Harder Probability Problems

(a) A bag contains seven red balls and three black balls. Anton takes out a ball, notes the colour and replaces it. He does this three times. What is the probability that he takes out at least one red ball?

(b) Debbie has 5 tins of tomatoes and 7 tins of beans in the cupboard, but the labels have come off the tins. Debbie chooses two tins at random. Calculate the probability that Debbie chooses two tins of the same type.

(c) Ashok has six coins in his pocket. He has one 5 cent coin, two 10 cent coins and three 20 cent coins. He takes at random a coin from his pocket, records its value and puts the coin back into his pocket. He does this twice. Calculate the probability that the second coin he takes has a higher value than the first coin he takes.

(d) A bag contains 3 black beads, 5 red beads and 2 green beads. Gianna takes a bead at random from the bag, records its colour and replaces it. She does this two more times. Work out the probability that, of the three beads Gianna takes, exactly two are the same colour.

(e) Barney has a biased coin. When the coin is thrown once, the probability that the coin will land heads is 0.3. Barney throws the coin 4 times. Work out the probability that the coin will land heads at least once.

(f) Carolyn has 20 biscuits in a tin. She has 12 plain biscuits, 5 chocolate biscuits and 3 ginger biscuits. Carolyn takes at random two biscuits from the tin. Work out the probability that the two biscuits were **not** the same type.