

AP PHYSICS

FREE-BODY DIAGRAMS

Apply the method described in the paragraph on the other side of this page to construct free-body diagrams for the situations described below.

1. A book is at rest on a table top. Diagram the forces acting on the book.
2. An object is suspended motionless from the ceiling by two ropes. Diagram the forces acting on the object.
3. An egg is free-falling from a nest in a tree. Neglect air resistance. Diagram the forces acting on the egg as it falls.
4. A flying squirrel is gliding from a tree to the ground at constant velocity. Consider air resistance. Diagram the forces acting on the squirrel.
5. A rightward force is applied to a book in order to move it across a desk with a rightward acceleration. Consider frictional forces. Neglect air resistance. Diagram the forces acting on the book.
6. A rightward force is applied to a book in order to move it across a desk at constant velocity. Consider frictional forces. Neglect air resistance. Diagram the forces acting on the book.
7. A college student rests a backpack upon his shoulder. The pack is suspended motionless by one strap from one shoulder. Diagram the vertical forces acting on the backpack.
8. A skydiver is descending with a constant velocity. Consider air resistance. Diagram the forces acting upon the skydiver.
9. A force is applied to the right to drag a sled across loosely-packed snow with a rightward acceleration. Diagram the forces acting upon the sled.
10. A football is moving upwards towards its peak after having been booted by the punter. Neglect air resistance. Diagram the forces acting upon the football as it rises upward towards its peak.
11. A car is coasting to the right and slowing down. Diagram the forces acting upon the car.