

Equations of motion

$$v = a t + u \quad S = u t + \frac{1}{2} a t^2 \quad v^2 = u^2 + 2 a s \quad S = \frac{(u+v)t}{2}$$

1. A tiger starts from rest and accelerates uniformly at **6 m/s²** for **270 m**. Calculate the time it takes to cover the distance.



2. A train moving at **20 m/s** brakes and decelerates uniformly at **8m/s²**. How much distance does it travel before coming to a stop?

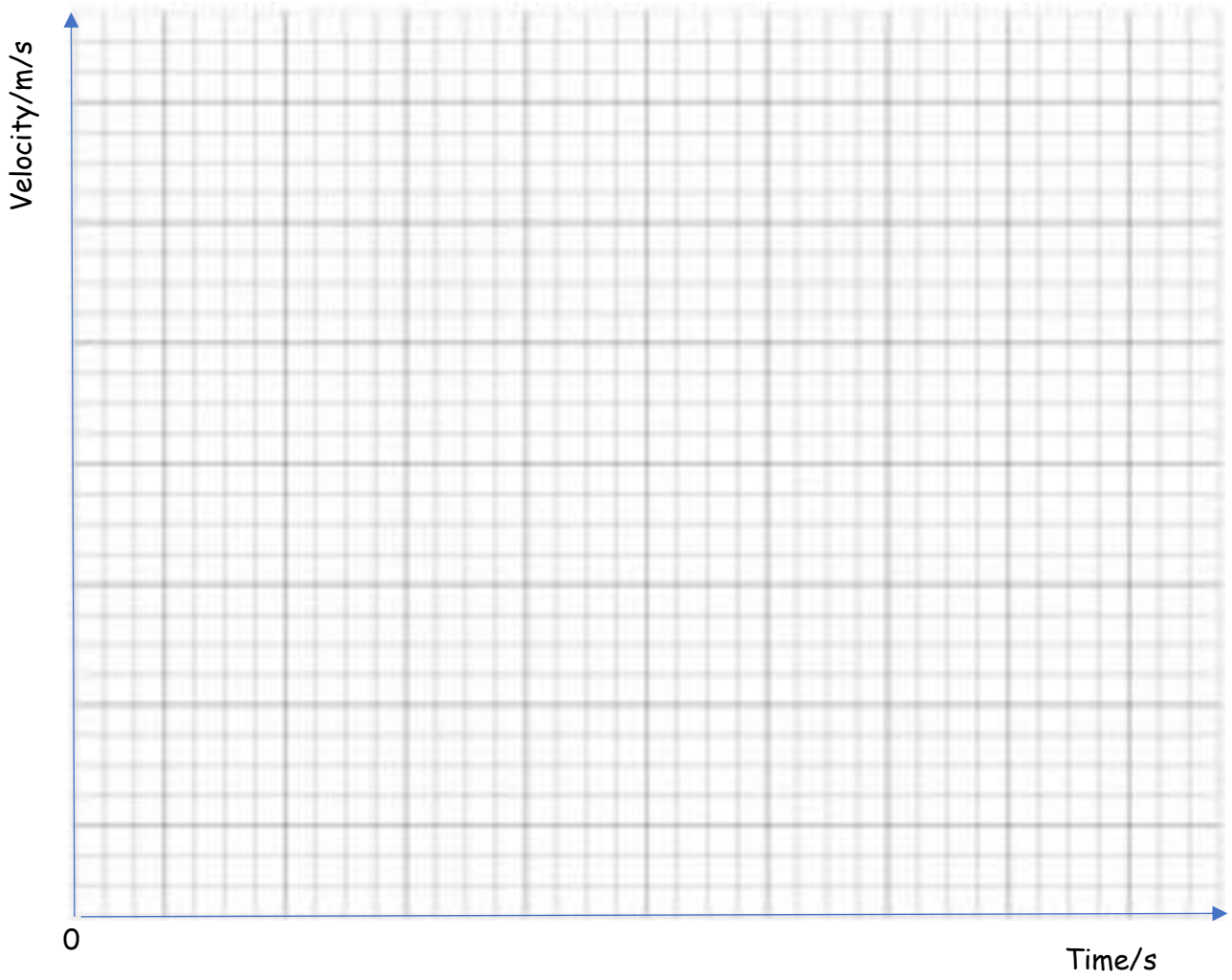


3. A lift is at floor 2, when a woman on floor 15 presses the call button. She waited for **1 minute** for the lift to arrive. Meanwhile, another man was approaching to the lift, so the woman waited for him for another **30 seconds**. They then travel all the way down. It took **them 80 seconds**. However, a woman saw that it is raining and decided to go back for her umbrella. She waited for the lift for **30 second** and then went up to floor 15 in **80 seconds**. At home she changed her mind and instead of go out under the rain, she decided to stay and watch movie. The lift can accelerate or decelerate at **0.10m/s²** for up to **10 seconds**. Draw a sketch of the velocity-time graph for the woman in the lift.



Label each part of her journey.

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