# NEXT-TIME QUESTION

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## Answer: b

Acceleration decreases because the net force on her decreases. Net force equal to her weight minus her air resistance, and since air resistance increases with increasing speed, net force and hence acceleration decreases. By Newton's 2nd law:

$$a = \frac{F_{NET}}{m} = \frac{(mg - R)}{m}$$

where $mg$ is her weight, and $R$ is the resistance she encounters. As $R$ increases, $a$ decreases. Note that if she falls fast enough so that $R = mg$, $a = 0$. Then with no acceleration she falls at constant velocity.

Go an extra step in the equation for Newton's 2nd law (divide $mg$ and $R$ by $m$) and get

$$a = g - \frac{R}{m}$$

Note that the acceleration $a$ will always be less than $g$ if air resistance $R$ impedes falling. Only when $R = 0$ does $a = g$.