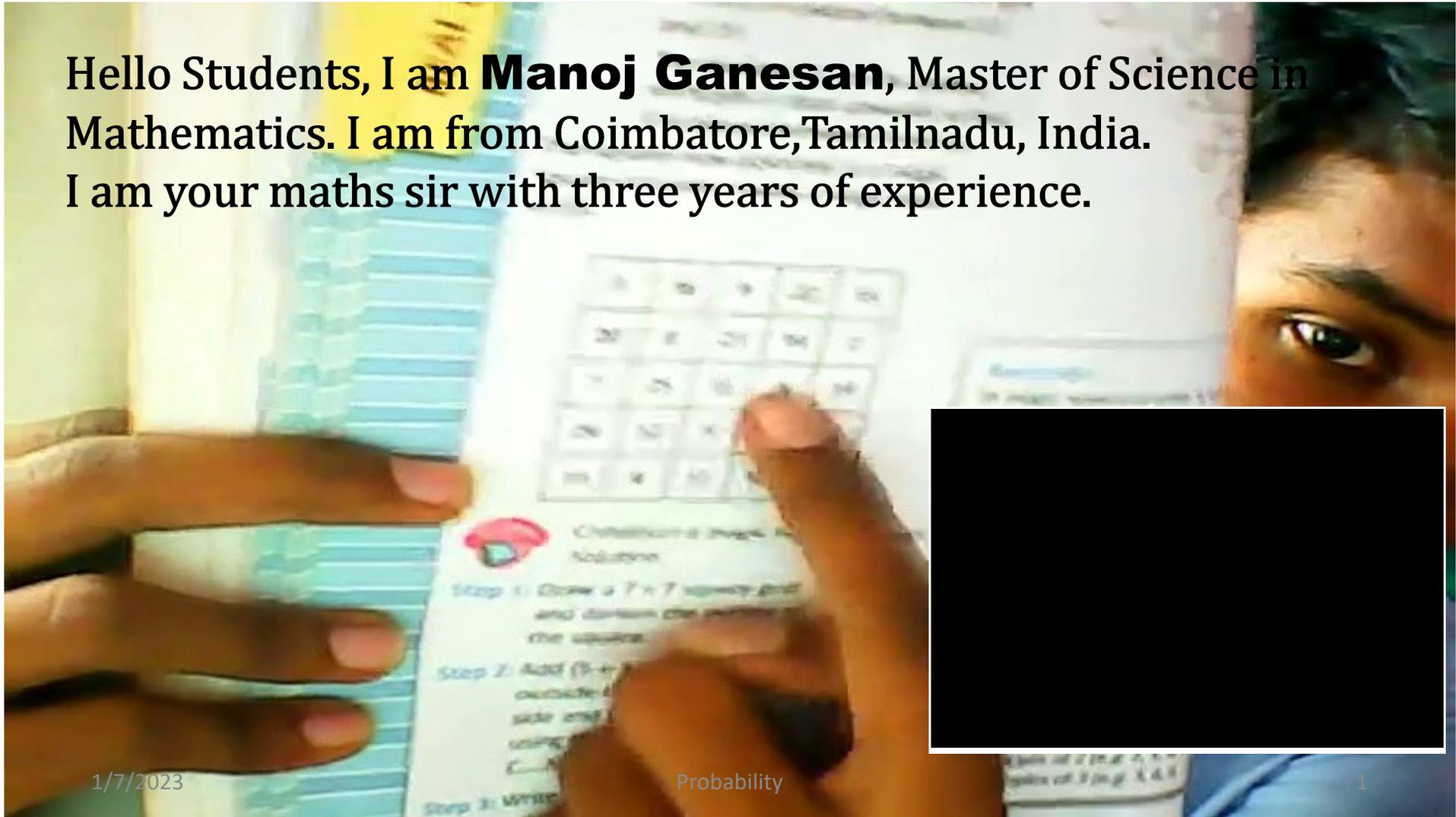Hello Students, I am **Manoj Ganesan**, Master of Science in Mathematics. I am from Coimbatore,Tamilnadu, India.
I am your maths sir with three years of experience.

Find the probability that a three - digit
number has at-least two odd numbers.

Answer. :- $\dfrac{19}{36}$

Solution :

Cardinality of S is $= \left\lceil \frac{l-a}{d} \right\rceil + 1$

$n(s) = \left\lceil \frac{999-100}{1} \right\rceil + 1$

100, 101, 102, … … …, 999

$= 899 + 1$

$= 900$

$\therefore$ The total 3- digit numbers $= 9 \times 10 \times 10$

(by permutation) $= 900$

We know that,

$$\frac{n(A)}{n(S)} = P(A)$$

$$\frac{n(A)}{n(S)} = \frac{Number\ of\ cases\ favourable\ to\ A}{Exhaustive\ number\ of\ cases\ in\ S}$$

To find n(A) i.e., Number of cases favourable to A
for at-least 2 odd numbers.

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

Case I: 3 odd numbers

$$= \_\ \_\ \_ = 5 \times 5 \times 5 \ = \ 125$$

$(1, 3, 5, 7, 9)$	$(1, 3, 5, 7, 9)$	$(1, 3, 5, 7, 9)$

Case II: 2 odd numbers

Sub case 1 : An Even number In Hundreds digit's Place

$$= \text{\_ \_ \_} = 4 \times 5 \times 5 = 100$$

(2,4,6,8)	(1, 3, 5 , 7, 9)	(1, 3, 5 , 7, 9)

Sub case 2 : An Even number In Tens digit's Place

$$= \_\ \underline{\ \ }\ \_ = 5 \times 5 \times 5$$

(1, 3, 5 , 7, 9)	(0,2,4,6,8)	(1, 3, 5 , 7, 9)

Sub Case 3 : An Even number in Unit digit's Place

$$= \_\ \_\ \_ = 5×5×5$$

(1, 3, 5 , 7, 9)	(1, 3, 5 , 7, 9)	(0,2,4,6,8)

∴ The total number of favourable outcomes

Sum of individual cases favourable to A

$= 125 + 100 + 125 + 125$

$= 475$

Thus the probability of A with at-least ($\geq$) 2 odd number s $= \dfrac{Number\ of\ cases\ favourable\ to\ A}{Exhaustive\ number\ of\ cases\ in\ S}$

$$P(A \text{ with Two Odd numbers}) = \frac{475}{900}$$

$$= \frac{19}{36}$$

Answer. :- $\frac{19}{36}$

Thank You

Week day	Math Topic	Available Time
Monday	Probability	2 PM -10 PM
Tuesday	Number System	2 PM -10 PM
Wednesday	Measurements	2 PM -10 PM
Thursday	Trigonometry	2 PM -10 PM
Friday	Geometry	2 PM -10 PM
Saturday	Live Discussion	2 PM -10 PM
Sunday	Doubt Session	2 PM -10 PM