

Section 1: Algebra

Chapter 2

Exercise D

5. (i) 184 runs in n matches

→ average of $\frac{184}{n}$ runs per match

(ii) Now $184 + 41 = 225$ runs in $n+1$ matches

→ average of $\frac{225}{(n+1)}$ runs per match.

(iii) This is 2 more than previously,

$$\text{so } \frac{225}{(n+1)} = \frac{184}{n} + 2$$

$$\times n(n+1) \quad \frac{n(n+1) \cdot 225}{(n+1)} = \frac{n(n+1) \cdot 184}{n} + 2n(n+1)$$

$$\rightarrow 225n = 184n + 184 + 2n^2 + 2n$$

$$\rightarrow 2n^2 - 39n + 184 = 0$$

$$\rightarrow 2n^2 - 16n - 23n + 184 = 0$$

$$\rightarrow 2n(n-8) - 23(n-8) = 0$$

$$\rightarrow (n-8)(2n-23) = 0$$

$$\rightarrow \underline{n = 8} \quad (\text{reject } n = 11\frac{1}{2} \text{ since } n \text{ is a whole number})$$

Product $2 \times 184 = 368$

Sum = -39

→ both -ve.

-16, -23

(iv) New batting average = $\frac{225}{n+1} = \frac{225}{9}$

= 25 runs per match