

Forces in Action

Read how forces move objects near and far.

3.7 "Force, motion, and energy. The student knows the nature of forces and the patterns of their interactions. The student is expected to: demonstrate and describe forces acting on an object in contact or at a distance, including magnetism..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each sentence that names a force; circle each sentence that describes an object's motion or position changing because of a force, including when you infer the force from nearby sentences.

Maya Tests Motion

- ① At recess, Maya held a bar magnet near a steel paper clip. The paper clip slid across the table toward the magnet, even though the magnet did not touch it. Magnetism is a force that can act at a distance. Next, Maya lifted the paper clip and let go. Gravity pulled the clip downward to the table without touching it.
- ② Some forces need contact. Maya put a ball on a line on the floor. She pushed it gently. The contact push made the ball roll forward. A harder push made it move farther. Then she pulled a wagon by its handle. The contact pull changed the wagon's position and made it roll toward her slowly.
- ③ To test a push, Maya planned a fair investigation. She placed the same ball at the same starting line each time. First, she gave it a gentle push. Then, she returned it to the line and gave it a harder push. She watched where the ball stopped and recorded what she saw. The ball moved farther after the harder push. Her observations showed that pushes can change motion and position.

2 ANSWER WITH EVIDENCE Use the passage

1 Which two forces in the first paragraph act at a distance?

2 What happened to the paper clip when Maya held the magnet near it?

3 How did the contact pull change the wagon's position and motion?

4 What did Maya keep the same in her investigation, and what changed?

3 YOUR TURN Your own words

Plan an investigation with a ball, toy wagon, or swing. In the three panels, draw and label the starting position, the push or pull, and the ending position, then write two sentences that name what you will keep the same and explain the change you expect.

PART 1 • READ AND MARK

Underline each sentence that names a force; circle each sentence that describes an object's motion or position changing because of a force, including when you infer the force from nearby sentences. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Which two forces in the first paragraph act at a distance?	Magnetism and gravity.
2	What happened to the paper clip when Maya held the magnet near it?	The paper clip slid across the table toward the magnet.
3	How did the contact pull change the wagon's position and motion?	The pull made the wagon roll toward Maya and changed its position.
4	What did Maya keep the same in her investigation, and what changed?	She kept the same ball and starting line. She changed the push from gentle to harder.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Panel 1: ball at a start line; Panel 2: arrow showing a push; Panel 3: ball at an ending line farther away. I will use the same ball and start line each time. A harder push should move the ball farther from the start line.

Accept accurate descriptions of magnetism and gravity as forces at a distance, and pushes and pulls as contact forces. For the open task, accept any safe, clear plan that shows a starting position, an applied push or pull, an ending position, one controlled condition, and a reasonable predicted change in motion or position.