Mutually Exclusive Events

(a) There are some yellow, pink and green pens in a pencil case. When a pen is chosen at random, the probability of choosing a yellow pen is 0.25 and the probability of choosing a green pen is 0.45.
(i) What is the probability of choosing a pink pen?
(ii) What is the probability of not choosing a yellow pen?
(iii) What is the probability of choosing a pink or yellow pen?
(iv) What is the minimum number of pens that the pencil case can contain?

(i) 0.3
(ii) 0.75
(iii) 0.55
(iv) 20

(b) In a football match, the probability that Rovers win a game is 0.4. The probability that they lose the game is the same as the probability of them winning the game.
(i) What is the probability that Rovers draw the game?
(ii) What is the probability that they do not lose the game?
(iii) If Rovers played 10 games, how many of them would you expect to win?

(i) 0.2
(ii) 0.6
(iii) 4

(c) A drawer contains black, red and white socks. When a sock is chosen at random, the probability that it is white is $\frac{1}{2}$. The probability of choosing a black sock is twice the probability of choosing a red sock.
(i) Work out the probability of not choosing a white sock.
(ii) What is the probability of choosing a black sock?
(iii) What is the probability of choosing red or white sock?
(iv) If there are 12 black socks, how many socks are in the drawer in total?

(i) $\frac{1}{2}$
(ii) $\frac{1}{3}$
(iii) $\frac{2}{3}$
(iv) 36

Three friends, Joy, Kalia and Lilly, play a game of Uno. The probabilities that Joy, Kalia or Lilly wins the game are in the ratio $6 : 11 : 3$.
(i) Calculate the probability that Joy or Lilly wins the game.
(ii) Work out the probability that Lilly does not win the game.
(iii) Twenty games of Uno are played. How many games would you expect Kalia to win?

(i) $\frac{9}{20}$
(ii) $\frac{17}{20}$
(iii) 11