

1. A pair of fair dice is rolled.

- (a) Calculate the probability that the sum of the numbers of the two dice is at most 6.
- (b) Calculate the probability that the sum of the numbers of the two dice is 4 or 8.

$$a) \quad E = \left\{ \begin{array}{l} (1,1), (1,2), (1,3), (1,4), (1,5) \\ (2,1), (2,2), (2,3), (2,4) \\ (3,1), (3,2), (3,3) \\ (4,1), (4,2) \\ (5,1) \end{array} \right\}$$

$$\text{Then } P(E) = \underbrace{\frac{1}{36} + \frac{1}{36} + \frac{1}{36} + \frac{1}{36} + \frac{1}{36}}_{15 \text{ terms}} = \frac{15}{36}$$

$$b) \quad E = \left\{ (3,1), (2,2), (1,3), (6,2), (5,3), (4,4), (3,5), (2,6) \right\}$$

$$P(E) = \frac{8}{36}$$