08	2b	Let M be the midpoint of $(-1,4)$ and $(5,8)$. Find the equation of the line through M with gradient $-\frac{1}{2}$.	2

Co-ords of M: $(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

$= \left(\frac{-1+5}{2}, \frac{4+8}{2}\right)$

$= (2, 6)$

Equation: $y - y_1 = m(x - x_1)$

$y - 6 = -\frac{1}{2}(x - 2)$

$2y - 12 = -x + 2$

$x + 2y - 14 = 0$

* 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

In better responses, candidates wrote down the correct formulae and then substituted into these. The most common errors were not knowing how to calculate the midpoint, finding the equation of the line with the given gradient but passing through an endpoint rather than the midpoint and finding the equation of the line passing through the two endpoints.

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