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11	5b	Kim has three red shirts and two yellow shirts. On each of the three days, Monday, Tuesday and Wednesday, she selects one shirt at random to wear. Kim wears each shirt that she selects only once. (i) What is the probability that Kim wears a red shirt on Monday? (ii) What is the probability that Kim wears a shirt of the same colour on all three days? (iii) What is the probability that Kim does not wear a shirt of the same colour on consecutive days?	1 1 2
(i)		$P(\text{red}) = \frac{3}{5}$	State Mean: 0.92/1 0.70/1 0.93/2
(ii)		$P(\text{same colour}) = P(\text{red, red, red})$ $= \frac{3}{5} \times \frac{2}{4} \times \frac{1}{3}$ $= \frac{1}{10}$	
(iii)		$P(\text{not wear shirt of same colour over consecutive days})$ $= P(\text{RYR or YRY})$ $= \frac{3}{5} \times \frac{2}{4} \times \frac{2}{3} + \frac{2}{5} \times \frac{3}{4} \times \frac{1}{3}$ $= \frac{3}{10}$	

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Board of Studies: Notes from the Marking Centre

Better responses included a probability tree in a large (half page) diagram, followed by successful interpretations to obtain correct answers to all parts.

(i) This part was done well with most candidates simply stating the correct answer.

(ii) In better responses, candidates clearly stated what probability they were calculating, showed the calculation and correctly evaluated it. Common errors were related to not recognising that there were only two yellow shirts. A probability of zero for the third day was frequently ignored or treated as a probability of 1. Numerical expressions were not simplified correctly, further highlighting the need to show working and to avoid giving bald answers.

(iii) This part was challenging. In most responses, candidates incorrectly assumed they needed the complement of their answer to part (ii), and many did not correctly interpret the meaning of 'consecutive days'. Candidates are encouraged to clearly write in words or symbols exactly what probability they are trying to find, then show the calculations needed.

Source: http://www.boardofstudies.nsw.edu.au/hsc_exams/