Q. No. 1

(A) Sum of three consecutive . . . numbers.

Solution:

Set of prime numbers = {2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43 . . . }.

Sum of Consecutive Prime No.s = 97.

$29 + 31 + 37 = 97$.

Hence, the numbers are 29, 31, 37

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(B) Introducing a boy and . . . the girl?

Solution:

Boy ← son — Daughter/Mother ← daughter — Father/Grandfather

Boy ← son — Daughter/Mother ↓ siblings — Uncle ← son

Girl ← neice

5

Either the boy is the girl's brother or first cousin: as per the given information.

Assuming Uncle to be on father's side, the boy is the girl's cousin.

(C) Two dice are thrown. . . . is even?

Solution:

Probability = Possible outcomes of event / Total outcomes

For two dice, Total no. of outcomes = 6^n

$= 6^2 = 36.$

outcomes where product is even:

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

So, number of possible outcomes = 27.

Hence, probability $= \frac{27}{36} = \frac{9^3}{12_4} = \frac{3}{4}$

∴ probability of even product when two dice are rolled simultaneously is 3/4.

(D) A library has an avg. . . . Sunday is?

Solution:

Given:

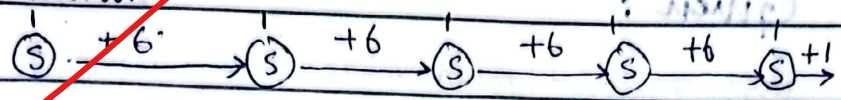
Average no. of visitors on Sundays = 510.

Avg. no. of visitors on other week days = 240.

Avg. no. of visitors visitors per day in a 30 day month beginning with Sunday = ?

Solution:

Calculating no. of Sundays in this month.



∴ No. Sundays = 5.

& Other days = 6+6+6+6+1 = 25.

Required avg. = $\frac{(\text{Avg. of Sunday vis.} \times \text{No. of Sun}) + (\text{Avg. of other day vis.} \times \text{No. of Oth. Days})}{\text{Total No. of days.}}$

$= \frac{(510 \times 5) + (240 \times 25)}{30}$

$= \frac{2550 + 6000}{30}$

$= \frac{8550}{30}$

$= 285$

240
25
1200
480×
6000

∴ The avg. no. of visitors per day in a month of 30 days beginning with a Sunday is 285.

Q.No.3

(A) A can do work . . . Left is?

Given:

A's one day work = $\frac{1}{15}$

B's one day work = $\frac{1}{20}$.

Fraction of work remaining after A & B combine for 4 days = ?

Solution:

Combined one day work = $\frac{1}{15} + \frac{1}{20}$

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

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

Work done in 4 days = $\frac{7}{60} \times 4 = \frac{28}{60_{15}}^{7}$

$= \frac{7}{15}$

Remaining work = $1 - \frac{7}{15} = \frac{15-7}{15} = \frac{8}{15}$ 5

Hence, fraction of work remaining after A & B combine for 4 days is $\boxed{8/15}$.

(B) Two numbers are in ratio . . . is?

Solution:

let the two numbers be 3x and 5x (since ratio is 3:5).

After subtracting 9,

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

Solving above.

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

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

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

$$9x = 99$$

$$x = 11$$

∴ the smallest number $3x = 3(11) = 33$.

Final answer = 33.

9
111
257
108
99

(C) The avg. weight of A, B, C . . . of B is?

Given:

Avg. wt. of A, B, & C $= \frac{A+B+C}{3} = 45$ kg.

Avg. wt. of A, B $= \frac{A+B}{2} = 40$ kg.

Avg. wt of B, C $= \frac{B+C}{2} = 43$ kg.

Weight of B = ?

Solution:

since $\frac{A+B}{2} = 40\ kg \Rightarrow A = 80 - B$.

since $\frac{B+C}{2} = 43\ kg \Rightarrow C = 86 - B$.

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

after putting values for A & C.

$$\frac{80 - B + B + 86 - B}{3} = 45\ kg.$$

$$-B + 166 = 45 \times 3$$

166
135
31

$$-B = 135 - 166$$

$$-B = -31$$

$$B = 31\ kg.$$

$\therefore$ weight of B = 31 kg.

(D) Find the missing terms.

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

(2) +1, ×2, −2, +1, ×4, ——.

$2 \times 3 = 6$, $4 \times 5 = 20$, $x \times 3 = 18$.

6?

$\Rightarrow$ 2, 3, 6, 4, 5, 20, 6, 3, 18

2. 1, 3, 9, 15, 25, 35, 49

1^2, 1×3, 3^2, 3×5, 5^2, 15×7, 7^2

1, 3, 9, 15, 25, 35, 49

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

2, 7, 2+8, +15, 10+8, +15, 18+8, (+15)

2, 7, 10, 22, 18, 37, 26, 37+15.

4. 34, 7, 37, 14, 40, 28, 43, 56.

(34), 7, +3, ×2, +3, ×~~2~~, +3, ×~~7~~

34, 7, 37, 14, 40, 28, 43, 56

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

(5), +2, +4, ~~+6~~ -4, -2, (19)

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

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V. Good

Keep up

Best wishes

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