A student measures distance $x$ to be 5 meters and area $A$ to be 25 ft$^2$. Discuss with neighbors which of the following are true; then vote for all that are true.

1. $[x^2] = [A]$
2. $[5x] = A$
3. $x^2 = [A]$
4. $x^2 = A$
5. None of the above
As part of an exam a few years ago, a student wrote the following derivation of a final result. Without knowing the problem, but knowing the dimensions of each quantity shown along the bottom can you determine:

Is equation D correct?
1. Yes
2. No
3. Can’t tell

Given that equation D is NOT correct, can you tell which is the first line that has an error?

\[ [M] = M \quad [g] = \frac{L}{T^2} \quad [h] = L \quad [\omega] = \frac{1}{T} \quad [v] = \frac{L}{T} \quad [R] = L \quad [I] = ML^2 \]
The diffusion constant \( D \), describes how molecules jiggling around in a fluid drift. It has dimensions

\[
[D] = L^2/T
\]

We have good reason to believe (we’ll see it in a reading later) that \( D \) depends on the average distance a molecules travels, \( \lambda \), and it’s average speed \( v \).

If \([\lambda] = L\) and \([v] = L/T\) guess an equation that expresses \( D \) in terms of \( \lambda \) and \( v \).