

# PROBABILITY 1

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Three coins are tossed once Find the probability of getting (i) 3 heads (ii) 2 heads (iii) at least 2 heads (iv) at most 2 heads (v) no head (vi) 3 tails (vii) exactly two tails (viii) no tail (ix) at most two tails

**Solution:** When three coins are tossed once the sample space is given by

$$S = HHH, HHT, HTH, THH, HTT, THT, TTH, TTT \quad (1)$$

$$n(s) = 8 \quad (2)$$

(i) Let B be the event of the occurrence of 3 heads Accordingly

$$B = HHH \quad (3)$$

$$P(B) = \frac{n(B)}{n(s)} = \frac{1}{8} \quad (4)$$

(ii) Let C be the event of the occurrence of 2 heads Accordingly

$$C = HHT, HTH, THH \quad (5)$$

$$P(C) = \frac{n(C)}{n(s)} = \frac{3}{8} \quad (6)$$

(iii) Let D be the event of the occurrence of at least 2 heads Accordingly

$$D = HHH, HHT, HTH, THH \quad (7)$$

$$P(D) = \frac{n(D)}{n(s)} = \frac{4}{8} \quad (8)$$

(iv) Let E be the event of the occurrence of at most 2 heads Accordingly

$$E = HHT, HTH, THH, HTT, THT, TTH, TTT \quad (9)$$

$$P(E) = \frac{n(E)}{n(s)} = \frac{7}{8} \quad (10)$$

(v) Let F be the event of the occurrence of no head Accordingly

$$F = TTT \quad (11)$$

$$P(F) = \frac{n(F)}{n(s)} = \frac{1}{8} \quad (12)$$

(vi) Let G be the event of the occurrence of 3 tails Accordingly

$$G = TTT \quad (13)$$

$$P(G) = \frac{n(G)}{n(s)} = \frac{1}{8} \quad (14)$$

(vii) Let H be the event of the occurrence of exactly 2 tails Accordingly

$$H = HTT, THT, TTH \quad (15)$$

$$P(H) = \frac{n(H)}{n(s)} = \frac{3}{8} \quad (16)$$

(viii) Let I be the event of the occurrence of no tail Accordingly

$$I = HHH \quad (17)$$

$$P(I) = \frac{n(I)}{n(s)} = \frac{1}{8} \quad (18)$$

(ix) Let J be the event of the occurrence of at most 2 tails Accordingly

$$J = HHH, HHT, HTH, THH, HTT, THT, TTH \quad (19)$$

$$P(J) = \frac{n(J)}{n(s)} = \frac{7}{8} \quad (20)$$