

Draw a diagram of each situation described below. Identify each force acting (in terms of the objects that are interacting). Some might refer to these as “action” and “reaction” forces, but they happen simultaneously. The two forces are considered Newton’s Third Law force pair. Be sure to draw the forces in your diagram.

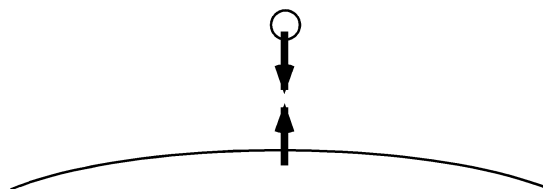
INTERACTION AND FORCES

DIAGRAM

1. Apple falls to the ground.

ONE FORCE: Earth pulls apple down.

OTHER FORCE: Apple pulls earth up.



2. You walk forward.

ONE FORCE:

You push ground backward.

OTHER FORCE:

Ground pushes you forward.

3. Thrown ball moves from thrower to catcher (neglect air resistance).

ONE FORCE:

Earth pulls ball down - OR - Air pushes ball backward.

OTHER FORCE:

Ball pulls Earth up - OR - Ball pushes air forward.

4. Thrown ball is caught by catcher.

ONE FORCE:

Catcher pushes ball backward.

OTHER FORCE:

Ball pushes catcher forward.

5. Book rests on table.

ONE FORCE:

Book pushes table down.

OTHER FORCE:

Table pushes book up.

6. Book sliding across table slows to a stop.

ONE FORCE:

Book pushes table forward.

OTHER FORCE:

Table pushes book backward.

7. Sailboat sails forward.

ONE FORCE:

Air pushes sail forward.

OTHER FORCE:

Sail pushes air backward.

8. Rocket accelerates in space.

ONE FORCE:

Exhaust gases push rocket forward.

OTHER FORCE:

Rocket pushes exhaust gases backward.

9. Bowling ball hits pin.

ONE FORCE:

Ball pushes pin forward.

OTHER FORCE:

Pin pushes ball backward.

In which case(s) is the “ONE FORCE” greater or lesser than the “OTHER FORCE”? Explain.

The two forces are always equal in magnitude.