

Assignment: Probability

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16.4.3 ¹A 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:

Number of faces	6
Faces of die(1,2,3)	X_1, X_2, X_3

Table 2: Description.

Probability	Value
$\Pr(X_1)$	$\frac{1}{3}$
$\Pr(X_2)$	$\frac{1}{2}$
$\Pr(X_3)$	$\frac{1}{6}$

Table 4: Probabilities of X_1, X_2 and X_3 .

(a)

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

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

(b)

$$\Pr(X_1 + X_3) = \Pr(X_1) + \Pr(X_3) - \Pr(X_1 X_3) \quad (16.4.2.2)$$

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

$$= \frac{3}{6} \quad (16.4.2.4)$$

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

(c)

$$\Pr(X_3)' = 1 - \Pr(X_3) \quad (16.4.3.6)$$

$$= 1 - \frac{1}{6} \quad (16.4.3.7)$$

$$= \frac{5}{6} \quad (16.4.3.8)$$