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LEARNBYMAPS

CSAT

MATH

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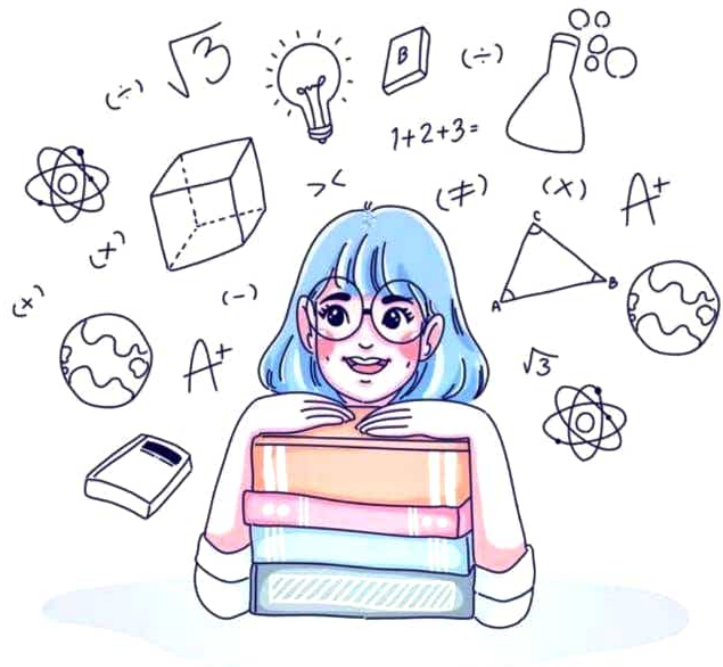
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Learnbymaps Csat Index

- Divisibility Rule
- Numeracy
- Count Triangles.
- Venn Diagrams.
- Calendar
- Time speed Distance + Running around Tracks + Boats & Streams.
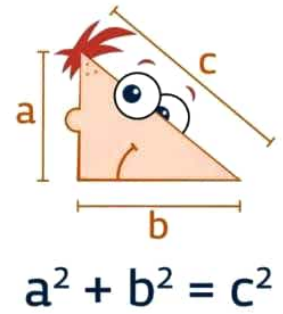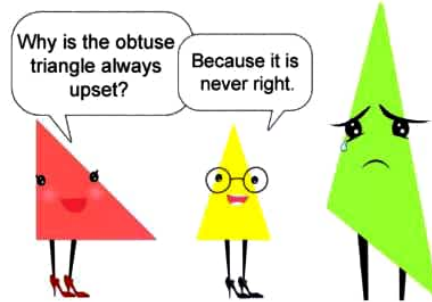
- Recurring fraction.
- Arithmetic Progression, G.P, H.P.
- Algebraic Formulas.
- Simple & Compund Interest
- Profit & Loss.
- Percentage.
- Clock
- Coding & Decoding.
- Directions.
- Dices
- Ratio & Proportion
- Alligations & Mixtures.
- Mean, Mode, Median
- Factorials
- Trignometry.
- Surds & Indices
- Mensurations
- HCF LCM.

Why is the obtuse triangle always upset?

Because it is never right.

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

$$1+2+3=$$

Divisibility Rules

Divisible by 2 → Unit Place, → Even.
Last Digit is 0,2,4,6,8.
Eg → 12, 28, 74, 14378 etc

by 3 → Sum of all Digits → Divisible by 3.
Eg → 99, 129, 1431 etc.

by 4 → Last 2 Digits → Divisible by 4 or 00.
Eg 712, 6916, 78348 etc

by 5 → Last Digit → 0,5.
Eg 125, 2505, 675, 12785 etc

by 6 → Divisible by → BOTH 2 and 3.
Eg → 138, 450, 174, 1044 etc.

by 7 → (1 1 7 7 6 1) ← Ans should be div by 7.
(1 -2 -3 -1 2 3) ← Multiple it & Add

by 8 → Last 3 Digits, Divisible by 8 or 000.
Eg → 1236, 328, 752 etc.

by 9 → Sum of Digits - Divisible by 9.
Eg 522, 5103, 50841 etc
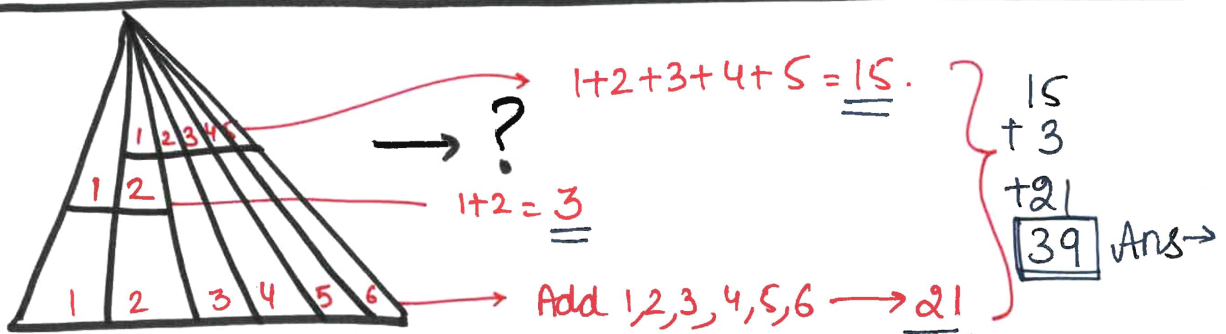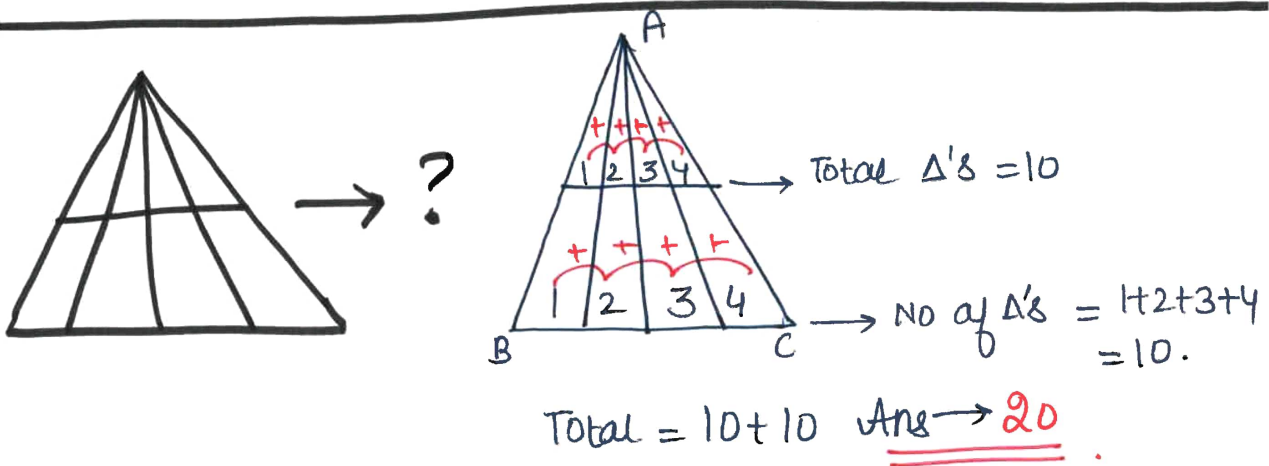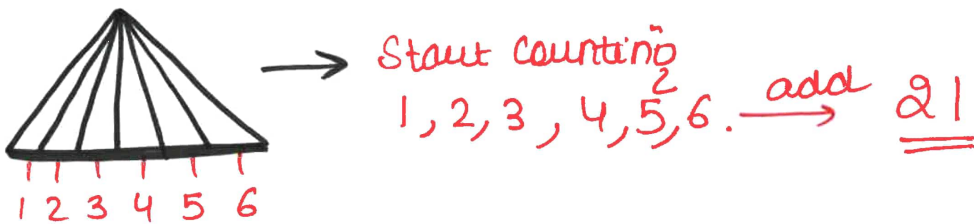
by 10 → Last Digit → 0.
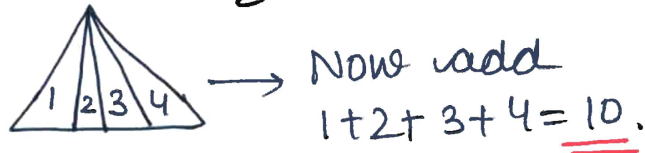Eg 20, 21780, 227450, 1100.

by 11 → (1, -1, 1, -1, +1, -1, +1) ← Multiple it & Add.
1 2 3 4 3 2 1 = 1,-2,3,-4,3,-2,1.
Add them 0 ← should be 1,0.

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Figure   **No of △'s**   **"COUNT TRIANGLES"** ^{T1}

△ ⟶ $\underline{\underline{1}}$.

△ (with one line) ⟶ Easily, u can count 1,2,3. △△△ = $\underline{\underline{3}}$
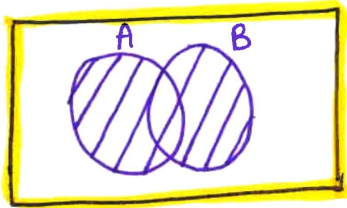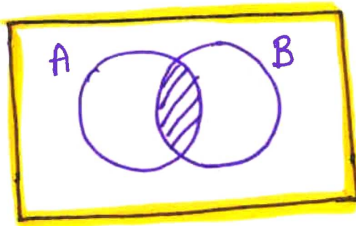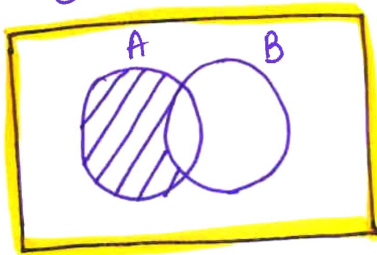
△ (with lines) ⟶ Start counting, Numbering △'s.

△ 1 2 3 4 ⟶ Now add
1+2+3+4 = $\underline{\underline{10}}$.

△ (larger) ⟶ Start counting
1,2,3,4,5,6. $\xrightarrow{add}$ $\underline{\underline{21}}$

1 2 3 4 5 6

△ A ⟶ **?**

A
△ 1 2 3 4 ⟶ Total △'s = 10

△ 1 2 3 4
B   C ⟶ No of △'s = 1+2+3+4
= 10.

Total = 10 + 10   Ans ⟶ $\underline{\underline{20}}$.

△ (large with lines) ⟶ **?**

1 2 3 4 ⟶ 1+2+3+4+5 = $\underline{\underline{15}}$. $\left.\begin{array}{l} 15 \\ +3 \\ +21 \end{array}\right\}$ $\boxed{39}$ Ans ⟶

1 2 ⟶ 1+2 = $\underline{\underline{3}}$

1 2 3 4 5 6 ⟶ Add 1,2,3,4,5,6 ⟶ 21
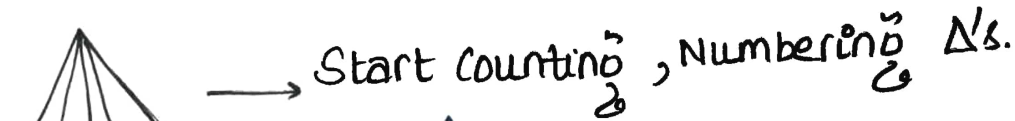
VENN DIAGRAM

-Collection Well-defined (OBJ)

1) Union (A∪B)

2) Intersection A∩B

3) Negation (A-B)

(only A)

4) Compliment (A')
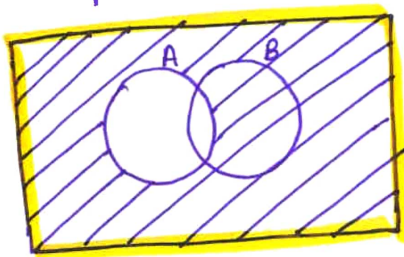
-All
(other than A)
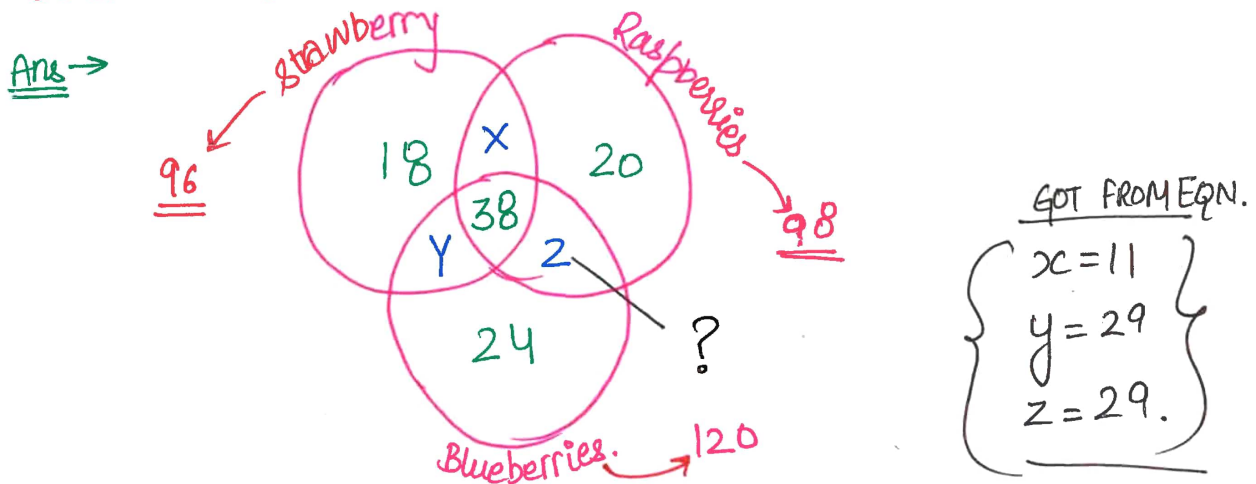
Q→ In a Survey, 96 people like strawberries, VD4.
98 " " Raspberries.
120 " " Blueberries,
18 " " Only Strawberries.
20 " " " Raspberries.
24 " " " Blueberries.
38 " " all 3.

How many people like raspberries & blueberries but NOT Strawberries?

Ans→

96

98

Blueberries → 120

GOT FROM EQN.
$$\begin{cases} x = 11 \\ y = 29 \\ z = 29. \end{cases}$$

$$\to X + Y + 38 + 18 = 96.$$
$$\to Y + z + 38 + 24 = 120$$
$$\to X + z + 38 + 20 = 98.$$

we can conclude from Ques

Ans → 29

$$\begin{cases} X + Y = 40 \\ Y + z = 58 \\ X + z = 40. \end{cases}$$

$$\to \cancel{X} + Y = \cancel{X} + z = 40.$$
$$\to Y = Z.$$
$$\to X + Y = 40.$$
$$\to Z + z = 58 \to z^2 = 58 \boxed{z = 29}$$

29 + X = 40.
X = 11

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FORMULA

$ST = D$ $S = \dfrac{D}{T}$

Time, Speed, Dis
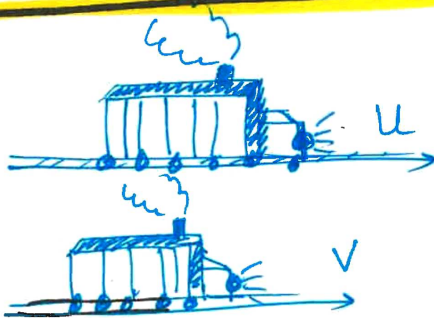## T, S, D.

km/hr $\xrightarrow{\times 5/18}$ m/sec

m/sec $\xrightarrow{\times 18/5}$ km/hour
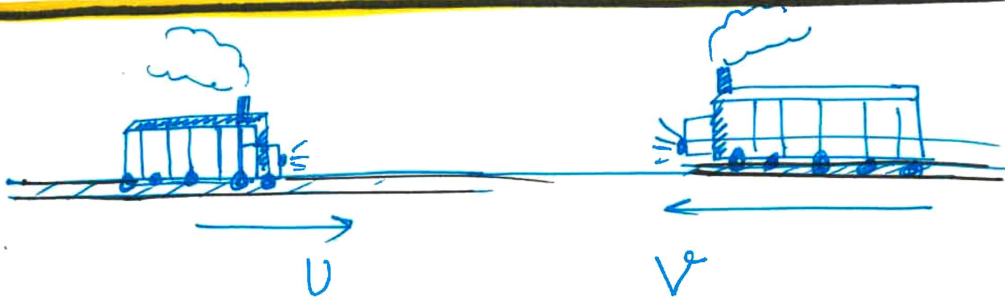
Relative Speed = $U + V$.

Relative Speed = $U - V$

$U > V$.

※ .

•(Ratio of Speeds of 2 objects =
Ratio of their Distance Covered)

$S_a : S_b :: D_a : D_b$

Boats & Stream
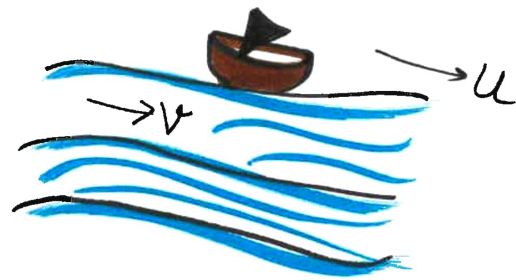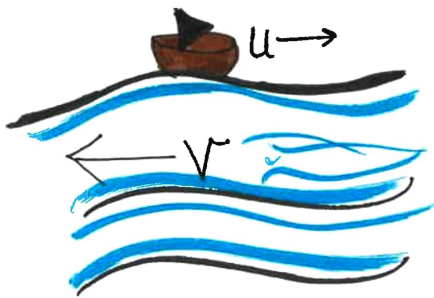
- Speed of boat downstream $\rightarrow$ $u + v$
  upstream $\rightarrow$ $u - v$.

$\rightarrow$ Average Speed = $\dfrac{\text{Total Distance}}{\text{Total time}}$.

$$\rightarrow \left(\dfrac{D_1}{S_1} + \dfrac{D_2}{S_2} \right)$$

- Speed of boat in still Water.

$$\dfrac{D + U}{2}$$

- Speed of stream.

$$\dfrac{D - U}{2}$$

$\left\{ \begin{array}{l} D \rightarrow \text{Downstream speed of } \unicode{x26F5} \\ U \rightarrow \text{Upstream } \text{,, } \text{,,} \end{array} \right.$

$\left(\begin{array}{l} \text{• Upstream - against} \\ \text{• downstream - along} \end{array} \right)$.

BS2

• Q, A boat goes 40 km in upstream. in 8 hours & take 6 hours to complete a distance of 36 km in downstream. Find the speed of boat in still water?.

Sol^n →

$$S = \frac{D}{T} = \frac{40}{8} = 5. \text{ (upstream)}.$$

$$D = \frac{36}{6} = 6 \quad = 6 \text{ (downstream)}.$$

$$= \frac{1}{2}(5+6) = \frac{11}{2} = 5.5 \text{ km/hr Ans}$$

___

@ x

← y

← z

$$\left\{ \begin{array}{l} \text{Average speed} = \dfrac{2xy}{x+y}. \\[2mm] \text{Average speed} = \dfrac{3xyz}{xy+yz+zx}. \end{array} \right\}$$