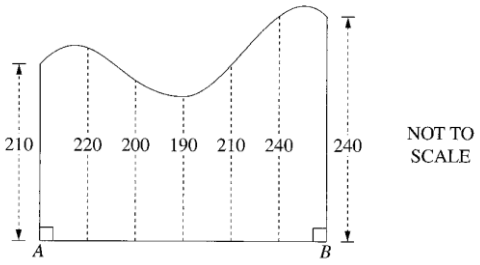
09	3d	The diagram shows a block of land and its dimensions, in metres. The block of land is bounded on one side by a river. Measurements are taken perpendicular to the line *AB*, from *AB* to the river, at equal intervals of 50 m. Use Simpson's rule with six subintervals to find an approximation to the area of the block of land.	3



State Mean: **1.82/3**

Simpson's Rule:

$$\text{Area} \approx \frac{h}{3}[\text{first} + \text{last} + 2 \times \text{odd} + 4 \times \text{even}]$$

$$\approx \frac{50}{3}[210 + 240 + 2 \times [200 + 210] + 4 \times (220 + 190 + 240)]$$

$$\approx \frac{50}{3}[450 + 820 + 2600]$$

$$\approx 64\,500 \qquad \therefore \text{ Area is } 64\,500 \text{ m}^2$$

OR: Simpson's Rule:

$$\text{Area} \approx \frac{h}{3}[y_0 + y_n + 4(y_1 + y_3) + 2(y_2 + y_4 + y_6 + \ldots)]$$

$$\approx \frac{50}{3}[210 + 240 + 2 \times [200 + 210] + 4 \times (220 + 190 + 240)]$$

$$\approx \frac{50}{3}[450 + 820 + 2600]$$

$$\approx 64\,500 \qquad \therefore \text{ Area is } 64\,500 \text{ m}^2$$

Board of Studies: Notes from the Marking Centre

This part was done well by most candidates, with many achieving two or three marks. Candidates did this part in a variety of ways including $\frac{h}{3}(y_0 + y_n + 4(y_1 + y_3 + \ldots) + 2(y_2 + y_4 + \ldots))$; or used three applications of $\frac{b-a}{6}\left(f(a) + 4\left(\frac{a+b}{2}\right) + f(b)\right)$ or $\frac{h}{3}\left(f(a) + 4\left(\frac{a+b}{2}\right) + f(b)\right)$; or used a table. Some candidates were unable to determine the value of h or were confused by the use of $\frac{b-a}{6}$. Candidates also applied Simpson's Rule an incorrect number of times as a result of not reading the question. A minority of candidates applied the Trapezoidal Rule. Use of brackets was poor and often applied incorrectly, leading to mistakes.

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