Assignment 1 (10.15.1.12)

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Problem: A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8, and these are equally likely outcomes. What is the probability that it will point at

  (i) 8?

 (ii) an odd number?

(iii) a number greater than 2?

 (iv) a number less than 9?

Solution:

 (i) Let A be the event that the arrow will point at 8. As all the numbers are equally likely to come,

$$\Pr(A) = \frac{\text{Number of outcomes favourable to A}}{\text{Number of all possible outcomes}}$$

$$\therefore \Pr(A) = \frac{1}{8}$$

 (ii) Let B be the event that the arrow will point at an odd number. We have four odd numbers, hence the number of outcomes favourable to B are 4.

$$\therefore \Pr(B) = \frac{4}{8}$$

$$\therefore \Pr(B) = \frac{1}{2}$$

(iii) Let C be the event that the arrow will point at a number greater than 2. We have 6 numbers greater than 2, hence the number of outcomes favourable to C are 6.

$$\therefore \Pr(C) = \frac{6}{8}$$

$$\therefore \Pr(C) = \frac{3}{4}$$

(iv) Let D be the event that the arrow will point at a number less than 9. We have 8 numbers less than 9, hence the number of outcomes favourable to C are 8.

$$\therefore \Pr(D) = \frac{8}{8}$$

$$\therefore \Pr(D) = 1$$