Samim Shah

Good for math portion
Write complete logic and steps
Work on theory portion too

Section - II

Question # 7 (a)

Given Data:

Total seats in concert hall = 400

Occupied seats = 325

To Find:

Attendance at a percent of capacity = ?

The given expression is the question is as follows; total seat 400, occupied 325.

Hence attendance at a percent of capacity is,

$$\text{Attendance in percentage} = \frac{325}{400} \times 100$$

$$= \frac{325}{4}$$

$$\therefore \quad 4 \overline{)\,325.2} \quad 81.3$$

$$32$$

$$5.2$$

$$5\,2$$

$$x$$

Attendance in percetage = 81.3 %

Q # 7" part (b)

Given Data :

Case 1: Persons = 30
weight of sugar = 40 kg
No. of days = 60 days

Case 2: Persons = 80
weight of sugar = 320Kg of sugar
No. of days = ?

To Find :

Number of days 80 persons consume 320Kg of sugar = ?

Solution :

Persons	weight	No. of days
30	40 kg	60
80	320 kg	?

So, we have to take compound ratio of 80:30 and 10:320

Then

$10 : x = 80 \times 40 : 30 \times 320$

$= 3200 : 9600$

Since, the ratios are equal, the product of extremes is equal to the product of means

$10 \times 9600 = x \times 3200$

$96000 = x \times 3200$

$\frac{96000}{3200} = x$

80
40
00
3200
3200

320
30
000
9600
10
0000
96000
96000

$$\frac{960}{32} = x$$

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

32 | 960 | 30
960
x

Hence, 80 persons use 320 kg of sugar in **30 days.**

Part (c)

Given Data:

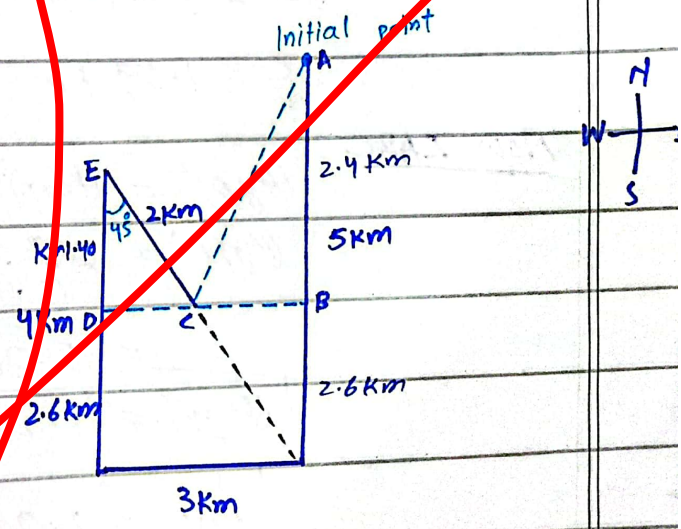
Cow Travels South = 5 Km
West = 3 Km
North = 4 Km
South-east = 2 Km

To Find:

~~How~~ The distance from its initial point = ?

Solution:

Given Diagram is,



The question tells that the crows goes to south-east it form an angle of 45° with its adjacent.

Hence, $\sin 45 = \frac{\text{opposite}}{\text{hypotenuse}}$

$$\sin 45^\circ = \frac{DC}{CE}$$

$$\frac{\sqrt{2}}{2} = \frac{DC}{2}$$

$$DC = \sqrt{2}$$

$$\boxed{DC = 1.41 \text{ km}}$$

Now we have to find DE. From Pythagoreus theorem we know

$$(Hyp)^2 = (Perp)^2 + (Base)^2$$

$$(2)^2 = (DE)^2 + (1.41)^2$$

$$4 = (DE)^2 + 1.98$$

$$4 - 1.98 = (DE)^2$$

$$\sqrt{2.011} = \sqrt{(DE)^2}$$

$$\boxed{DE = 1.40}$$

As the total base line: the crow's travel to west is 3K. Then ~~BD~~

$$BC = BD - DE$$

$$BC = 3 - 1.41$$

$$BC = 1.59 \text{ km}$$

Now $\angle ABC$

$$(Hyp)^2 = (Perp)^2 + (Base)^2$$

$$(Hyp)^2 = (2.4)^2 + (1.59)^2$$

$$= 5.76 + 2.5281$$

$$\sqrt{(Hyp)^2} = \sqrt{8.28}$$

$$\boxed{Hyp = 2.9 \text{ km}}$$

Hence, the crow will be 2.9 km away from his initial position

023

∴ 5 − 1.40
3.6

1
2.4
2.4
96
48x
576
58
1.59
1.59
1431
1795x
159xx
2.5281

2.5281
5.76
8.28

Q # 7 Part (d)

Given Data :

Radius, $r = 10\ cm$

Height, $h = 36\ cm$

To find :

Volume, $V = ?$

Solution :

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

$V = \pi r^2 h$

$= (3.14)(10)^2(36)$

$= (3.14)(100)(36)$

$= (3.14)(3600)$

$V = 11304\ cm^3$

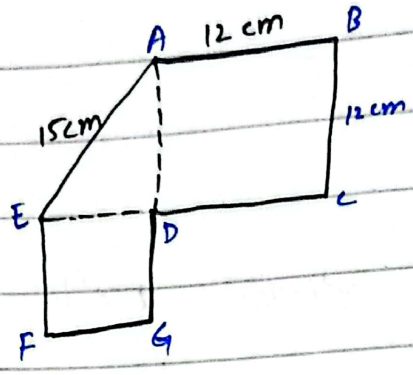
∴ 100
36
600
3000 ×
3600
3.14
1440
36000
108000
113040

Question # 8 Part (c)

To Find: Total Area = ?

Perimeter = ?

Given Shape:



Area of ~~Rectangle~~ Square ABCD:

$A = l \times w$

$A = 12 \times 12$

$\boxed{A = 144\ cm^2}$

Area of Triangle $\angle ADE$:

$A = \frac{1}{2} \cdot b \times h$ — (i)

$(Hyp)^2 = (Perp)^2 + (Base)^2$

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

$225 = 144 + (Base)^2$

$225 - 144 = (Base)^2$

$\sqrt{81} = \sqrt{(Base)^2}$

$\boxed{Base, DE = 9\ cm}$

Then $A = \frac{1}{2}(9)(12)$

$A = \frac{1}{2}(108)$

$\boxed{Area = 54\ cm^2}$

15
15
75
150
225
144
81

Area of ~~Rectangle~~ Square DEGF :

As DE = 9 cm

Then DE = DG = GF = EF = 9 cm

Area = l^2

Area = $(9)^2$

$A = 81\ cm^2$

Total Area :

Total Area = Area of square ABCD + Area of Triangle AD

Area of square DGEF

Total Area = 144 + 54 + 81

Total Area = 279 cm^2

Perimeter = AB + BC + DC + AD + AE + DG + FG + FE

= 12 + 12 + 12 + 12 + 15 + 9 + 9 + 9

= 48 + 15 + 27

Perimeter = 90 cm

120

Q # 8 . Part (d)

Given Expression:

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

Definition of Terms:

Mean: The average value of all numbers in a given expression is called mean.

Median: The middle number in a given expression/series is called median.

Mode: The most frequent number is called mode.

Range: Difference between highest and lowest number in a series is called range.

Calculations:

$$\text{Mean} = \frac{15+15+16+16+17+17+18+19}{8}$$

$$= \frac{193}{8}$$

$$\boxed{\text{Mean} = 24.2}$$

$$\text{Median} = \frac{16+17}{2} = \frac{33}{2}$$

$$\boxed{\text{Median} = 16.2}$$

Mode = 15, 16, 17

Range = 19 − 15

Range = 4

Part (b)

Given Data :

12 cards numbered 1, 2, 3, 4, 5, ..., 12

To Find :

Probability of 8 = ?

Probability of even number = ?

Probability of negative number = ?

a number less than 13 = ?

Solution :

Sample Space = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Let A be the event selecting '8', then $n(A) = 8$

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

since, Probability = Number of desired outcom / Total number of outcom

$$P(A) = \frac{1}{12}$$

Let A be the event selecting 'even numbers',

then $n(A) = 2, 4, 6, 8, 10, 12$

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

$$\boxed{P(A) = \frac{6}{12}}$$

Let A be the event selecting 'negative numbers'

then $n(A) = 0$

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

$$P(A) = \frac{0}{12}$$

$$\boxed{P(A) = 0}$$

Let A be the event selecting 'number less than 13',

then $n(A) = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12$

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

$$P(A) = \frac{12}{12}$$

$$\boxed{P(A) = 1}$$