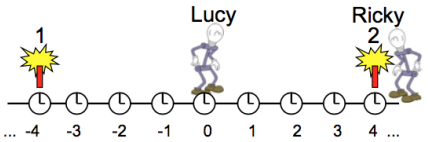
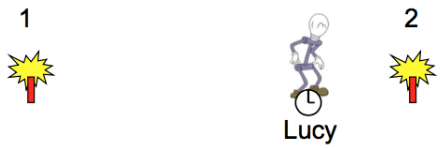


Two firecrackers explode. Lucy, halfway between the firecrackers, sees them explode at the same time. Ricky (same reference frame as Lucy) is next to firecracker 2. According to Ricky, which firecracker explodes first?

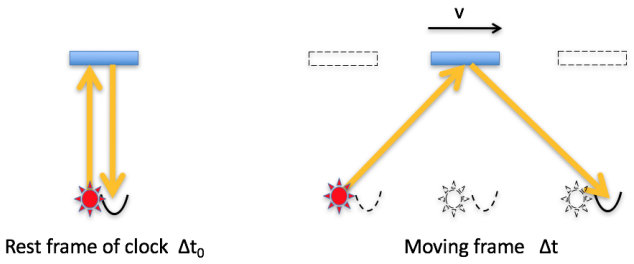
A. Both explode at the same time
B. Firecracker 1 explodes first
C. Firecracker 2 explodes first

Hint: Separate what Ricky "sees" from what he would observe.



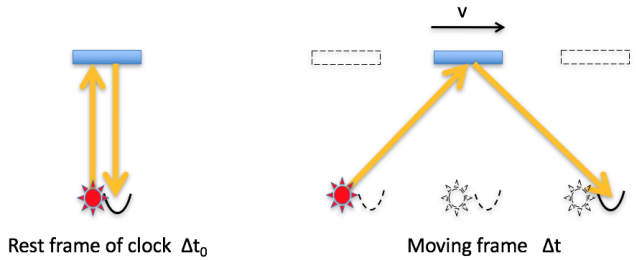
Two firecrackers sitting on the ground explode. This time, Lucy is sitting twice as far from firecracker 1 as from firecracker 2. She sees the explosions at the same time. Which firecracker exploded first in Lucy's reference frame?

A. Both explode at the same time
B. Firecracker 1 explodes first
C. Firecracker 2 explodes first



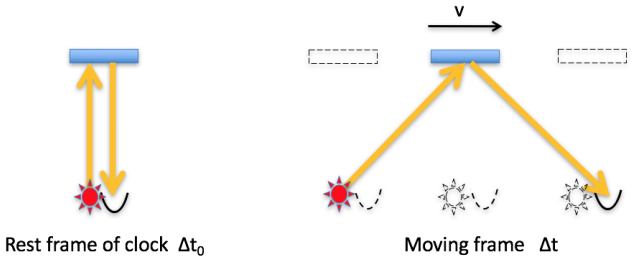
In which frame of reference is the time between tics of the clock **longer**?

A. Rest frame of clock
B. moving frame
C. no difference



What is the **minimum** number of observers needed in the **rest frame** to measure the "tic"?

A. 1
B. 2
C. 3
D. More than 3
E. ???



What is the **minimum** number of observers needed in the **moving frame** to measure the "tic"?

A. 1
B. 2
C. 3
D. More than 3
E. ???

I have a stick of length L sitting in front of me. In the reference frame of a passing train, (moving parallel to the stick) what is the measured length of the stick?

A. L
B. γL
C. L/γ
D. I'm sure it's B or C, but not sure which one
E. It depends

In particle decay the rate of decay is proportional to the number of particles left,

$$\frac{dN}{dt} = -\lambda N$$

If we start with N_0 particles, what's the fraction of remaning particles in a time Δt?

A. $N_0 e^{-\lambda \Delta t}$
B. $N_0 e^{+\lambda \Delta t}$
C. $N_0 e^{-\Delta t/\lambda}$
D. $N_0 e^{+\Delta t/\lambda}$
E. Something else

In a particle detection experiment, the fraction of particles detected is:

A. underestimated
B. overestimated
C. the same as

if we use the time of flight in the detector frame.