General Science And Ability

~◁(Test No:03)▷~

QUESTION:03

~◁(PART:A)▷~

> A can do work in 15 days and
> B in 20 days -------------

Given Data:

    A can do the work in 15 days

    B can do the work in 20 days

    They work together for 4 days

Required:

    Fraction of work that is left when work
    together for 4 days.

Solution:

(a) One day work for A :

$$\frac{1}{15}$$

(b) One day work for B :

$$\frac{1}{20}$$

(c) Combined work of One day :

$$= \frac{1}{15} + \frac{1}{20}$$

$$= \frac{4+3}{60}$$

$$= \frac{7}{60}$$

2	15 - 20
5	5 - 10
2	3 + 2
3	3 - 1
	1 - 1

Together, they do $\frac{7}{60}$ work in one day

(d) Work done in 4 days, when work together.

$$= \frac{4 \times 7}{60}$$

$$= \frac{28}{60}$$

$$\boxed{= \frac{7}{15}}$$

(e) Work left

$$= 1 - \frac{7}{15}$$

$$= \frac{15-7}{15}$$

$$= \frac{8}{15}$$

Hence, $\frac{8}{15}$ of the work is left when A and B work together for 4 days.

~(Q NO:03)~

~(PART:B)~

< Two numbers are in ratio 3:5 >

Given Data:

(i) Two numbers are in the ratio 3:5

(ii) After subtraction of 9 from each number new ratio becomes 12:23

To be required:

(i) Smaller number = ?

Solution:

let the first number = x

Let the second number is also = x

(i) $\Rightarrow$

$$3x : 5x$$

(ii) $\Rightarrow$

$$3x-9 : 5x-9 = 12:23$$

$$\frac{3x-9}{5x-9} = \frac{12}{23}$$

(Cross Multiply)

$$23(3x-9) = 12(5x-9)$$

$$69x - 207 = 60x - 108$$

$$69x - 60x = -108 + 207$$

$$9x = 99$$

$$x = \overset{11}{\cancel{99}}/\cancel{9}$$

$$\boxed{x = 11}$$

(i) To find smallest number:

$$3x = 3 \times 11 = 33$$
$$5x = 5 \times 11 = 55$$

Hence, $3x$ will be the smallest number.

QUESTION: 03

PART: C

The average weight of A, B and C is 45 kg. If the average weight ....

Given Data:

(i) Three quantities i.e, A, B, C

(ii) Average weight of A, B, C = 45 kg

(iii) Average weight of A and B = 40 kg

(iv) Average weight of B and C = 43 kg

To be Required:

Weight of B = ?

Formula:

$$Average = \frac{sum\ of\ observation}{total\ number\ of\ observation}$$

Solution

(a) Find sum of observations from the formula:

(i) $A + B + C = 45 \, kg$

$$Average = \frac{Sum \ of \ observation}{Total \ number \ of \ observation}$$

$$45 \, kg = \frac{A + B + C}{3}$$

$$45 \times 3 = A + B + C$$

$$135 = A + B + C$$

or

$$\boxed{A + B + C = 135} \longrightarrow \text{Ⓐ}$$

(iv) $\Longrightarrow$

$$B + C = 43$$

$$Average = \frac{B + C}{2}$$

$$43 = \frac{B + C}{2}$$

$$B + C = 43 \times 2$$

$$\boxed{B + C = 86} \longrightarrow \text{Ⓑ}$$

(iii) $\Longrightarrow$

$$A + B = 40$$

$$Average = \frac{A + B}{2}$$

$$40 = \frac{A + B}{2}$$

$$A + B = 40 \times 2$$

$$\boxed{A + B = 80} \longrightarrow \text{Ⓒ}$$

(b) Putting values in point (A) (B+C)

$$A + B + C = 135$$
$$A +$$

(b) eq (A) ⇒

$$A + B + C = 135$$
$$80 + C = 135 \qquad \because A + B = 80$$
$$C = 135 - 80$$
$$\boxed{C = 55}$$

Putting value of "C" in eq (B)

$$B + C = 86$$
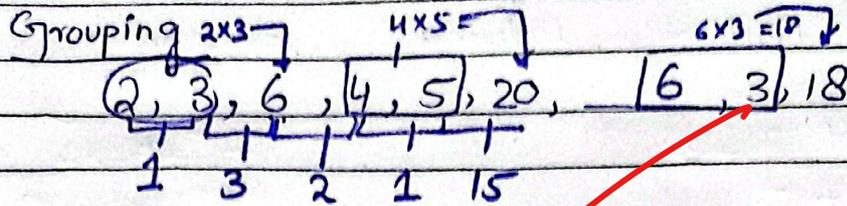$$B + 55 = 86$$
$$B = 86 - 55$$
$$\boxed{B = 31}$$

Hence, the value of weight of B is $\boxed{31 kg}$.

_____

⤙ QUESTION: 03 ⤚~

⤙ PART: D ⤚~

Find missing terms.

1- 2,3,6,4,5,20,____,3,18

Grouping 2×3⌐   4×5=⌐   6×3 =18 ↓

(2, 3, 6 ,|4, 5|, 20, ____ |6 , 3|, 18

1   3   2   1   15

Missing Number = 6

2- 1,3,9,15,25,____,49

Difference

1, 3, 9, 15, 25, $\underline{35}$, 49

 2   6   6   10   10   14
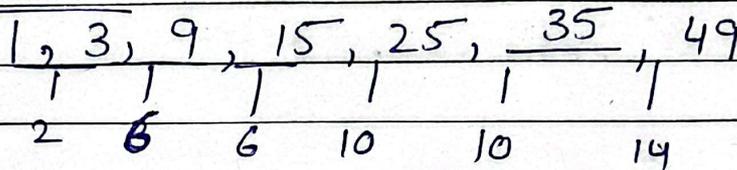
So, the Missing Number = 35

3- 2,7,10,22,18,37,26,____

Odd Position -Difference   Even Position -Differ
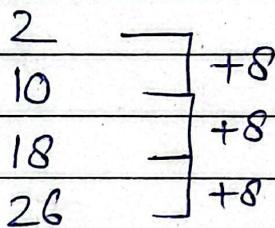
Odd		Even	
2		7	+15
10	+8	22	
18	+8	37	+15
26	+8	?	+15

Missing Number = 37 +15

= 52.

4 - 34, 7, 37, 14, 40, 28, 43, ____

Odd Position	Difference	Even Number Position	Difference
34	+3	7	+7 X2
37	+3	14	+7 X2
40	+3	28	
43		?	+7 X2

So, ~~43 X7 = 43X2 = 86~~

So, $28 \times 2 = 56$

Missing Number = $\boxed{56}$ ✓

5. 5, 7, 11, ____, 17, 19

$$5, \quad 7, \quad 11, \quad ____, \quad 17, \quad 19$$
$$+2 \quad +3 \qquad \qquad +2$$

All, there are prime numbers so, missing number will be $\boxed{13}$

5, 7, 11, 13, 17, 19.

⌇(QUESTION : 01)³⁰~

~(PART : A)³⁰~
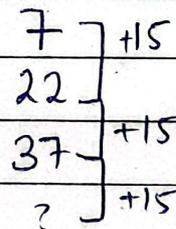
> Sum of three consecutive prime number is 97. Find the numbers.

Given Data:

Sum of three consecutive prime numbers = 97

To be Required:

Find the number (consecutive prime numbers)

~(Solution)³⁰~

Let numbers are (consecutive prime numbers)

$$x, \ x+2, \ x+4$$

So,

$$x + x + 2 + x + 4 = 97$$
$$3x + 6 = 97$$
$$3x = 97 - 6$$
$$3x = 91$$
$$x = \frac{91}{3}$$
$$x = 30.33$$

(As, it is a decimal so, we find nearest possible prime number.

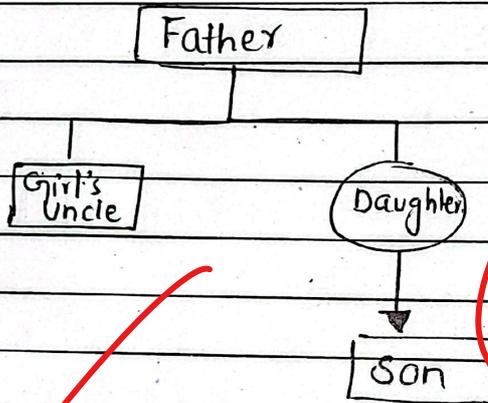$$29 + 31 + 37 = 97$$

Hence, the three consecutive prime numbers i.e, 29, 31, 37 sum is equal to 97.

~◄(QUESTION: 01)►~

~◄(PART: B)►~

> Introducing a boy, a girl said, "He is the son of the daughter of the father ---."

Given Data:

```
          ┌──────────┐
          │  Father  │
          └────┬─────┘
      ┌────────┴────────┐
 ┌──────────┐      ╭──────────╮
 │  Girl's  │      │ Daughter │
 │  Uncle   │      ╰────┬─────╯
 └──────────┘           │
                        ▼
                  ┌──────────┐
                  │   Son    │
                  └──────────┘
```

As, the mother of boy is the daughter of father of girl's uncle. Therefore, girl's uncle is the brother of ~~son~~ boy's mother. Hence, girl is the cousin of boy.

~◄(QUESTION: 01)►~

~◄(PART: C)►~

> Two dice are thrown simultaneously.
> What is the probability of getting
> two numbers whose product is even

Given Data:

(i) Two dice are thrown simultaneously

(ii) Each dice has numbers

$$1,2,3,4,5,6$$

To be Required:

• Probability of getting two numbers whose product is even.

⟨Solution⟩

Possibilities = 6 × 6 = 36.

$(1×1 , 1×2 , 1×3 , 1×4, 1×5 , 1×6$
$2×1 , 2×2, 2×3 , 2×4, 2×5, 2×6$
$3×1 , 3×2, 3×3 , 3×4 , 3×5 , 3×6$
$4×1, 4×2 , 4×3 , 4×4 , 4×5 , 4×6$
$5×1 , 5×2 , 5×3 , 5×4 , 5×5, 5×6$
$6×1 , 6×2, 6×3 , 6×4 , 6×5 , 6×6)$

$$\text{Possit Probability} = \frac{27}{36}$$

$$= \frac{3}{4}$$

Hence, the probability of getting two numbers whose product is even is $\frac{3}{4}$.

QUESTION: 01

PART: D

> A library has an average of 510 visitors on Sundays and 240 on other days. The ------ ---

Given Data:

(i) Average visitors on Sunday = 510
(ii) Average visitors on other days = 240
(iii) Total days in a month = 30
(iv) Month begins with a Sunday.

To be Required :

→ Average number of visitors per day in a month of 30 days beginning with a Sunday is

Solution

(a) Find number of Sundays in 30 day month.

$$1, 8, 15, 22, 29 \rightarrow 5 \text{ Sundays}$$

Sundays = 5

Other Days = 30 - 5 = 25

(b) Calculate total visitors:

Visitors on Sundays:

$$\text{Average} = \frac{\text{sum of observation}}{\text{Total No. of observation}}$$

$$510 = \frac{\text{sum of observation}}{5}$$

Sum of observation = 5 × 510

= 2550.

Visitors on other days:

$$Average = \frac{sum}{Total\ NO}$$

$$240 = \frac{sum}{25}$$

Sum of observation = 240 × 25

= 6000

Total visitors in a month:

= 2550 + 6000

= 8550

New Average per day:

$$Average = \frac{sum\ of\ observation}{Total\ NO.\ of\ observation}$$

$$= \frac{8550}{30}$$

= 285

Hence, 285 visitors visit the library per day.

V. Good presentation. Keep up, Best wishes

⑤