

TODBA GUL

GSA

Test: 3

Q.1(a)

Solution:

To find three consecutive prime numbers that add up to 97, list the prime numbers less than 97:

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, and 97.

Now, if following three prime numbers are added from this list, 97 will be the result.

$$29 + 31 + 37 = 97$$

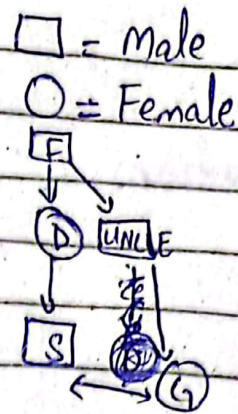
Answer: 29, 31, 37

Q.1(b)

Solution:

The given relation statement states that girl's uncle has

a father whose daughter has a son, introduced as boy. It implies that daughter is the sister of uncle and mother of girl also. In this way, girl is the sister of boy.



Q1(c)

Solution:

Formula:

Probability = $\frac{\text{No. of ways of occurrence of an event}}{\text{Total possible outcomes}}$

Dice 1	Dice 2	Product
1	2	2
2	2	4
3	4	12
4	2	8
5	6	30
6	3	18

~~Total~~ number of ways - 6

Total outcomes = $6 \times 6 = 36$

Probability (even numbers) = $\frac{6}{36} = \frac{1}{6}$ Answer

Q.1- (D)

Solution:

Given:

Average Number of visitors in library
on Sunday = 510

Average visitors on other days = 240

Average number of visitors per day
in a month of 30 days
beginning with a Sunday = ?

Solution:

Number of visitors in 5 Sundays (30 days)
= 510 visitors

Other 25 days = 240 visitors

Total visitors in 5 Sundays (30 days)

$$510 - 240 = 270$$

$$\therefore \text{In a month of 30 days} = 240 + \frac{270 \times 5}{30}$$

there are 5 Sundays

$$= 240 + 45$$

$$= 285 \text{ visitors}$$

Q. No. 3
(a)

Given:

A works = 15 days

B works = 20 days

Together they work = 4 days
work left = ?

Solution:

Formula:

$$\text{Efficiency} = \frac{\text{useful energy transferred}}{\text{total energy supplied}}$$

By taking LCM of A and B, we get

Total = 60
energy

$$\begin{array}{r} 3 \overline{) 15-20} \\ 5 \overline{) 5-20} \\ 4 \overline{) 1-4} \\ 1-1 \\ \hline 60 \end{array}$$

$$A = \text{Efficiency} = \frac{15}{60} = \frac{1}{4} \text{ or } 4$$

$$4+3=7$$

$$B \text{ efficiency} = \frac{20}{60} = \frac{1}{3} \text{ or } 3$$

Total work = 60 unit

Work = Time $\times$ efficiency

$$A \text{ work} = 7 \times 4 = 28 \text{ unit}$$

$$\begin{aligned}\text{Fraction of work left} &= \frac{60 - 28}{60} \\ &= \frac{32}{60} = \frac{8}{15} \text{ unit}\end{aligned}$$

Q3. H (c)

Given:

Average weight of A, B, C = 45 Kg

Average weight of A and B = 40 kg

Average weight of B and C = 43 kg

weight of B = ?

Solution:

$$\text{Average} = \frac{\text{Sum of all observations}}{\text{Total number of observations}}$$

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

$$A+B+C = 45 \times 3 = 135 \text{ --- (1)}$$

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

$$A+B = 40 \times 2 = 80 \text{ --- (2)}$$

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

$$B+C = 43 \times 2 = 86 \text{ --- (3)}$$

Put eq (3) into eq (1)

$$A + 86 = 135$$

$$A = 135 - 86$$

$$A = 49$$

Put A in eq (2)

$$49 + B = 80$$

$$B = 80 - 49$$

weight of $B = 31 \text{ Kg}$

Q 3 (D)

Find the missing ~~series~~ terms

1-2, 3, 6, 4, 5, 20, —, 3, 18

In the given series the following pattern continues.

$$2 \times 3 = 6$$

$$4 \times 5 = 20$$

$$x \times 3 = 18$$

So, according to the above pattern
x should be **6**.

ii- 1, 3, 9, 15, 25, ~~4~~, 49

The sequence of given series is:

$$(1)^2 = 1$$

$$(2)^2 = 4 - 1 = 3$$

$$(3)^2 = 9$$

$$(4)^2 = 16 - 1 = 15$$

$$(5)^2 = 25$$

$$(6)^2 = 36 - 1 = 35$$

$$(7)^2 = 49$$

Therefore, the ^{missing} number will be 35.

iii- 2, 7, ~~10~~, 22, 18, 37, 26, —

In the given series, all the odd numbers are added by 5 and even numbers are added by 15

$$\begin{array}{l} \cancel{2+5=7} \quad 7, 22, 37 \quad (37+15) \\ \cancel{7+3=10} \quad \quad \quad = 52 \\ 18 \end{array}$$

iv- 5, 7, 11, — 17, 19

The following pattern continues in the given series

$$5+3=7$$

$$7+5=11$$

$$\begin{aligned}
 &\cancel{11+2=14} \\
 &11+2=13 \\
 &13+5=17 \\
 &17+2=19
 \end{aligned}$$

So, the missing number is 13

Q3.b

Solution:

Let the numbers be $3x$ and $5x$

According to the given condition, if 9 is subtracted from each, new numbers are 12:23

$$\begin{aligned}
 \therefore 3x - 9 &= 12 \\
 3x &= 12 + 9 \\
 &= 21 \\
 x &= \frac{21}{3} \\
 x &= 7
 \end{aligned}$$

$$\begin{aligned}
 5x - 9 &= 23 \\
 5x &= 23 + 9 \\
 5x &= 32 \\
 x &= \frac{32}{5}
 \end{aligned}$$

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

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

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

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

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

$$9x = 99$$

$$x = 11$$

Now the ~~smaller~~ smaller number.

$$3(11) = 33 \text{ Answer}$$