Consider the mass-pulley system shown.

Note: The figure may not be drawn to scale.

Determine the distance covered by the force $F$ as it lifts the mass by a height $\Delta x$.

A) $d = \Delta x$.
B) $d = 2 \Delta x$.
C) $d = 3 \Delta x$.
D) $d = 4 \Delta x$.

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Note: The figure is drawn to scale.

$\frac{d}{2}$ is the distance from the floor to the bottom of the block.

As the mass is being lifted by a height $\Delta x$, the length of each of the two strings supporting the moving pulley will be reduced by $\Delta x$ so $d = 2 \Delta x$.

Answer B.

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