ACTIVE EXAMPLE 3–2 FIND THE AVERAGE ACCELERATION

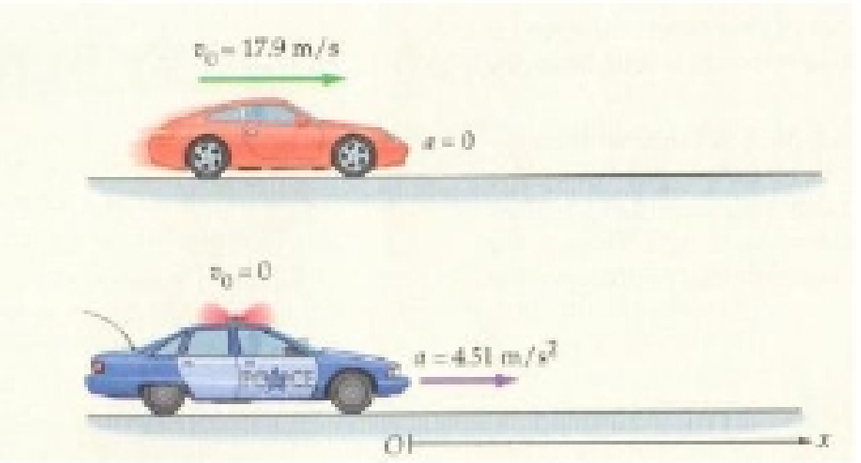
A car is traveling northwest at 9.00 m/s. Eight seconds later it has rounded a corner and is now heading north at 15.0 m/s. What are the magnitude and direction of its average acceleration during those 8.00 seconds?

Vector average acceleration:

$$\vec{a}_{AV} = \frac{\vec{v}_f - \vec{v}_i}{t_f - t_i} = \frac{\Delta \vec{v}}{\Delta t}$$

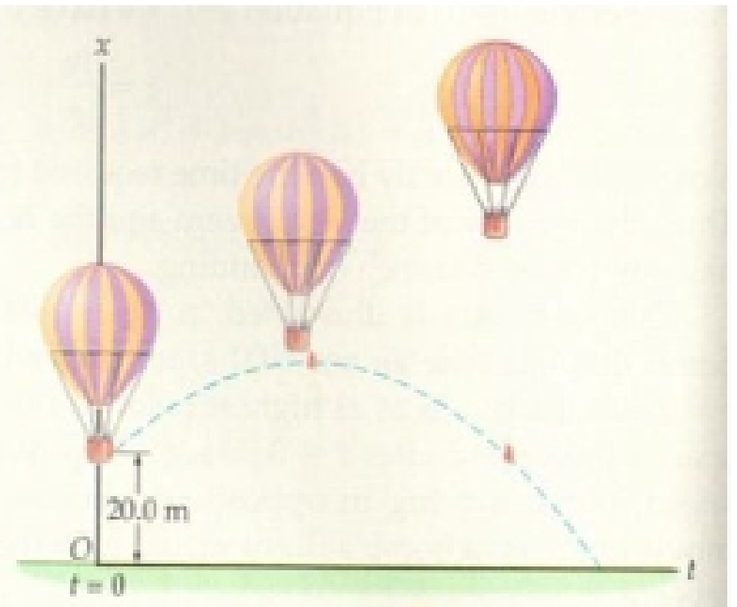
Relative motions

1) Speeder and police: What is the relative velocity of the **speeder car** relative to **police car**? Or how the police see your car over the chase?



$V_{speeder/police}$=?

2) Sand bag: What is the relative velocity of the **sand back** with respect to the person in **the balloon** ?

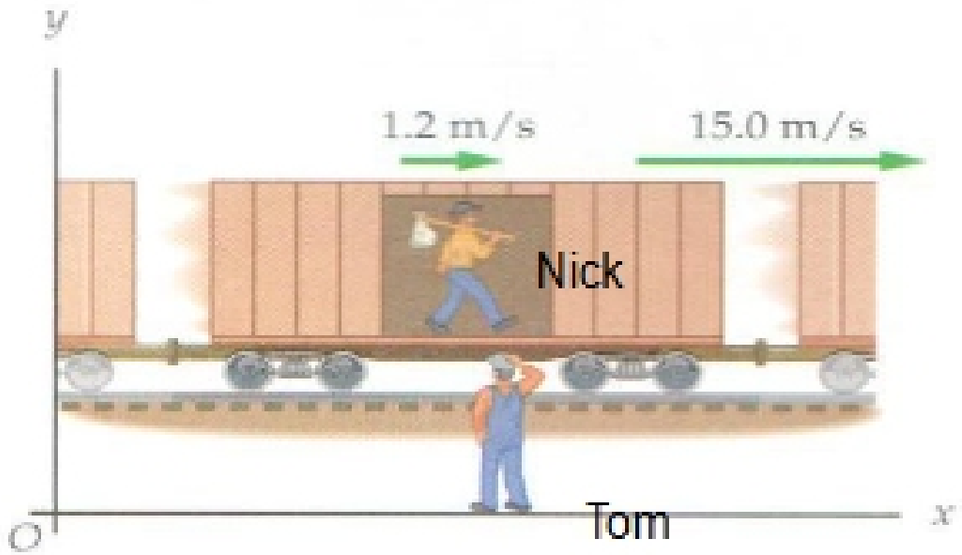


$V_{bag/balloon}$=?

Relative motion

What is the magnitude of velocity of Nick relative to Tom, $v_{Nick/Tom}$=?

a) 13.8 m/s
b) 15.0m/s
c) 16.2m/s
d) All wrong



(a)