

PROBABILITY

T SIVA PARVATHI - FWC22089

16.4.5 ¹ Out of 100 students, two sections of 40 and 60 are formed. If you and your friend are among the 100 students, what is the probability that

- (a) you both enter the same section?
- (b) you both enter the different sections?

Solution: 100 students divided into two sections 40 and 60,

RV	Values	Description
X	{0,1}	0: section1, 1: section2
Y	{0,1}	0: student1, 1: student2
XY	{001,101}	Students enter same section
	{00,01,10,11}	Students enter different section

Table 2: Random Variables(RV) X, Y and XY

- (a) both enter the same section

$$\Pr(001, 101) = \frac{{}^{40}C_2}{{}^{100}C_2} + \frac{{}^{60}C_2}{{}^{100}C_2} = \frac{156}{990} + \frac{354}{990} = 0.51 \quad (16.4.1.1)$$

- (b) both enter different section

$$\Pr(00, 01, 10, 11) = 1 - 0.51 = 0.49 \quad (16.4.2.2)$$

¹Read question numbers as (CHAPTER NUMBER).(EXERCISE NUMBER).(QUESTION NUMBER)