
$\mathrm{V}_{\text {average }}$ is approximately the instantaneous velocity at the midpoint

## Average Velocity



$$
V>0
$$

Moving away from $\mathrm{V}=0 \rightarrow$ speeding up


Moving to $\mathrm{V}=0 \rightarrow$ slowing

$$
\text { slowing } \rightarrow \boldsymbol{a} \uparrow \downarrow \boldsymbol{V} \rightarrow \mathrm{a}>0
$$

$$
\vec{v}_{\text {ave }}=\frac{\Delta \vec{x}}{\Delta t} \quad \Delta \vec{x}=\vec{v}_{\text {ave }} \cdot \Delta t
$$




## Note!

- We say "area under curve"
- We mean "area between curve and horizontal axis"
- Areas above axis are positive
- Areas below axis are negative


## x-t from v-t graphs






