EdExcel Statistics 1

Probability

Section 1: Introducing Probability

Solutions to Exercise

1. (i) $P(5) = \frac{1}{8}$

   (ii) $P(5 \text{ or more}) = P(5, 6, 7 \text{ or } 8) = \frac{4}{8} = \frac{1}{2}$

   (iii) $P(\text{less than } 5) = 1 - P(5 \text{ or more}) = 1 - \frac{1}{2} = \frac{1}{2}$

   (iv) $P(\text{multiple of } 2) = P(2, 4, 6 \text{ or } 8) = \frac{4}{8} = \frac{1}{2}$

2. (i) $P(3) = \frac{1}{12}$

   (ii) $P(\text{even number}) = P(2, 4, 6, 8, 10 \text{ or } 12) = \frac{6}{12} = \frac{1}{2}$

   (iii) $P(\text{multiple of 3 and even number}) = P(6, 12) = \frac{2}{12} = \frac{1}{6}$

   (iv) $P(\text{multiple of 3 or even number}) = P(2, 3, 4, 6, 8, 9, 10 \text{ or } 12) = \frac{8}{12} = \frac{2}{3}$

   (v) $P(\text{neither multiple of 3 or even number}) = 1 - \frac{2}{3} = \frac{1}{3}$

3. (i) $P(A') = 1 - P(A) = 1 - 0.3 = 0.7$

   (ii) $P(B') = 1 - P(B) = 1 - 0.5 = 0.5$

   (iii) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
   $= 0.3 + 0.5 - 0.15$
   $= 0.65$

4. $P(A \cup B) = 1 - P(A' \cap B') = 1 - 0.2 = 0.8$
   $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
   $0.8 = 0.5 + 0.35 - P(A \cap B)$
   $P(A \cap B) = 0.05$