06	**4c**	A chessboard has 32 black squares and 32 white squares. Tanya chooses three different squares at random. (i) What is the probability that Tanya chooses three white squares? (ii) What is the probability that the three squares Tanya chooses are the same colour? (iii) What is the probability that the three squares Tanya chooses are not the same colour?	**2** **1** **1**

i. $P(\text{3 white squares}) = \frac{32}{64} \times \frac{31}{63} \times \frac{30}{62}$

$= \frac{5}{42}$

ii. $P(\text{3 white squares}) + P(\text{3 black squares}) = \frac{5}{42} \times \frac{5}{42}$

$= \frac{5}{21}$

iii. $P(\text{not same colour}) = 1 - \frac{5}{21}$

$= \frac{16}{21}$

* 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

(i) Misinterpretation of the question by many candidates assuming there was 'replacement' led to the solution $P(\text{www}) = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$. However, consistently carrying through this error in part (ii) and part (iii) was not penalised in those parts. Better responses took into account that there was no replacement and most candidates were able to use their calculators to obtain a simple fraction.

(ii) Most candidates doubled the answer from part (i) and received the mark for this part of the question.

(iii) Most candidates used the complement of the event to answer this question. Candidates who drew tree diagrams and then tried to work out the probability were often unsuccessful in obtaining the correct answer.

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