

Comparing Forces

Grade 5 • SCIENCE • Students practice comparing how gravity, friction, and magnetism affect the motion or position of objects. • Standards: 5-PS2-1

Read each scenario carefully. Identify which force or forces are affecting the motion or position of the object: gravity, friction, or magnetism. Write your answer on the line provided.

1. A book falls off a desk and drops to the floor. Which force pulls the book downward?
2. A refrigerator magnet sticks to the metal door without touching anything else. Which force holds it in place?
3. Maya slides a wooden block across a table, and it gradually slows down and stops. Which force causes the block to slow down?
4. A paper clip moves across a desk toward a magnet without being touched. Which force is acting on the paper clip?
5. A soccer ball kicked across grass slows down faster than a ball kicked across smooth pavement. Which force is stronger on the grass?
6. A marble rolling down a ramp speeds up as it moves downward. Which force causes the marble to speed up, and which force acts against its motion?
7. Two steel washers hang from a magnet. Which TWO forces are acting on the washers to keep them in that position?
8. A sled slides down a snowy hill and eventually stops at the bottom even though the ground is flat. Name the force that made it slide down and the force that made it stop.
9. A student tries to push a heavy box across a carpet but it barely moves. When she pushes the same box across a smooth tile floor, it moves easily. Explain why friction affected the box differently on the two surfaces.

10. A steel ball and a plastic ball of the same size are dropped from the same height at the same time. A magnet is placed on the ground below them. Compare how gravity and magnetism affect each ball differently during the fall.

Answer Key — Comparing Forces

For the teacher / parent. Do not distribute with the worksheet.

1. gravity (*Gravity is the force that pulls objects toward Earth.*)
2. magnetism (*Magnetism is a noncontact force that attracts certain metals.*)
3. friction (*Friction between the block and table surface opposes the motion.*)
4. magnetism (*Magnetism can act at a distance without direct contact.*)
5. friction (*Rougher surfaces like grass create more friction than smooth surfaces.*)
6. gravity speeds it up and friction acts against its motion (*Gravity pulls the marble down the ramp while friction opposes the motion.*)
7. magnetism and gravity (*Magnetism pulls the washers upward while gravity pulls them downward.*)
8. gravity made it slide down and friction made it stop (*Gravity pulled the sled down the hill and friction on the flat ground stopped it.*)
9. the carpet has more friction than the tile floor because it is rougher (*Rougher surfaces create more friction, making objects harder to move.*)
10. gravity pulls both balls down equally but magnetism only pulls the steel ball toward the magnet (*Gravity acts on all objects equally, but magnetism only affects magnetic materials like steel.*)