Given: A stone is thrown upward and at the tip-pity top of its path its vertical velocity is momentarily zero.

What is its acceleration at this point?

A) $a_{top} = 9.8 \text{ m/s}^2$ and is directed down.
B) $a_{top} = 0 \text{ m/s}^2$ and its directed is undetermined.
C) $a_{top} = 9.8 \text{ m/s}^2$ and is directed up.
Near the surface of the Earth, for all practical purposes the gravitational acceleration is constant, which is $9.8 \text{ m/s}^2$ and is directed downward.

To illustrate how it works, let us take for example and upward initial velocity of $9.8 \text{ m/s}^2$. One second later the velocity will be zero. Two seconds later the velocity will be $-9.8 \text{ m/s}^2$. In other words, in each second the velocity is decreased by $9.8 \text{ m/s}$.

Answer A.

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