

Physics 241  
Problem Set 1  
(Due 4/11/1431 H)

Name:

Number:

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1. You are standing on a train platform watching a high-speed train pass by. A light inside one of the train cars is turned on and then a little later it is turned off. Who can measure the proper time interval for the duration of the light: you or a passenger on the train?
2. An airplane flies from San Francisco to New York (about 4800 km) at a steady speed of 300 m/s. How much time does the trip take, as measured by an observer on the ground? By an observer in the plane?
3. How fast must a rocket travel relative to the earth so that time in the rocket “slows down” to half its rate as measured by earth-based observers? Do present-day jet planes approach such speeds?