect:- The process that traps heat in Earth's atmosphere is called greenhouse effect.



The structure of a water molecule is shown above. There is a covalent bond between oxygen and each hydrogen atom. A lone pair of electrons is also present on the oxygen molecule. In the covalent bonds, both electrons are donated by the oxygen atom. Hence this bond may be further classified as "co-ordinate" covalent bond.

(c)

RADAR = Radio waves

SONAR = Sound waves

LIDAR = Light waves

Mobile Phone = Micro waves

Thermistors = X-rays

(d)

Advantages:-

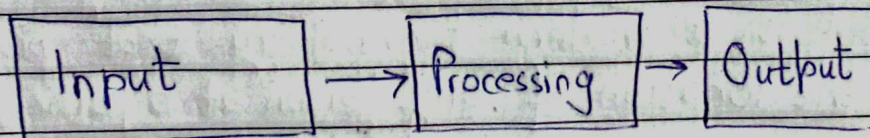
- (i) Saves humans from doing mundane tasks
- (ii) Does tedious task very quickly
- (iii) Generative AI generates unimaginably beautiful artworks

Disadvantages:-

- (i) Loss of jobs
- (ii) Dampens human intellect
- (iii) Large coolers needed to cool AI processors ; contribution to global warming

Q5

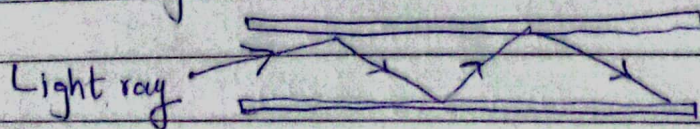
(a)



(b)

The field of physics that deals with the study of light, its behaviour, and characteristics is called optics.

An optical fiber works on the principle of total internal reflection. A light ray is incident in the 'core' of the optical fibre at an angle greater than the critical angle.



(c) Different methods of solid waste ^{management} incineration include:-

(i) Incineration

Solid waste is burnt in a controlled environment.

(ii) Landfills

Solid waste is buried in huge pits.

(iii) Recycling

Solid waste is re-processed and used again.

(d)

GPS

It refers to 'Global Positioning System'. It is a modern technology that provides the location of any person at a particular time.

GIS

It refers to 'Global Information System'. This provides global, 24/7 access to information to anybody.