Assignment 1

Jaswanth Chowdary Madala

1) A jar contains 24 marbles, some are green and others are blue. If a marble is drawn at random from the jar, the probability that it is green is $\frac{2}{3}$ Find the number of blue balls in the jar.
Solution: Consider the random variable X, which denotes the color of the marble drawn as described in the table 1.

RV	Values	Description
X	$\{0, 1\}$	0: Green, 1: Blue

TABLE 1: Random variable X

The given information about probabilities is listed in table 1.

Event	Probability
$\Pr(X = 0)$	$\frac{2}{3}$
$\Pr(X = 1)$	$\frac{1}{3}$

TABLE 1: Probabilities

Let there be n blue balls in the jar i.e., out of 24 marbles the jar has n blue balls. Hence we have,

$$\Pr(X = 1) = \frac{n}{24} \tag{0.0.1}$$

$$\frac{n}{24} = \frac{1}{3} \tag{0.0.2}$$

$$n = 8 \tag{0.0.3}$$

There are 8 blue balls in the jar.