Assignment: Probability

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16.4.3 [1]A die has two faces each with number '1', three faces each with number '2' and one face with number '3'. If die is rolled once, determine

(a) $\Pr(2)$

(b) $\Pr(1\text{or}3)$

(c) $\Pr(\text{not}3)$

Solution:

Variable	Value	Description	Probability	Pr Value
X_1	1	Face of die '1'	$\Pr(X_1)$	$\frac{1}{3}$
X_2	2	Face of die '2'	$\Pr(X_2)$	$\frac{1}{2}$
X_3	3	Face of dir '3'	$\Pr(X_3)$	$\frac{1}{6}$

Table 16.4.3.2: Variable Description.

(a)

$$\Pr(X_2) = \frac{1}{2} \tag{16.4.1.1}$$

(b)

$$\Pr(X_1 + X_3) = \Pr(X_1) + \Pr(X_3) - \Pr(X_1 X_3) \tag{16.4.2.2}$$

$$= \frac{1}{3} + \frac{1}{6}(\because \Pr(X_1 X_3) = 0) \tag{16.4.2.3}$$

$$= \frac{3}{6} \tag{16.4.2.4}$$

$$\Pr(X_1 + X_3) = \frac{1}{2} \tag{16.4.2.5}$$

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

(c)

$$\Pr\left(X_3\prime\right) = 1 - \Pr\left(X_3\right) \tag{16.4.3.6}$$

$$= 1 - \frac{1}{6} \tag{16.4.3.7}$$

$$= \frac{5}{6} \tag{16.4.3.8}$$