Introduction to Data Science
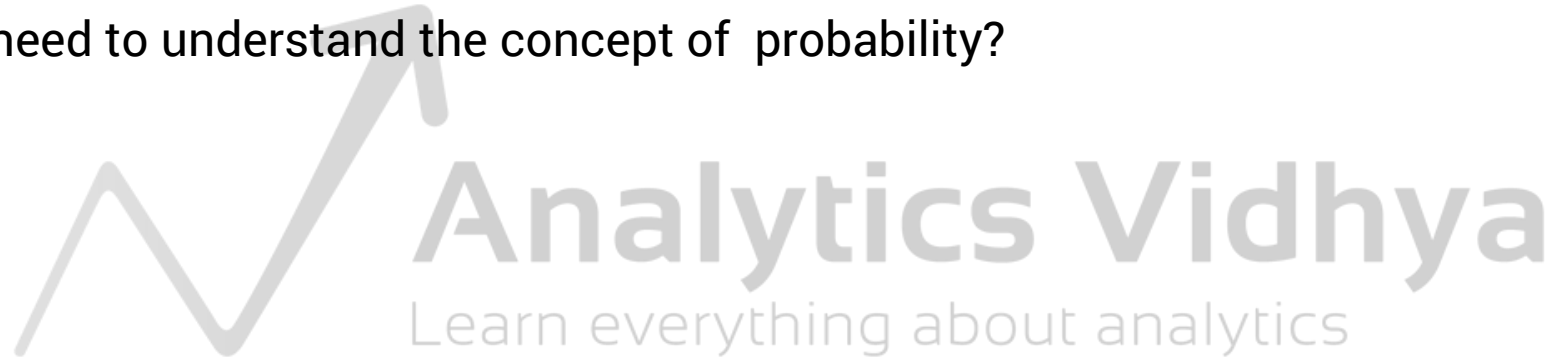
In the previous video

- What is probability?

- Why do we need to understand the concept of probability?

How to convert events to numbers ?
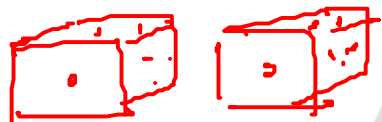
1 out 100 have Typhoid

$\frac{1}{100} = 0.01$

1, 2, 3, 4, 5, 6

6 outcomes

$\frac{1}{6}$

Winner gets = 8

$X = [1, 2, 3, 4, 5, 6]$

$Y =$ Sum of numbers on a pair of dice

$Y = [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]$
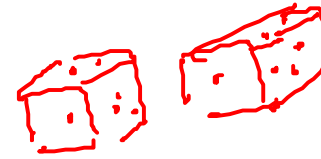
$\frac{3}{6} = 0.5$

Random Variables

- Each value of the random variable may or may not be equally likely. If I start fighting a wrestling champion our chances of winning are not equally likely.

- Sometimes the random variables only take fixed or discrete values like here, the sum of values on two dice can either be 2 or 3 and not 2.5

$$Y = [\ 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\ ]$$

$2 = \{1, 1\} = 1 \text{ way}$

$3 = \{(1,2)(2,1)\} \Rightarrow 2 \text{ ways}$

$4 = \{(2,2), (3,1), (1,3)\} = 3 \text{ ways}$

$5 = \{(4,4), (4,1)(2,3), (3,2)\} = 4 \text{ ways}$

$6 = \{(3,3), (1,5), (5,1), (2,4), (4,2)\} = 5 \text{ ways}$

$7 = \{(1,6), (6,1), (2,5)(5,2), (3,4), (4,3)\} = 6 \text{ ways}$

$8 = \{(2,6), (6,2), (3,5), (5,3), (4,4)\} = 5 \text{ ways}$

$9 = \{(3,6), (6,3), (5,4), (4,5)\} = 4 \text{ ways}$

$10 = \{(4,6), (6,4), (5,5)\}$ 3 ways

$11 = \{(5,6), (6,5)\} = 2 \text{ way}$

$12 = \{(6,6)\} = 1 \text{ way}$

36 ways

$P(w) = \dfrac{5}{36}$