Assignment: Probability

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Problem: 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

(i) P(2)

(ii) P(1 or 3)

(iii) P(not 3)

Solution: Total number of faces = 6
Let the faces of die be X = $\{1, 2, 3\}$.
Probability P = $\frac{Total number of favourable outcomes}{Total number of Possible outcomes}$.

Probability	**Value**
P(1)	$\frac{1}{3}$
P(2)	$\frac{1}{2}$
P(3)	$\frac{1}{6}$

Table 2: Probabilities of X

(i) P(X=2) = $\frac{1}{2}$

(ii)

$$P(X = 1 + X = 3) = P(1) + P(3) - P(1, 3) \tag{1}$$
$$= \frac{1}{3} + \frac{1}{6} (\because P(1, 3) = 0) \tag{2}$$
$$= \frac{3}{6} \tag{3}$$
$$P(X = 1 + X = 3) = \frac{1}{2} \tag{4}$$

(iii)

$$P(X = 3)\prime = 1 - P(3) \tag{5}$$

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

$$= \frac{5}{6} \tag{7}$$