

$$P(MS) \Rightarrow 30\% \Rightarrow 0.3 \Rightarrow MS \rightarrow \text{morning sale}$$

$$P(AS) \Rightarrow 60\% \Rightarrow 0.6 \Rightarrow AS \rightarrow \text{afternoon sale}$$

$$P(MNS) \Rightarrow 1 - P(MS) = 0.7 \rightarrow MNS \rightarrow \text{morning no sale}$$

$$P(ANS) \Rightarrow 1 - P(AS) = 0.4 \rightarrow ANS \rightarrow \text{afternoon no sale}$$

$$S \Rightarrow 5,000 \quad SP \Rightarrow 10,000$$

$$P(MS \text{ and } SS) \Rightarrow \text{morning sale and sell standard edition}$$

$$P(MS \& SS) = 0.3 \times 0.3$$

$$P(MS \text{ and } SP) \Rightarrow \text{morning sale and sell premium edition}$$

$$P(MS \& SP) = 0.3 \times 0.7$$

$$P(AS \text{ and } SS) \Rightarrow \text{afternoon sale and sell standard edition}$$

$$P(AS \& SS) = 0.6 \times 0.5$$

$$P(AS \text{ and } SP) \Rightarrow \text{afternoon sale and sell premium edition}$$

$$P(AS \& SP) = 0.6 \times 0.5$$

$$P(X) \Rightarrow \text{Random variable}$$

which can have value

$$0, 5000, 10000, 15000, 20000$$

$$P(X=0) \text{ salesman earning nothing on any given random day}$$

$$\hookrightarrow P(MNS \text{ and } ANS) \Rightarrow 0.28$$

$$0.7 \times 0.4$$

$$P(X=5000) \text{ salesman earning Rs 5000 on any given random day}$$

could be possible in two ways

$$P(MS \text{ and } SS) \text{ and } P(ANS)$$

$$0.3 \times 0.3 + 0.7 \times 0.4 = 0.036 + 0.28 = 0.316$$

+  $\rightarrow$  mutually exclusive  $\Rightarrow 0.246$

$$P(MNS) \text{ and } P(AS \text{ and } SS)$$

$$0.7 \times 0.6 \times 0.5 = 0.21$$

$$P(X=10000) \text{ salesman earning Rs 10000 on any given random day}$$

$$P(MS \text{ and } SP) \text{ and } P(ANS) \quad P(MS \text{ and } SS) \text{ and } P(AS \text{ and } SP)$$

$$0.3 \times 0.7 + 0.6 \times 0.5 = 0.21 + 0.3 = 0.51$$

$$(0.3 \times 0.7) + (0.6 \times 0.5) \Rightarrow 0.321$$

$$(0.3 \times 0.3) + (0.6 \times 0.5)$$

$$P(X=15000) \text{ salesman earning Rs 15000 on any given random day}$$

$$P(MS \& SS) \times P(AS \& SP) \Rightarrow 0.3 \times 0.3 \times 0.6 \times 0.5 \Rightarrow 0.027$$

$$P(MS \& SP) \times P(AS \& SS) \Rightarrow 0.3 \times 0.7 \times 0.6 \times 0.5 \Rightarrow 0.063$$

$$\Rightarrow 0.090$$

$$P(X=20000) \text{ salesman earning Rs 20000 on any given random day}$$

$$P(MS \& SP) \times P(AS \& SP) = (0.3 \times 0.7) \times (0.6 \times 0.5) = 0.063$$

$$P(X=0) = 0.28$$

$$P(X=5000) = 0.21$$

$$P(X=10000) = 0.321$$

$$P(X=15000) = 0.090$$

$$P(X=20000) = 0.063$$

Random variable  $X$  with all possible ways & their corresponding probability

the weight ~~average~~ probability is the <sup>sum</sup> product of  $X$  random variable and their corresponding probability

$$(0 \times 0.28) + (5000 \times 0.21) + (10000 \times 0.321) + (15000 \times 0.090) + (20000 \times 0.063) = 6,870 \approx 7,000$$

The long term average of an given salesman is around Rs 7000.