

Push, Pull, Observe

Plan a fair investigation and describe what motion changes.

3.7.B “plan and conduct a descriptive investigation to demonstrate and explain how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons.”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each word that names a force action: *push*, *pushed*, *pull*, or *pulled*. Circle the two sentences that report the wagon's observed results after the push and after the pull.

Maya Tests a Wagon

- ① A push or a pull is a force. A force can change an object's position or motion. It can start a still object moving, stop a moving object, or change the direction it travels. To investigate forces, Maya chose a small wagon, a smooth floor, a tape starting line, and a clear path. She planned to watch where the wagon went after each force.
- ② Maya placed the wagon at the tape line. First, she pushed it straight ahead for one second. Next, she returned it to the same line and pulled it straight ahead for one second. Except for a push or a pull, she applied both forces in the same way, straight ahead for one second with the same amount of force. She used the same wagon, floor, path, and starting place. Only the kind of force changed.
- ③ After the push, the wagon rolled forward from the tape line and stopped near a blue book. After the pull, it also rolled forward from the tape line and stopped near the blue book. Maya recorded that both forces changed the wagon's position because it began at the line and ended farther along the path. Her investigation showed that either a push or a pull can start a still wagon moving.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What did Maya do to make sure the wagon started in the same place for both trials?

2 What did Maya keep the same in both trials, and what was the only difference?

3 After the pull, what landmark was the wagon near when it stopped?

4 How do Maya's results show that a force changed the wagon's position?

3 YOUR TURN _____ Your own words

Plan and conduct a two-trial investigation with a toy car tied to a string. Start each trial at the same tape line, use a push in one trial and a pull in the other, and apply both forces as nearly the same as possible. Fill in the table with your plan and your observed results.

OBJECT AND START PLACE	FORCE ACTION	WHAT STAYED THE SAME	OBSERVED RESULT

PART 1 • READ AND MARK

Underline each word that names a force action: *push*, *pushed*, *pull*, or *pulled*. Circle the two sentences that report the wagon's observed results after the push and after the pull. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What did Maya do to make sure the wagon started in the same place for both trials?	She used a tape starting line and returned the wagon to that same line before the pull trial.
2	What did Maya keep the same in both trials, and what was the only difference?	She kept the wagon, floor, path, starting place, direction, time, and amount of force the same. The only difference was whether she used a push or a pull.
3	After the pull, what landmark was the wagon near when it stopped?	It stopped near a blue book.
4	How do Maya's results show that a force changed the wagon's position?	After both forces, the wagon began at the tape line and ended farther along the path. Its position changed.

PART 3 • YOUR TURN (SAMPLE ANSWER)

OBJECT AND START PLACE	FORCE ACTION	WHAT STAYED THE SAME	OBSERVED RESULT
Toy car tied to a string at a tape line	Push straight ahead for 1 second	Same car, string, floor, path, tape line, force amount, and time	The car rolled forward from the line and stopped near a chair.
Toy car tied to a string at the same tape line	Pull the string straight ahead for 1 second	Same car, string, floor, path, tape line, force amount, and time	The car rolled forward from the line and stopped near a chair.

Accept clear descriptions of the controlled parts of Maya's test, including the same starting place, path, wagon, force amount, and one-second duration. For the open task, accept reasonable observed results and a plan that changes only push versus pull while keeping the other conditions the same.