

Name: _____

Date: _____

Describe the Forces (Part 1)

1. Sarah is pushing a full file cabinet on a carpeted floor as hard as she can. The cabinet doesn't move.
 - a. Draw the tiny bumps you can't see on the bottom of the file cabinet.
 - b. Draw tiny bumps on the carpeted floor.
 - c. Draw arrows to show the forces acting on the file cabinet.



Write a sentence to explain why the file cabinet doesn't move. Be sure to describe all of the forces acting on the cabinet.

2. Imagine that Sarah has emptied the file cabinet. Would it be just as difficult to push an empty file cabinet across the carpet as it was to push the full file cabinet?
- a. Draw bumps on the carpet and the bottom of the file cabinet to illustrate what is different when the cabinet isn't as heavy.
 - b. Sarah is pushing the file cabinet. This time it moves. Draw arrows to show the forces acting on the cabinet.



Why would the weight of the file cabinet make a difference in the forces acting on it?

3. Imagine a full file cabinet sitting on ice, like on an ice-skating rink or on a frozen pond. Ice is smooth with only small bumps on its surface. The cabinet moves easily over the ice.
- a. Draw the tiny bumps on the bottom of the file cabinet.
 - b. Draw small bumps on the ice.
 - c. Draw arrows to show the forces acting on the file cabinet in this scenario.
- Remember that the file cabinet moves over the ice!



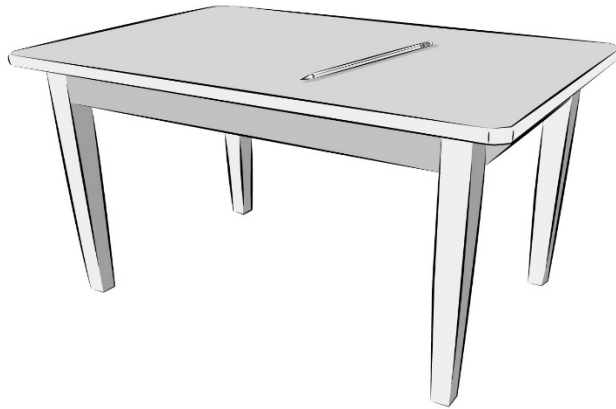
Write a sentence explaining why the full file cabinet moves on an icy surface, but not on the carpet. Make sure to describe all of the forces acting on the cabinet.

Name: _____

Date: _____

Describe the Forces (Part 2)

1. Use an arrow to show the force of gravity pulling the pencil toward Earth. What arrow can you draw to show why the pencil doesn't move?



Write a sentence to answer this question: Why doesn't the pencil move?

2. Trevor and Katie are building a tree fort. They need to get more wood from the ground to the tree branches where they're building the fort. They tied a rope around the wood. Trevor is sitting in the fort holding one end of the rope. At first, Trevor lets the piece of wood hang in the air. The wood isn't moving at all.

a. Draw arrows to show the forces acting on the wood.



What forces (pushes and/or pulls) are acting on the wood?

How large should the arrows be to represent the forces acting on the wood when it's hanging in the air without moving? How do you know?

- b. Draw arrows to show the forces (pushes and pulls) acting on the piece of wood as Trevor uses the rope to pull the wood into the fort. Be sure to show the direction and size of the forces acting on the wood.



How large should each arrow be to represent the forces acting on the wood as it moves toward the fort? How do you know?
