

- [2.2.D.a] Recognize that inertia is a property of matter that can be described as an object's tendency to resist a change in motion and is dependent upon the object's mass.
- [2.2.D.b] Determine the effect of the sum of the forces acting on an object.
- [2.2.D.c] Using information about net force and mass, determine the effect of acceleration.
- [2.2.D.e] Analyze force pairs when given a scenario and describe their magnitudes and directions.

Chapter 4: Pages 43 – 55 *TEXTBOOK (Conceptual Physics; Paul G. Hewitt)*

Chapter 5: Pages 59 – 70 *TEXTBOOK (Conceptual Physics; Paul G. Hewitt)*

Chapter 6: Pages 74 – 82 *TEXTBOOK (Conceptual Physics; Paul G. Hewitt)*

Define the following terms:

1. Force (4.3)
2. Inertia (4.3)
3. Mass (4.5)
4. Action force (6.2)
5. Reaction force (6.2)

Answer the following questions:

1. Does the Law of Inertia apply to moving objects, objects at rest, or both? Explain your answer...
2. Does a 2-kg rock have twice the mass of a 1-kg rock? Twice the inertia? Twice the weight?
3. Does a liter of molten lead have the same volume as a liter of apple juice? Same mass?
4. What is the net force on an object if there is a 10-N and 15-N force pushing in the same direction?
5. What is the weight of 2-kg of yogurt? (Both Newtons and pounds)
6. A cart is being pushed with a certain force. If the force is doubled, how does the acceleration change?

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7. A cart is being pushed with a certain force. If the mass is doubled, how does the acceleration change?
8. How much force does a 20,000-kg rocket develop to accelerate  $1 \text{ m/s}^2$ ?
9. Calculate the acceleration of a 2-kg block being pushed with a 20-N force.
10. Calculate the acceleration of a 2-kg block being pushed with a 20-N force which encounters a 4-N friction force.
11. When a hammer exerts a force on a nail, how does the amount of force compare with that of the nail on the hammer?
12. If the action force is a bow string acting on an arrow, what is the reaction force?
13. If you hit a wall with a force of 200-N, how much force is exerted back on you?
14. Your weight is the result of the gravitational force of Earth on your body. What is the corresponding reaction force?
15. Why is it easier to walk on a carpeted floor than on a smooth, polished floor?