

At each of the stations described below, draw free-body diagrams for the objects in the system.

Station 1: Ball rolling off the table

1. Draw a free-body diagram for the ball in the air.



2. In what direction is the ball accelerating as it falls?

3. Does the net force on the ball in the free-body diagram indicate the direction of acceleration of the ball? Explain.

Station 2: Cart pulled by hanging mass

4. Draw a free-body diagram for the cart on the table.



5. In what direction is the cart accelerating as it moves across the table?

6. Does the net force on the cart in the free-body diagram indicate the direction of acceleration of the cart? Explain.

7. Draw a free-body diagram for the hanging mass.



8. In what direction is the mass accelerating as it falls?

9. Does the net force on the mass in the free-body diagram indicate the direction of acceleration of the mass? Explain.

Station 3: Wood block pulled by a string at a constant speed

10. Draw a free-body diagram for the wood block.



11. In what direction is the block accelerating as it moves across the table?

12. Does the net force on the block in the free-body diagram indicate the direction of acceleration of the block? Explain.

Station 4: Wood block sitting on an incline

13. Draw a free-body diagram for the wood block.



14. What direction is the block accelerating as it sits on the table?

15. Does the net force on the block in the free-body diagram indicate the direction of acceleration of the block? Explain.
