Dropping the lowest grade for the homework won’t decrease the homework average score.

To prove this, assume that there are \( n \) homeworks assigned and that \( hw_1, hw_2, \ldots, hw_n \) are the scores for these assignments. Without loss of generality we can assume that

\[
hw_1 \leq hw_2 \leq \cdots \leq hw_n.
\]  

(1)

The average homework score is \( \frac{hw_1 + hw_2 + \cdots + hw_n}{n} \). The average homework score after dropping the smallest score (this score is \( hw_1 \) under our assumptions) is \( \frac{hw_2 + hw_3 + \cdots + hw_n}{n-1} \).

The above statement will follow from the next theorem.

**Theorem 1**

\[
\frac{hw_1 + hw_2 + \cdots + hw_n}{n} \leq \frac{hw_2 + hw_3 + \cdots + hw_n}{n-1}.
\]  

(2)

**Proof:**

Multiplying the left-hand side of (2) by \( n-1 \) and the right-hand side by \( n \), we get that the inequality (2) is equivalent to

\[
hw_1 \cdot (n-1) + hw_2 \cdot (n-1) + \cdots + hw_n \cdot (n-1) \leq hw_2 \cdot n + hw_3 \cdot n + \cdots + hw_n \cdot n.
\]  

(3)

Moving the terms \( hw_2 \cdot (n-1) + \cdots + hw_n \cdot (n-1) \) to the right-hand side of (3) results in

\[
hw_1 \cdot (n-1) \leq hw_2 \cdot n + hw_3 \cdot n + \cdots + hw_n \cdot n - (hw_2 \cdot (n-1) + \cdots + hw_n \cdot (n-1)),
\]  

or, after grouping the terms,

\[
hw_1 \cdot (n-1) \leq hw_2 \cdot (n-1) + hw_3 \cdot (n-1) + \cdots + hw_n \cdot (n-1).
\]  

(4)

Simplifying (4) we get that to prove (2) is equivalent to prove

\[
hw_1 \cdot (n-1) \leq hw_2 + hw_3 + \cdots + hw_n.
\]  

(5)

Now, (5) can be rewritten as

\[
\underbrace{hw_1 + hw_2 + \cdots + hw_1}_{n-1 \text{ times}} \leq hw_2 + hw_3 + \cdots + hw_n.
\]  

(6)

Moving all terms from the left-hand side of (6) to the right-hand side, we get that (6) is equivalent to

\[
0 \leq (hw_2 - hw_1) + (hw_3 - hw_1) + \cdots + (hw_n - hw_1).
\]  

(7)

Remember (1) that \( hw_1 \) is the minimum score, so \( hw_i - hw_1 \geq 0 \) for \( i = 2, 3, \ldots, n \). Therefore, every term in (7) is non-negative. Hence, the entire sum of non-negative terms is also non-negative, and (7) is established.

Since (7) is equivalent to (2) the Theorem is proved. \( \square \)