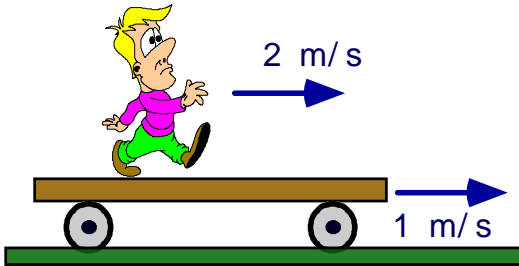


Unit 3: Kinematics in 2D

1 - Relative Velocity

In order to properly describe an object's motion we need to know...

Example: A man walks to the right with a velocity of 2 m/s on a platform that moves with a velocity of 1 m/s to the right.



a) *What is the person's velocity relative to the platform?*

Reference frame: _____

$$v_{\text{person-platform}} = \text{_____ m/s}$$

b) *What is the person's velocity relative to the ground?*

Reference frame: _____

$$v_{\text{person-ground}} = v_{\text{platform}} + v_{\text{person-platform}}$$

$$v_{\text{person-ground}} = \text{_____ m/s} + \text{_____ m/s}$$

$$v_{\text{person-ground}} = \text{_____ m/s}$$

Example: You can throw a pie at 32 m/s. If you are standing on a train traveling 32 m/s east and throw a pie forward what is its resultant (total) velocity?

Example: A bowling team on a train heads **east** at 15 m/s. A stationary observer watches them play as they pass. At what velocity would the following throws appear to be moving at?

Biff: Throws @ 12 m/s East

Hank: Throws @ 18 m/s East

Ralph: Throws @ 15 m/s West

Train A leaves Vancouver station traveling east at 90. km/h at 9:00 am. At the same time train B leaves Montreal traveling west at 110 km/h. If the two stations are 4800 km.

a. At what time do they meet?

b. Where are they when they meet?

If the conductor of train A notices that it takes exactly 3.2 s for train B to pass it, what is the length of train B?