

QNo:- 97 ,Correct Answer:- 502

Explanation:- As the digits appear in ascending order in the numbers, number of ways of forming a n-digit number using the 9 digits = 9C_n

$$\begin{aligned} \text{Number of possible two-digit numbers which can be formed} &= {}^9C_2 + {}^9C_3 + {}^9C_4 + {}^9C_5 + {}^9C_6 + {}^9C_7 + {}^9C_8 + {}^9C_9 = 2^9 - ({}^9C_0 + {}^9C_1) \\ &= 512 - (1 + 9) = 502 \end{aligned}$$

QNo:- 98 ,Correct Answer:- B

Explanation:-

$$\begin{aligned} u^2 + (u - 2v - 1)^2 &= -4v(u + v) \\ \Rightarrow u^2 + u^2 + 4v^2 + 1 - 4uv + 4v - 2u + 4vu + 4v^2 &= 0 \\ \Rightarrow 2u^2 - 2u + 8v^2 + 4v + 1 &= 0 \\ \Rightarrow 2(u^2 - u + \frac{1}{4}) + 2(4v^2 + 2v + \frac{1}{4}) &= 0 \\ \Rightarrow 2(u - \frac{1}{2})^2 + 2(2v + \frac{1}{2})^2 &= 0 \\ \Rightarrow u - \frac{1}{2} = 0; 2v + \frac{1}{2} &= 0 \\ u = \frac{1}{2} \text{ and } v = -\frac{1}{4} \\ u + 3v = \frac{1}{2} - \frac{3}{4} = -\frac{1}{4} \end{aligned}$$

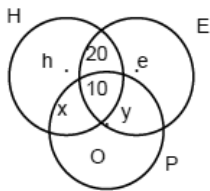
QNo:- 99 ,Correct Answer:- C

Explanation:-

$$\begin{aligned} 5 + \log_3 a = 2^3 = 8 &\Rightarrow a = 27 \\ \text{Similarly, } 4a + 12 + \log_2 b = 5^3 = 125 & \\ \text{Since } a = 27, 4(27) + 12 + \log_2 b = 125 &\Rightarrow b = 32. \\ a + b = 59. \end{aligned}$$

QNo:- 100 ,Correct Answer:- 52

Explanation:- Let the number of students who studying only H be h, only E be e, only H and P but not E be x, only E and P but not H be y.



Given only P = 0
 All three = 10;
 Studying only H and E but not P = 20
 Given number of students studying H =
 Number of students studying E =
 $h + x + 20 + 10 = e + y + 20 + 10$
 $h + x = e + y$
 total number of students = 74
 $\therefore h + x + 20 + 10 + e + y = 74$
 $h + x + e + y = 44$
 $h + x + h + x = 44$
 $h + x = 22$
 $\therefore \text{The number of students studying H} = h + x + 20 + 10 = 22 + 20 + 10 = 52.$