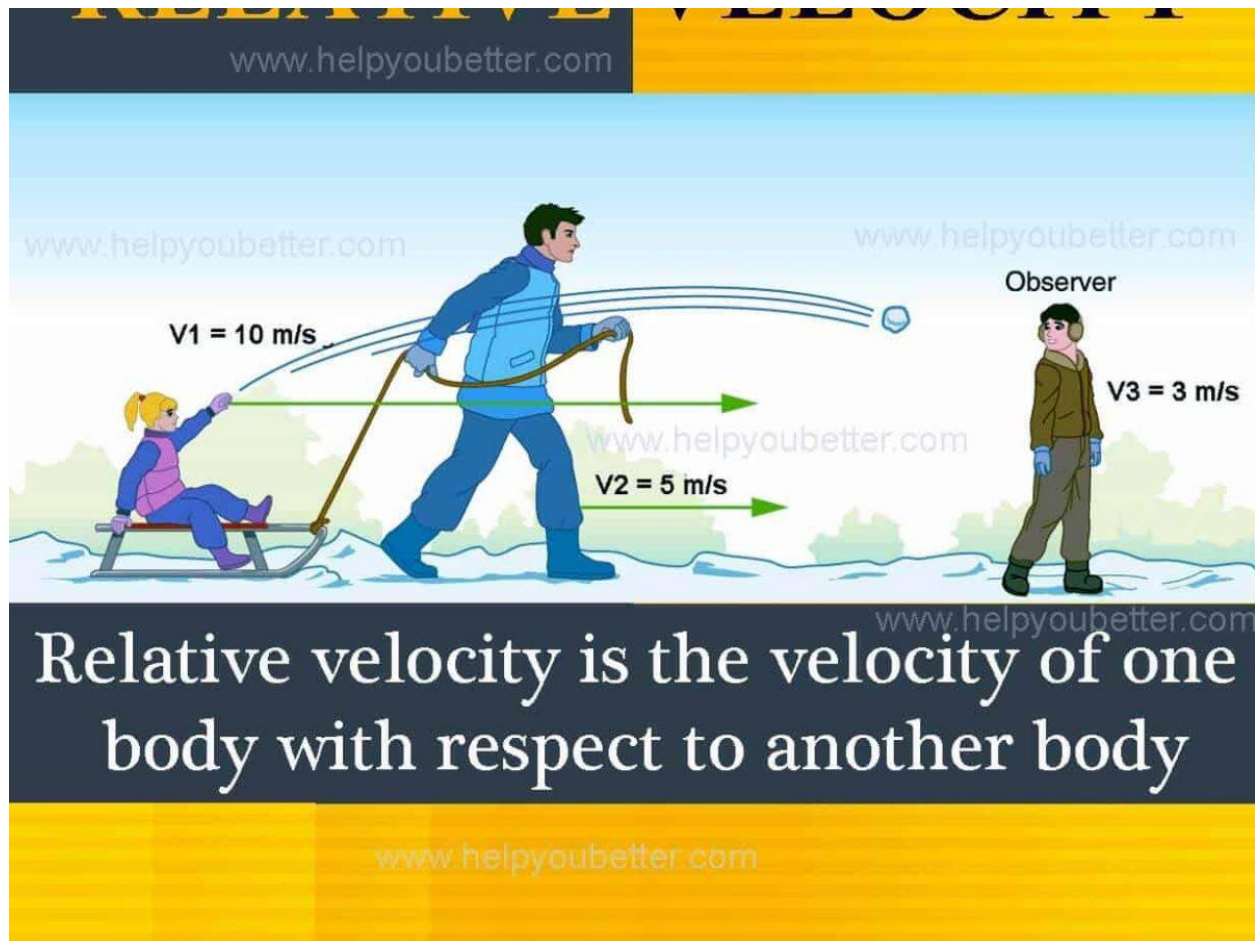


# Relative Motion and Relative Velocity



## Relative Motion

- We can solve relative velocity questions using the following equation:

$$\vec{v}_{AC} = \vec{v}_{AB} + \vec{v}_{BC}$$

$\vec{v}_{AC}$  = velocity of A moving relative to C

$\vec{v}_{AB}$  = velocity of A moving relative to B

$\vec{v}_{BC}$  = velocity of B moving relative to C

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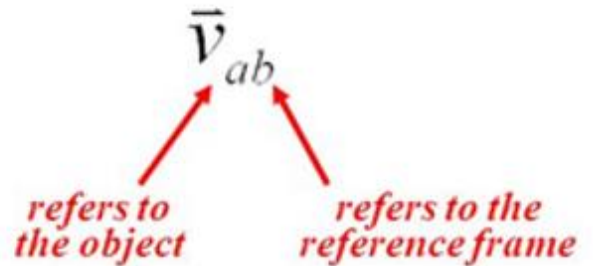
# Relative Velocity Problems

All velocity is measured from a *reference frame* (or point of view).

Velocity with respect to a reference frame is called relative velocity.

A relative velocity has two subscripts, one for the object, the other for the reference frame.

Relative velocity problems relate the motion of an object in two different reference frames.



$$\vec{v}_{ab} + v_{bc} = v_{ac}$$

*velocity of object a relative to reference frame b*      *velocity of reference frame b relative to reference frame c*      *velocity of object a relative to reference frame c*