**Title:-**

Assignment # 01

**Name:-**

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**Class:-**

BSAvM-S-26

**Roll no:-**

2600225

**Subject:-**

Mathematics & Logic - 1

**Q** Why do we need to study Mathematics and logics in management Sciences?

**Ans)** 5 following resons are Stated below.

→ **Reson 1 :-** "Better decision-making under uncertainity".
Managers Constantly make decision with incomplete or uncertain information. Mathematics (especially probability and statics) helps managers evalute risks; compare alternatives, and Predict outcomes logically rather then relying on intution alone.

**Reference:** Robbins, S.P., & Coulter, M. (2018). Management (14th ed.). Pearson Education.

→ **Reson 2 :-** "Efficient use of resources".
Mathematical tools such as optimization, linear Programing, and quantative models help managers allocate resources efficiently and minimize waste.

**Reference:** Hillier, F.S., & Lieberman, G.J. (2021). Introduction to Operation Research (11th ed.). McGraw-Hill Education.

→ **Reson 3 :-** "Data analysis and Perfomance evaluation".
Mathematics and logic allow managers to analyze financial statement, interpret market data, measure perfomance, and evaluate Productivity accurately.

**Reference:** Keller, G. (2018). Statics for Mangement and Ecnomics (11th ed). Cengage Learning.

→ **Reson 4 :- "Logical and Critical thinking".**

    Logic trains managers to think Systematicaly, identify flawed arguments, and make consistent decision.

\* **Reference:** Simon, H.A. (1997). Administrative Behaviour, (4th ed.). Free Press.

→ **Reson 5 :- "Strategic Planing and forecasting".**

    Mathematical model helps managers forecast demand, Plan budgets, analyze trends, and develop long-term strategies.

\* **Reference:** Render, B., Stair, R.M., Hanna, M.E, & Hale, T. S. (2020). Quantative Analysis for Management (13th ed.). Pearson Education.

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**Q** Evalute each algebric expression for Specified Values.

11) $x^2 - 3(x-y)$, for $x=8$ and $y=2$

$= 8^2 - 3(8-2)$

$= 8^2 - 3(6)$

$= 8^2 - 18$

$= 64 - 18$

$= 46$ ans.

12) $x^2 - 4(x-y)$, for $x=8$ and $y=3$

$= 8^2 - 4(8-3)$

$= 8^2 - 4(5)$

$= 8^2 - 20$

$= 64 - 20$

$= 44$ ans.

15) $\dfrac{2x + 3y}{x+1}$, for $x=-2$ and $y=4$

$= \dfrac{2(-2) + 3(4)}{-2 + 1}$

$= \dfrac{-4 + 12}{-1}$

$= \dfrac{8}{-1}$

$= -8$ ans.

16) $\dfrac{2x + y}{xy - 2x}$, for $x=-2$ and $y = 4$

$= \dfrac{2(-2)+4}{(-2)(4) - 2(-2)}$

$= \dfrac{-4+4}{-8+4}$

$= \dfrac{0}{-4}$

$= 0$ ans.

**Q.** Simplify each algebric expression.

**92)** $4(5y-3) - (6y+3)$

$= 20y - 12 - (6y +3)$

$= 20y - 12 - 6y - 3$

$= 20y - 6y - 12 - 3$

$= (20y - 6y) + (-12 - 3)$

$= 14y - 15$ ans.

**93)** $7 - 4[3 - (4y - 5)]$

$= 7 - 4[3 - 4y + 5]$

$= 7 - 4[8 - 4y]$

$= 7 - 32 + 16y$

$= -25 + 16y$

$= 16y - 25$ ans.

**94)** $6 - 5[8 - (2y - 4)]$

$= 6 - 5[8 - 2y + 4]$

$= 6 - 5[12 - 2y]$

$= 6 - 60 + 10y$

$= -54 + 10y$    $10y - 54$ ans.

95) $18x^2 + 4 - [6(x^2 - 2) + 5]$

$= 18x^2 + 4 - [6x^2 - 12 + 5]$
$= 18x^2 + 4 - [6x^2 - 7]$    # Assignment A
$= 18x^2 + 4 - 6x^2 + 7$
$= (18x^2 - 6x^2) + (4 + 7)$
$= 12x^2 + 11$  ans.

96) $14x^2 + 5 - [7(x^2 - 2) + 4]$

$= 14x^2 + 5 - [7x^2 - 14 + 4]$
$= 14x^2 + 5 - [7x^2 - 10]$
$= 14x^2 + 5 - 7x^2 + 10$
$= (14x^2 - 7x^2) + (5 + 10)$
$= 7x^2 + 15$  ans.

Q    Fill in the missing numbers in table and then draw Venn digram by clearly describing each Part.

|  | Irregular Seatbelt use | Regular Seat belt use | Total |
|---|---|---|---|
| Texted while driving | 1737 | 2048 | 3785 |
| Did not text while driving | 1945 | 2775 | 4720 |
| Total | 3682 | 4823 | 8505 |

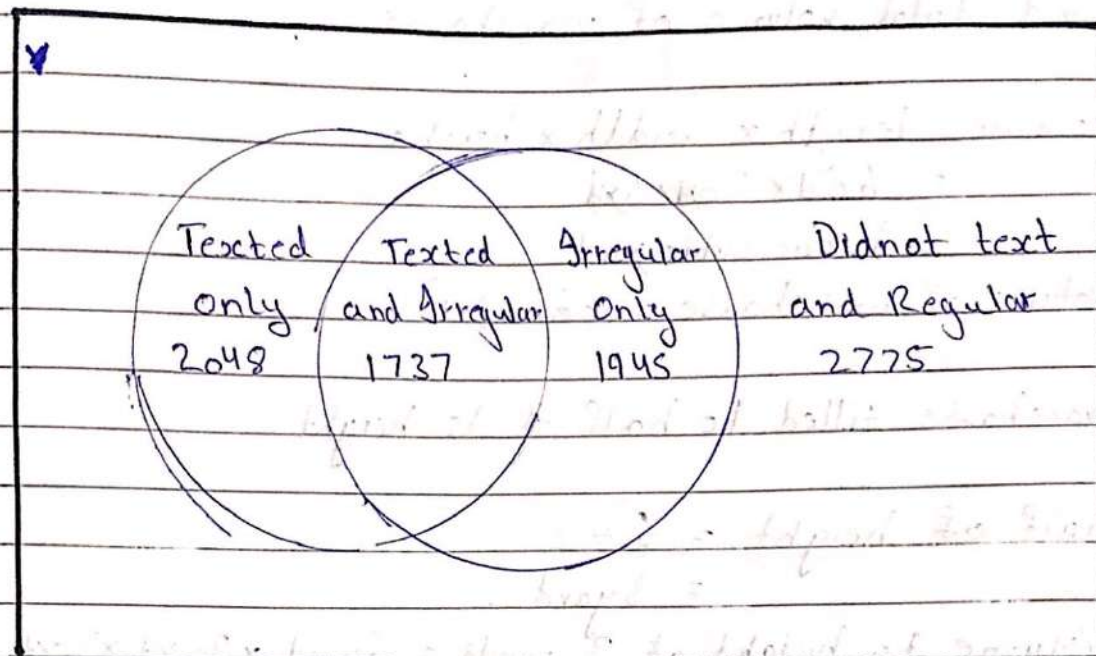a)  Regular $= 3785 - 1737 = 2048$
b)  Did not text irregular $= 3682 - 1737 = 1945$
c)  Total did not text $= \cancel{2048 + 2775 = 4823}$
        $1945 + 2775 = 4720$

d) Total Regular Seatbelt use = 2048 + 2775 = 4823

E) Grand total = 3785 + 4720 = 8505

Texted only 2048 | Texted and Irregular 1737 | Irregular Only 1945 | Did not text and Regular 2775

Here is the ven digram Showing:
- 2048 = Texted only.
- 1737 = Texted and irregular (intersection).
- 1945 = Irregular only.
- 2775 = Neither (Did not text and regular).

Q Find the area and volume by using Provided units.

a) **Warehouse:** Given

Length = 60 yards
Width = 30 yards
Height = 6 yards.

* Find the area of the floor.

$$Area = Length \times width$$
$$= 60 yd \times 30 yd$$
$$= 1800 yd^2$$

Floor area = 1800 yd².

**✱ Find total volume of warehouse.**

Volume = length × width × height
= 60yd × 30yd × 6yd
= 10800 cubic yard
Volume of warehouse = 10800 yd³

**✱ Warehouse filled to half of its height.**

Half of height = 6 ÷ 2
= 3 yards.
Volume to height of 3 yards = 60 yd × 30 yd × 3 yd
= 5400 cubic yards
Volume of boxes = 5400 yd³

**b) Room:** Given
- length = 24 feet
- Width = 16 feet
- Height = 8 feet

Area of floor.

Area = ~~24 yd × 16 yd~~    24 feet × 16 feet
= ~~384 square yards~~    384 square feet
floor area = ~~384 yd²~~    384 ft²

Volume of the room

Volume = ~~24 yd × 16 yd × 8 yd~~    24 feet × 16 feet × 8 feet
= ~~3072 cubic feet~~    3072 cubic feet.

Volume of room = 3072 ft³

c) **Grain Silo:** Given
Base area = 260 Square feet
height = 22 feet

Volume of Silo cylinder

Volume = Base area × Height
$$= 260 \times 22$$
$$= 5720 \text{ cubic feet}$$
Total volume = 5720 ft³.

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