

5.9: Thinking about the Material

5.9.1: Reflect and research

1. What was the name of the publication in which Newton's published his three laws, and when was it published?
2. When did Galileo come up with his principle of inertia?
3. Suppose that Newton grew up in an accelerating train, with no knowledge that he is living in an accelerating train. What would Newton's first law look like in this world?
4. When you skate on ice, there is kinetic friction between your skates and the ice. Does the coefficient of kinetic friction depend on the temperature of the ice? If yes, what is the optimal temperature for skating with the least amount of friction?

5.9.2: To try at home

1. Place two books stacked on each other on the palm of one hand held horizontally. Use your other hand to press down (and forward) on the top book and try to move the bottom book. No matter how hard you push down (to increase the force of friction between the two books), you cannot make the bottom one move. How come?

5.9.3: To try in the lab

1. Propose an experiment to determine whether gravitational and inertial mass are equal.
2. Propose an experiment to measure the coefficients of static and kinetic friction between a block and a surface.

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