

1. Choose a non-scientific theory you are familiar with (e.g. Surrealism, Westerns, Capitalism, 官官話話, etc.) and, for each of the four features of a scientific theory given in the textbook and lecture, briefly discuss the extent to which your choice does or does not follow them. (Discuss mean *discuss*, not just YES/NO.)
2. Give examples from your daily experience to explain why constant *velocity* is something one experiences by seeing and not physical feeling, whereas *acceleration* can be experienced by physical feeling alone.
3. Suppose you are traveling by public transport and cannot hear or see anything outside the vehicle. Describe a simple experiment or observation inside the vehicle that you could use to *visually* demonstrate to the other passengers that a) the vehicle is an inertial frame of reference b) the vehicle is a non-inertial frame of reference. (Ignore effects of gravity). In other words, describe what the passengers would see in each case.
4. (a) Give an example from daily life in which in two people are moving *relative to one another*.
(b) According to measurements by their respective watches, in your example how certain are they that time passes at the same rate for each of them? Give your answer as a realistic numerical value for the uncertainty (recall the Measurement and Error lab).