

Invisible Pull Test

Plan a fair test of a magnet and a magnetic object.

S5P3.b "Plan and carry out an investigation to observe the interaction between a magnetic field and a magnetic object."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline Maya's test question, circle each thing she kept the same, and number the four tested distances 1 through 4 to show how she planned a fair investigation.

Testing a Magnetic Field

- ① Magnets create a magnetic field, an area where they can push or pull certain materials without touching them. Iron and steel are magnetic objects, but wood, plastic, and aluminum are not pulled by an ordinary classroom magnet. You cannot see a magnetic field directly. You can observe its effects when a magnetic object moves, turns, or sticks to a magnet.
- ② To investigate one field, Maya placed a steel paper clip on a desk and used a ruler to set a bar magnet 8 centimeters away. She slowly moved the magnet closer without touching the clip. Her question was, "How does the magnet's distance affect when the clip begins to move?" She kept the same magnet, clip, desk surface, and starting position each time.
- ③ Maya ran three trials at each distance, 8, 6, 4, and 2 centimeters. For every trial, she recorded whether the paper clip moved toward the magnet before contact. At 8 and 6 centimeters, the clip did not move. At 4 centimeters, it moved in two trials. At 2 centimeters, it moved in all three trials. Repeated trials made her observation more dependable.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What was Maya's test question, and what single factor did she change?

2 Name two conditions Maya kept the same to make her test fair.

3 What happened at 8 and 6 centimeters? How was this different from the result at 2 centimeters?

4 Why did Maya run three trials at each distance?

3 YOUR TURN _____ Your own words

Plan and carry out a fair test with a magnet and one magnetic object. Choose four distances, keep two conditions the same, and test each distance three times. In the table, record what happened before the magnet touched the object.

DISTANCE	TWO CONDITIONS KEPT THE SAME	RESULTS FROM 3 TRIALS BEFORE CONTACT

PART 1 • READ AND MARK

Underline Maya's test question, circle each thing she kept the same, and number the four tested distances 1 through 4 to show how she planned a fair investigation. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What was Maya's test question, and what single factor did she change?	Her question was how the magnet's distance affected when the clip began to move. She changed the distance between the magnet and the paper clip.
2	Name two conditions Maya kept the same to make her test fair.	Any two: the same magnet, the same paper clip, the same desk surface, or the same starting position.
3	What happened at 8 and 6 centimeters? How was this different from the result at 2 centimeters?	At 8 and 6 centimeters, the paper clip did not move. At 2 centimeters, it moved toward the magnet in all three trials.
4	Why did Maya run three trials at each distance?	Repeated trials made her observation more dependable.

PART 3 • YOUR TURN (SAMPLE ANSWER)

DISTANCE	TWO CONDITIONS KEPT THE SAME	RESULTS FROM 3 TRIALS BEFORE CONTACT
1 cm	Same bar magnet and steel washer; same desk surface	Moved toward magnet in 3 of 3 trials
2 cm	Same bar magnet and steel washer; same desk surface	Moved toward magnet in 3 of 3 trials
3 cm	Same bar magnet and steel washer; same desk surface	Moved toward magnet in 1 of 3 trials
4 cm	Same bar magnet and steel washer; same desk surface	Did not move in 3 of 3 trials

Accept equivalent descriptions of the distance variable, controlled conditions, and observations. For the open task, accept different distances and results if the student tests a magnetic object, changes distance, controls conditions, and records observations from repeated trials.