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An ideal gas is heated very gradually. This causes it to expand slowly. During this entire process, the temperature of the gas remains constant.

Which statement is correct?

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**A**

As the heat is applied, the internal energy of the gas increases.

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**B**

The gas does no work in expanding.

**C**

The rate of heating and the rate of gas doing work are equal at all times.

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**D**

The root-mean-square speed of the gas molecules increases as the heat is applied.