

Relative Velocity

- Sometimes your velocity is known relative to a reference frame that is moving relative to the earth.

→ Example 1: A person moving relative to a train, which is moving relative to the ground.

→ Example 2: a plane moving relative to air, which is then moving relative to the ground.

- These velocities are related by vector addition:

$$\vec{V}_{ac} = \vec{V}_{ab} + \vec{V}_{bc}$$

- » v_{ac} is the velocity of the object relative to the ground
- » v_{ab} is the velocity of the object relative to a moving reference frame
- » v_{bc} is the velocity of the moving reference frame relative to the ground