BOARD OF STUDIES
NEW SOUTH WALES

Question 7.

a.) i)

ii)

b) . i) $V = 25\left(1 - \frac{0}{60}\right)^2$

$= 25.$ $\therefore$ 25 l.

ii) ~~$t, 25$~~ $\frac{25}{4} = 25\left(1 - \frac{t}{60}\right)^2$

~~$25 = 100($~~

$\frac{25}{4} = 25\left(\frac{59t}{60}\right)^2$

~~$\frac{25}{4} = 25$~~

$375 = 1500(59t)^2$

$-59t^2 = 1500 - 375$

$-t^2 = 1125 \div 59$

$t^2 = 19.06$

$t = |-4.365|$

$= 4.365.$

$\therefore$ ~~After~~ After about 4$\frac{1}{2}$ seconds.

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(iii)

c) i) The total number of socks = 8.

~~$\frac{1}{8} \times$~~ After the first selection, there are 7 socks left in the drawer, and the

P(getting a matching pair) $= \frac{1}{7}$

P(Not getting a matching pair) $= 1 - \frac{1}{7}$

$= \frac{6}{7}$.

ii) ~~[illegible]~~

~~P(Not getting a~~

P(Not having a matching pair after 3rd selecting) $= \frac{6}{7} \times \frac{5}{6}$

$= \frac{5}{7}$

iii) ~~$\frac{6}{7} \times 1 - \left(\frac{6}{7} \times \frac{5}{6}\right)^2$~~

~~$1 - \left(\frac{6}{7} \times \frac{5}{6}\right)^2$~~

~~$= 1 - \frac{25}{49}$~~

~~$= \frac{49}{49} - \frac{25}{49}$~~

~~$= \frac{24}{49}$~~

~~$\frac{6}{7} \times \frac{1}{7} + \left(1 - \frac{6}{7}\right) \times (1 -$~~

~~$\left(\frac{6}{7} \times \frac{6}{7}\right) + \left(\frac{1}{7} \times \frac{5}{6}\right)$~~

$\left(\frac{6}{7} \times \frac{1}{7}\right) + \left(\frac{1}{7} \times \frac{5}{6}\right) = \frac{11}{294}$.