Answer on Question #84700, Physics / Molecular Physics | Thermodynamics

Question:

A body is weights first in the left and then in the right hand pan of a balance.the respective weights being 9.845grams and 9.836grams.calculate the true weight of the body and the ratio of the lenghts of the armths of the balance.

Solution:

The following is valid for two tests: $ma = m_1 b$ and $mb = m_2 a$, therefore the ratio equals to $r = \frac{a}{b} = \sqrt{\frac{m_1}{m_2}} = \sqrt{\frac{9.845}{9.836}} = 1.00046$, respectively the true weight of the body is $w = m_2 \frac{a}{b} = 9.840$ grams.

The answer:

1. The true weight of the body is 9.840 grams.
2. The ratio equals to 1.00046.