Question 1

1) Sum of three consecutive prime number is 97= find the number

Let the prime numbers: x, 3x, 5x

$$x + 3x + 5x = 97$$
$$9x = 97$$
$$\Rightarrow \boxed{x = \frac{97}{9}}$$

$$\Rightarrow 3x = \cancel{3}\left(\frac{97}{\cancel{9}_3}\right)$$
$$= \frac{97}{3}$$

$$\Rightarrow 5x = 5\left(\frac{97}{9}\right)$$

$$\frac{485}{9}$$

$$\begin{array}{r} 397 \\ 5 \\ \hline 485 \end{array}$$

2) Introducing a boy, a girl said, "He is the son of the daughter of the father of my uncle". How is the boy related to the girl.

The boy is the cousin of the girl.

3) Two dice are thrown simultaneously. What is the probability of getting

5

2 Numbers whose product is even.

Let the number of dice 1 and dice 2

Dice 1 Dice 2	Dice 1 and Dice 2	
1 x 1	$1 \times 1 = 1$	$2 \times 1 = 2$
2 x 2	$1 \times 2 = 2$	$2 \times 2 = 4$
3 x 3	$1 \times 3 = 3$	$2 \times 3 = 6$
4 x 4	$1 \times 4 = 4$	$2 \times 4 = 8$
5 x 5	$1 \times 5 = 5$	$2 \times 5 = 10$
6 x 6	$1 \times 6 = 6$	$2 \times 6 = 12$

$3 \times 1 = 3$	$4 \times 1 = 4$	$5 \times 1 = 5$
$3 \times 2 = 6$	$4 \times 2 = 8$	$5 \times 2 = 10$
$3 \times 3 = 9$	$4 \times 3 = 12$	$5 \times 3 = 15$
$3 \times 4 = 12$	$4 \times 4 = 16$	$5 \times 4 = 20$
$3 \times 5 = 15$	$4 \times 5 = 24$	$5 \times 5 = 25$
$3 \times 6 = 18$	$4 \times 6 = 30$	$5 \times 6 = 30$

$6 \times 1 = 6$
$6 \times 2 = 12$
$6 \times 3 = 18$
$6 \times 4 = 24$
$6 \times 5 = 30$
$6 \times 6 = 36$

$$\text{Probability} = \frac{27 \cdot 3}{36 \ 45}$$

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

$$= 75\%$$

⟲ 5

4) 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?

Average visitors of library on sunday = 510 visitor
Other day of week = 240
If the month start from sunday then the total sunday in month = 5

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

$$\text{Average} = \frac{510 + 240}{30}$$

$$= \frac{750 \ 25}{30}$$

Average = 25 visitors

Hence, average visitor on per day are 25

Section - B

Question = 2

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

$A = 15$ days

$B = 20$ days

Total Work = ?

Taking L.C.M.

5	15, 20
3	3, 4
4	1, 4
	1, 1

Total work done = 60 units

Productivity of $A = \dfrac{60}{15}$

$A = 4$ units

Productivity of $B = \dfrac{60}{20}$

$= 3$ units

$A + B = 7$ units

A+B

← 4days →

|————— 60units —————|
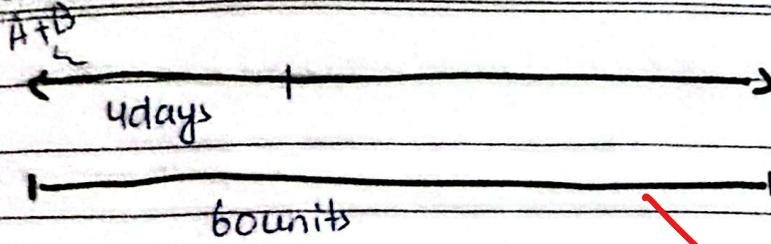
Productivity of A and B x days

7   x 4 = 28 units

Remaining Work = 60 - 28 = 32

= 32 units

The 32 units work is left

a) Find the missing number.

(1)   2, 3, 6, 4, 5, 20 ... __6__ ... 3, 18

2×3 = 6

4×5 = 20

6×3 = 18

2)   1, 3, 9, 15, 25 ... __35__ ... 49

1+2 = 3

3+6 = 9

9+6 = 15

15+10 = 25

25+10 = 35

35+14 = 49

3)   5, 7, 11 ... __13__ ... 17, 19.

5+2 = 7   13+4 = 17

7+4 = 11   17+2 = 19

④ $\quad$ 34, 7, 37, 14, 40, 28, 43, --- $\quad$ 56

+3 $\quad$ +3 $\quad$ +3

7+7

14+14 $\qquad$ 28+28

⑤ $\quad$ 2, 7, 10, 22, 18, 37, 26 ----

③ The average weight of A, B and C is 45kg. If the average weight of A and B 40kg and B and C is 43kg. Then the weight of B is?

$$A + B + C = 45kg$$
$$A + B = 40kg$$
$$B + C = 43kg.$$
$$B = ?$$

$$Average = \frac{Sum\ of\ all\ numbers}{Total\ No}$$

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

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

$$A + B + C = 135$$

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

$$40 \times 2 = A+B$$
$$A+B = 80$$

$$43 = \frac{B+C}{2}$$
$$B+C = 43 \times 2$$
$$B+C = 86$$

$$A+B+C = 135$$
$$80+C = 135$$
$$C = 135-80$$
$$C = 55$$
$$A+B+C = 135$$
$$A+86 = 135$$
$$A = 135-86$$
$$A = 49$$

$$49+B+55 = 135$$
$$B = 135-55-49$$
$$B = 31$$

Hence weight of B is 31kg.

2) Two numbers are in the ratio 3:5. If 9 is subtracted from each, the new number are in the ratio

12:23. The smallest number is?

Two numbers ratio = 3.5

Let x is the number

If their ratios are

$$3x : 5x$$

9 is subtracting

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

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

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

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

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

$$9x = 99$$

$$x = 11$$

$$\begin{array}{r} 2\;23 \\ \times\;9 \\ \hline 207 \end{array}$$

$$\begin{array}{r} 12 \\ 207 \\ 108 \\ \hline \end{array}$$

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

Ans: