09	4a	A tree grows from ground level to a height of 1.2 metres in one year. In each subsequent year, it grows $\frac{9}{10}$ as much as it did in the previous year. Find the limiting height of the tree.	2

State Mean: **1.59/2**

Consider the series 1.2,1.08, …

Using $S_\infty = \frac{a}{1-r}$ with $a = 1.2$, $r = \frac{9}{10} = 0.9$

$= \frac{1.2}{1-0.9}$

$= \frac{1.2}{0.1}$

$= 12$ $\therefore$ The limiting height of the tree is 12 metres.

* 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

Nearly all candidates realised that this part referred to an infinite geometric series. Common mistakes in those responses that did not achieve full marks were the use of an incorrect formula or an attempt to recalculate the common ratio from the first partial sums leading to $r = 1.9$.

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