

Forces at Work

Sort forces by whether objects touch.

SC.6.P.13.1 "Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic, and gravitational."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each contact force, circle each force acting at a distance, and write G, M, or E beside gravitational, magnetic, and electrical examples to compare how each force acts.

Garden Cleanup Forces

- ① During a school garden cleanup, Maya pushed a loaded wheelbarrow across the path. Her hands touched the handles, so the push was a contact force. Friction between the tire and the ground was also a contact force. It acted opposite the wheelbarrow's motion and made the cart harder to move. When Maya let go, the wheelbarrow did not keep rolling far because friction slowed it. Contact forces happen when objects touch, including pushes, pulls, friction, and the support force from a surface.
- ② Other forces can act even when objects do not touch. Earth pulls the wheelbarrow, Maya, and every other object toward its center. This gravitational force makes dropped objects fall and gives objects weight. A magnet can pull an iron paper clip across a small gap without touching it. This is magnetic force. Electrical force can push or pull charged objects. For example, after a plastic comb is rubbed with wool, it may attract tiny paper bits without touching them. Magnetic, electrical, and gravitational forces act at a distance.
- ③ Scientists describe a force by naming what causes it and what it does. A force may change an object's motion, such as starting, stopping, slowing, speeding up, or changing direction. It can also change an object's shape. When Maya squeezed a sponge, her hand touched the sponge and changed its shape. Later, a magnet lifted paper clips from a tray. The magnet did not need to touch the clips first. In both situations, an object experienced a force, but only the squeeze was a contact force.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What two objects touch when Maya pushes the wheelbarrow? Why does this make the push a contact force?

2 What type of force is friction between the tire and the ground? What does it do to the wheelbarrow?

3 Compare Maya squeezing the sponge with the magnet lifting paper clips. Which situation is a contact force, and why?

4 Name the three forces in the passage that act at a distance. Which one pulls objects toward Earth's center?

3 YOUR TURN _____ Your own words

Create two new everyday force situations. In the table, include one contact force and one force acting at a distance, then explain the evidence and effect for each one.

SITUATION YOU CREATE	FORCE TYPE	EVIDENCE	EFFECT

PART 1 • READ AND MARK

Underline each contact force, circle each force acting at a distance, and write G, M, or E beside gravitational, magnetic, and electrical examples to compare how each force acts. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What two objects touch when Maya pushes the wheelbarrow? Why does this make the push a contact force?	Maya's hands and the wheelbarrow handles touch. The push is a contact force because the objects touch.
2	What type of force is friction between the tire and the ground? What does it do to the wheelbarrow?	Friction is a contact force. It acts opposite the wheelbarrow's motion, making it harder to move and slowing it.
3	Compare Maya squeezing the sponge with the magnet lifting paper clips. Which situation is a contact force, and why?	Squeezing the sponge is a contact force because Maya's hand touches the sponge. The magnet can lift the paper clips without touching them first.
4	Name the three forces in the passage that act at a distance. Which one pulls objects toward Earth's center?	Magnetic, electrical, and gravitational forces act at a distance. Gravitational force pulls objects toward Earth's center.

PART 3 • YOUR TURN (SAMPLE ANSWER)

SITUATION YOU CREATE	FORCE TYPE	EVIDENCE	EFFECT
A soccer player kicks a ball	Contact force	The player's foot touches the ball.	The ball starts moving.
A magnet pulls a steel pin across a desk	Magnetic force at a distance	The magnet and pin do not touch.	The pin moves toward the magnet.

Accept equivalent wording that correctly identifies touching objects for contact forces and no touching for forces acting at a distance. For the open task, accept accurate original examples with a correct force type, evidence, and effect.