

5 Probability & Statistics 1 – Part 2

— Answers

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5.1 $\frac{3}{6} = \frac{1}{2}$ (the even numbers 2, 4, 6).

5.2 $P(A \cup B) = 0.3 + 0.5 - 0.1 = 0.7$.

5.3 $P(A) \times P(B) = 0.4 \times 0.25 = 0.1 = P(A \cap B)$, so A and B **are** independent.

5.4 $E(X) = 1(0.2) + 2(0.5) + 3(0.3) = 0.2 + 1.0 + 0.9 = 2.1$.

5.5 $E(X) = np = 40 \times 0.25 = 10$.

5.6 Here $X \sim B(6, 0.5)$, so $E(X) = np = 6 \times 0.5 = 3$ heads. The probability of all 6 heads is $(0.5)^6 = \frac{1}{64} \approx 0.0156$.