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Test 3

Question 1

Sum of three consecutive Prime numbers is 97. Find the numbers.

Solution:

Let the three prime numbers are

$$2x, 3x, 5x$$

According to condition

Sum of three prime numbers $= 97$

$$2x + 3x + 5x = 97$$

$$10x = 97$$

Divided by 10 on both sides

$$\frac{10x}{10} = \frac{97}{10}$$

$$x = 9.7$$

So the numbers are

$$2x = 2 \times 9.7 = 19.4$$
$$3x = 3 \times 9.7 = 29.1$$
$$5x = 5 \times 9.7 = 48.5$$

Result:

Three prime numbers are

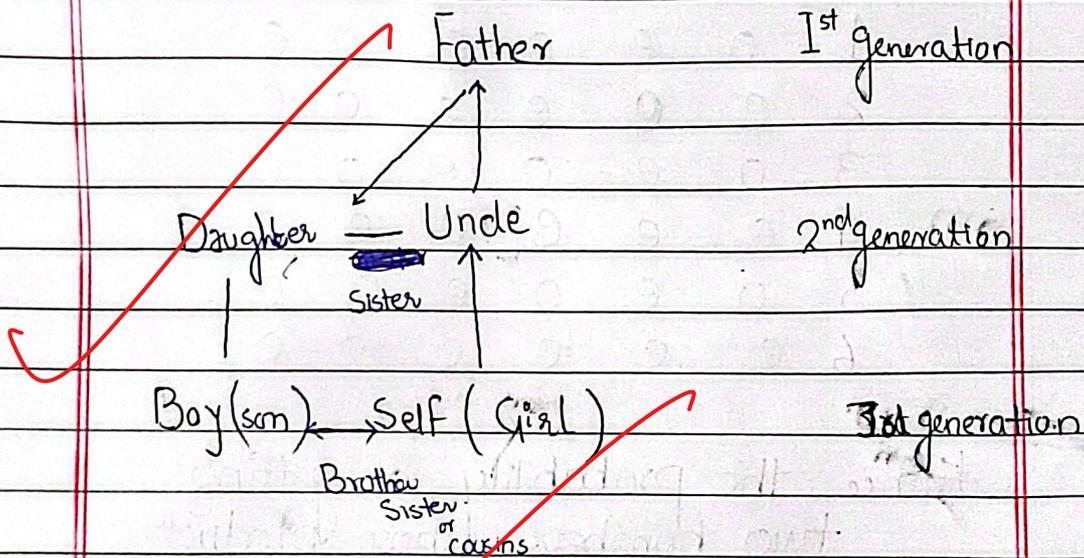$$\boxed{\begin{array}{r} 19.4 \\ 29.1 \\ 48.5 \\ \hline 97.0 \end{array}}$$

B₂ Introducing a boy, a girl said, "He is the son of the daughter of the father of my uncle."

How the boy related to that boy.

SOLUTION:

The answer is given through an illustration.

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                Father              1ˢᵗ generation

    Daughter  ——  Uncle            2ⁿᵈ generation
                 Sister

  Boy(son) —→ Self (Girl)          3ʳᵈ generation
          Brother
          Sister
            or
          cousins
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From the illustration one cannot fully deduce the fact that either the boy is the brother of the girl or cousin.

~~Hence, the~~ If the uncle is paternal uncle that they ~~might be~~ are cousins ~~sister or~~ if the uncle belongs to mother's family, then boy and the girl might be brother and sister.

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

SOLUTION:

As one dice has six sides therefore total number of even numbers possibility on two dices can be measured through a checker box. Let "e" denotes even and "O" denotes odd.

X	1	2	3	4	5	6
1	O	e	O	e	O	e
2	e	e	e	e	e	e
3	O	e	O	e	O	e
4	e	e	e	e	e	e
5	O	e	O	e	O	e
6	e	e	e	e	e	e

Hence, the probability of getting two numbers whose product is even while throwing two dices simultaneously is 27 and total number of sample space = 36

So probability = $\frac{27}{36}$ = $\frac{9}{12}$ = $\frac{3}{4}$

Probability (Even) = $\frac{3}{4}$

D A library has an average of 510 visitors on Sundays and 240 on other days. The average number of visitors per day in a month of 30 days beginning with a Sunday is.

SOLUTION:

A month of 30 days starting from a sunday will contain

5 sundays in a month with remaining 25 days.

1 Total numbers of Visitors on Sundays

$$\text{Average} = \frac{\text{No of vistors}}{\text{Total visiter Sundays}}$$

$$510 = \frac{(N_{vs})}{5}$$

$$(N_{vs}) = 510 \times 5$$

$$= 2550 \text{ visitors on Sundays}$$

2 Total number of visitors on remaing days

$$N_{vRemaining} = 240 \times 25 \text{ days}$$

$$= 6000 \text{ visitors}$$

3 Total visitors in a month of 30 days

$$N_{vsundays} + N_{vremaing}$$

$$= 2550 + 6000$$

$$= 8550 \text{ visitors}$$

4   Average of visitors in a month of
    — 30 days

$$\text{Average per day} = \frac{\text{Total visitors}}{\text{days in month}}$$

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

$$= 285 \text{ visitors per day}$$

QUESTION #03

A   A can do work in 15 days and B in 20 days. If they work on it together for 4 days, then the fraction of the work that is left is?

Data Given:
   A work done = 15 days
   B work done = 20 days

Required:
   Fraction of work left after doing work together for 4 days.

Solution:
   To find the fraction of work done left after doing work together by A and B for 4 days, first we have to find

① Work done by A in one day
   $$W_A = \frac{1}{15} \text{ days}$$

② Work done by B in one day

$$W_B = \frac{1}{20} \; \text{days}$$

③ Work done by A and B in one day

$$W_{A+B} = \frac{1}{15} + \frac{1}{20}$$

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

$$= \frac{7}{60} \; \text{days}$$

③

④ The fraction of work left while both A and B did work for 4 days.

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

$$W_{A+B} = \frac{7}{15} \quad \text{Ans.}$$

Remaining work??

C The average weight of A, B and C = 45 kg. If the average weight of A and B be 40 kg and that of B and C be 43 kg. Then weight of B is?

Data Given:

Average weight of A, B, C = 45 kg

Average weight of A, B = 40 kg

Average weight of B, C = 43 kg

A+B+C   135 kg
A(80)   80
          125

80 (1·7

36

Weight of B = ?

Solution:-

To find weight of B, first weight of A or C must be find by finding the total weight of the sum A+B+C.

$$\text{Average ABC} = \frac{A+B+C \text{ weight}}{3}$$

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

Total weight $= 45 \times 3$

$A+B+C = 135 \, kg$ ①

Now

→ Total weight of A+B $= 40 \times 2$

$A+B = 80 \, kg$ ②

→ Total weight of B+C $= 43 \times 2$

$B+C = 86 \, kg$ ③

Putting eq (ii) in eq (i) to get

Weight of C.

$(A+B) + C = 135 \, kg$

$80 + C = 135 \, kg$

$C = 135 - 80 \, kg$

$C = 55 \, kg$ eq (iv)

Now put eq.(IV). value of C in
eq (iii)

$$B + C = 86 \, kg$$
$$B + (55kg) = 86 \, kg$$

$$B + 55 - 55 = 86 - 55 \, kg$$

$$\boxed{B = 31 \, kg}$$

HENCE

WEIGHT OF B = 31 Kg;

D Find the missing:

1 2, 3, 6, 4, 5, 20.   6   , 3 , 18

2 1, 3, 9, 15, 25,   30   , 49

3 2, 7, 10, 22, 18, 37, 26, 52

4 34, 7, 37, 14, 40, 28, 43, __35__

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

B Two numbers are in the ratio 3:5 if 9
is subtracted from each. the new numbers
are in the ratio 12:23. The smaller
number is ?

Solution:

Let the two numbers are

$$3x \quad \text{and} \quad 5x$$

So According to Condition

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

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

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

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

$$\frac{9x}{9} = \frac{99}{9}$$

$$\boxed{x = 11}$$

So the numbers are

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

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

Smallest Number is

$$3x = 33 \quad \text{Ans}$$