10	**4c**	There are twelve chocolates in a box. Four of the chocolates have mint centres, four have caramel centres and four have strawberry centres. Ali randomly selects two chocolates and eats them. (i) What is the probability that the two chocolates have mint centres? (ii) What is the probability that the two chocolates have same centres? (iii) What is the probability that the two chocolates have different centres?	 **1** **1** **1**

4M, 4C, 4S

(i) $P(MM) = \frac{4}{12} \times \frac{3}{11}$

$= \frac{1}{11}$

(ii) P(MM or CC or SS)

$= \frac{1}{11} + \frac{1}{11} + \frac{1}{11}$

$= \frac{3}{11}$

(iii) *METHOD 1:*

P(different) = 1 – P(same)

$= 1 - \frac{3}{11}$

$= \frac{8}{11}$

State Mean:
0.68/1
0.67/1
0.75/1

METHOD 2:

P(MC or MS or CM or CS or SM or SC)

$= 6 \times \frac{4}{12} \times \frac{4}{11}$

$= \frac{8}{11}$

* These solutions have been provided by *projectmaths* and are not supplied or endorsed by the Board of Studies

Board of Studies: Notes from the Marking Centre

Better responses used a probability tree, or similar construct, and observed that in part (ii) the probability was 3 times that in part (i), and that in part (iii) the probability was 1 minus that in part (ii). Many candidates responded as if there were replacement of the first selection prior to the second selection being made. Many candidates had difficulty simplifying numerical expressions, further highlighting the need to show working and to avoid giving bald answers.

(i) A common incorrect response was $\frac{4}{12} + \frac{3}{11}$.

(ii) A common error was to multiply the 3 probabilities or cube the answer from part (i).

(iii) The most common error was not recognising that the required answer was the complement of the answer in (ii).

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