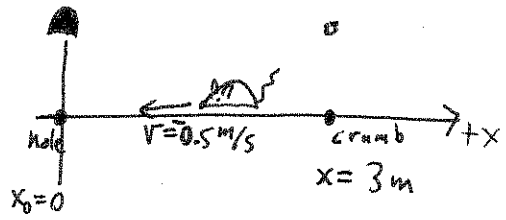
Crumby Mouse.

using formal problem-solving procedure, then a quick-think procedure.

Draw it or make axis representation:



The question here is asking how long the mouse takes to get back to its hole. We know he walked out straight 3m to get to the crumb.

So we know the crumb's displacement from the hole: $\Delta x = +3m$. BUT the trip back starts at crumb and ends at hole so $\Delta x = -3m$

We also know mouse's velocity: the way I've drawn my axes, mouse is going at negative velocity toward s his hole: $\bar{v} = -0.5\ m/s$

I've written this as average velocity because it seems to be implied in the problem that velocity is constant the entire trip back.

So...

KNOWNS: $\bar{v}, v, v_0, \Delta x$

$\bar{v} = v = v_0 = -0.5\ m/s$ because velocity is constant.

$\Delta x = -3m$ going crumb to hole.

UNKNOWN: t

Definition of average velocity is displacement over elapsed time:

$$\bar{v} = \frac{\Delta x}{t} \quad \text{so} \quad -0.5\frac{m}{s} = \frac{-3m}{t} \rightarrow t = \frac{-3m}{-0.5\ m/s} = \boxed{6\ \text{seconds}}$$

Shorter thought process: "The problem tells us how far apart the hole & crumb are. The mouse travels that distance with a speed of 0.5 m/s, and $v = \frac{x}{t}$ so $t = \frac{x}{v}$ and $t = \frac{3m}{0.5\ m/s} = 6$ seconds

→ This is the same thought process as the highway driving problem!