Question #1:

(A) Let the three prime number be:

$$a, b, c$$

As per given data:

$$a + b + c = 97 \quad —①$$

$$\text{Average} = \frac{a+b+c}{3}$$

From eq ① Average $= \frac{97}{3}$

$$\text{Average} \approx 32.23$$

The number will be approximately 32.

Prime number near to 32 are:

$$29, 31, 37, 41$$

As $29 + 31 + 37 = 97$

> So, three consecutive prime numbers would be 29, 31, 37.

(B) As per given data:

The total # of visitors on Sunday = 510

The total # of visitors on other days = 240

And, since total days in a month = 30 days.

and the month begins with a Sunday.

→ **Total Sundays in a month:**

Sundays are date = 1, 8, 15, 22, 29

> Total Sundays = 5

→ Visitors on Sunday = 510×5

= 2550 visitors.

→ Visitors on other days = 30-5-25 day.

→ Visitors on other days = 25×240

= 6000 visitor.

Total Visitors in a month = 2550+6000

= 8550 visitor.

→ **Average Visitors Per Day:**

Average visitors = $\dfrac{\text{Total Visitors}}{\text{# of days}}$ = $\dfrac{8550}{30}$

> Average = 285 visitors

So, in average 285 visitors come

(c) **Sample Space of 2 Dice will be:**

Sample :-   (1,1)   (1,2)   (1,3) (1,4) (1,5) (1,6)
Space

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

(3,1)   (3,2)   (3,3)   (3,4) (3,5) (3,6)   (A)

(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) (6,5)

→ Total # of outcomes = 36

→ Sample Space = 27 (# with product of even)

$$\text{Probability} = \frac{\text{Sample Space}}{\text{Total outcomes}}$$

$$\text{Probability} = \frac{27^9}{36_{12}} = \frac{9}{12} → \frac{3}{4}$$

So, probability of getting sample product of two number as even is $\frac{3}{4}$

(B) The father of Uncle means = Grandfather of girl.

As, Daughter of grandfather = Sister of father

And the son of father's sister = Cousin

So, the boy is the cousin of girl.

Question #2:

(A) As per data,

A can complete work in = 15 days

B can complete work in = 20 days.

Together, they worked for 4 days.

So,

The fraction of work = ?

Work of 'A' in 1 days = $\frac{1}{15}$

Work of 'B' in 1 days = $\frac{1}{20}$

Let, A and B work together = $\frac{1}{15} + \frac{1}{20}$

Then, one day work together

will be = $\frac{4+3}{60} = \frac{7}{60}$

As according to the question,

the 4 day data would be = $4 \times \frac{7}{60}$
$$\frac{}{15}$$

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

As, Total work = 1

Work done = $\dfrac{7}{15}$

Work left = $1 - \dfrac{7}{15}$

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

$$\boxed{\text{Work left} = \dfrac{8}{15}}$$

(B) As given,

Two numbers are in ratio = 3:5 —①

So, numbers would be

$3x$ and $5x$

As, after subtracting '9' from the two numbers their ratio would be:

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

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

$69x - 60x = 207 - 108$

$$\boxed{x = 11}$$

The original numbers be, $3x = 3 \times 11 = 33$

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

$$\boxed{\text{So, Smaller number would be 33}}$$

(c) As per the question,

Average of A, B, C = 45kg.

So,

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

$$\boxed{A+B+C = 45 \times 3 = 135kg} \quad \text{—} \quad \textcircled{1}$$

Now, the average of A and B is 40kg.

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

$$\boxed{A+B = 40 \times 2 = 80kg} \quad \text{—} \quad \textcircled{2}$$

And, Averga of B, C is 43kg.

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

$$\boxed{B+C = 86kg} \quad \text{—} \quad \textcircled{3}$$

Solving ① and ③

$$B+C - A+B = 86 - 80$$

$$\boxed{C-A = 6kg} \quad \text{—} \quad \textcircled{4}$$

Solving ② and ③ $A+B+B+C = 80 + 86$

$$\boxed{A+2B+C = 166 kg} \quad \text{—} \quad \textcircled{5}$$

Solving ⑤ and ①

$A+2B+C = 166$

$A+B+C = 135$

$$B = 31$$

So, the weight of B is 31 kg. ✓

(D) ① 2, 3, 6, 4, 5, 20, ___, 7, 18

2, 3, 6, 4, 5, 20, 6, 3, 18 ✓

② 1, 3, 9, 15, 25, ___, 49

1, 3, 9, 15, 25, 39, 49. ✗

③ 2, 7, 10, 22, 18, 37, 26, ___

2, 7, 10, 22, 18, 37, 26, 52. ✓

④ 34, 7, 37, 14, 40, 20, 43, 56 ✓

⑤ 5, 7, 11, 13, 17, 19

4