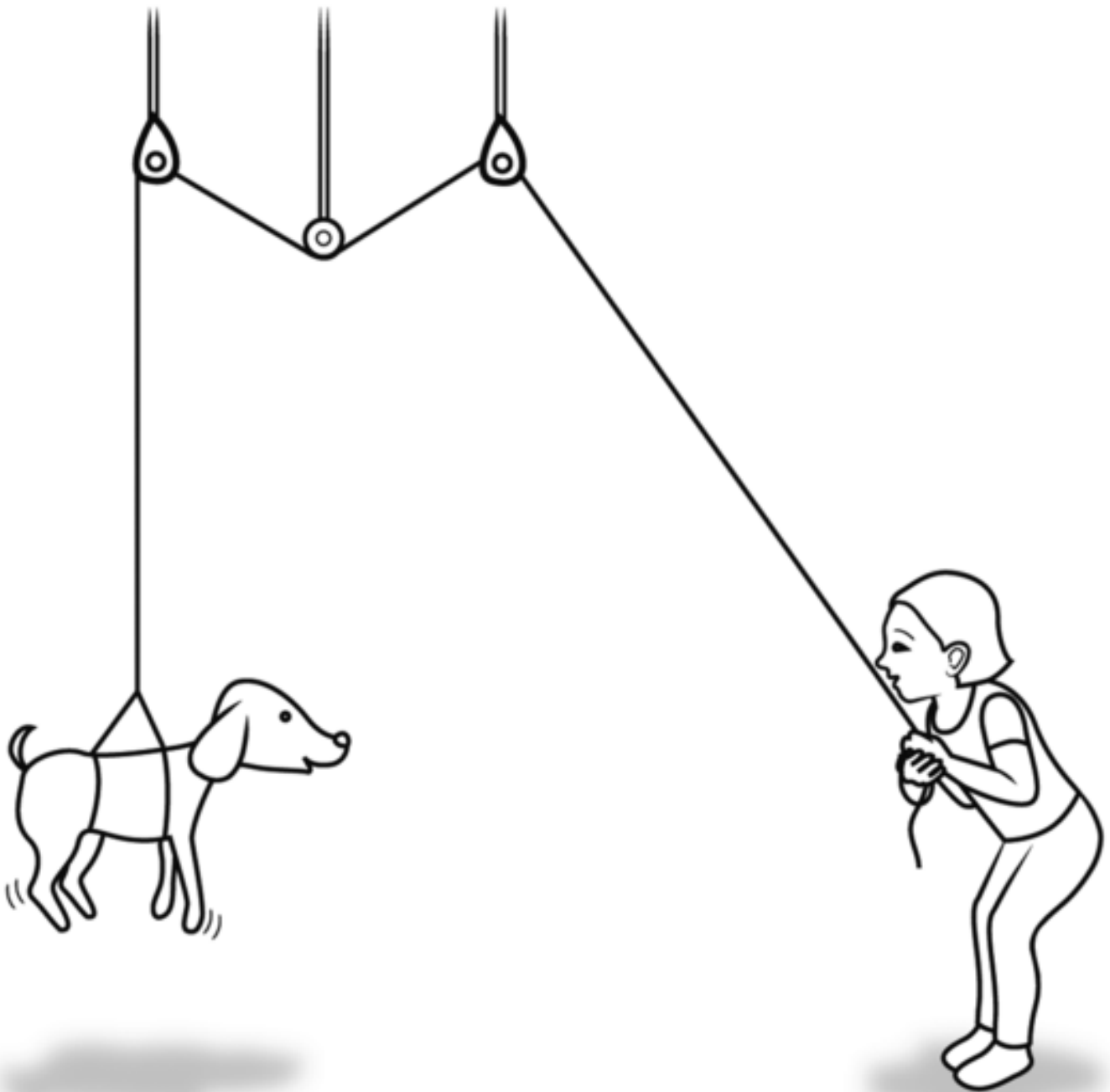
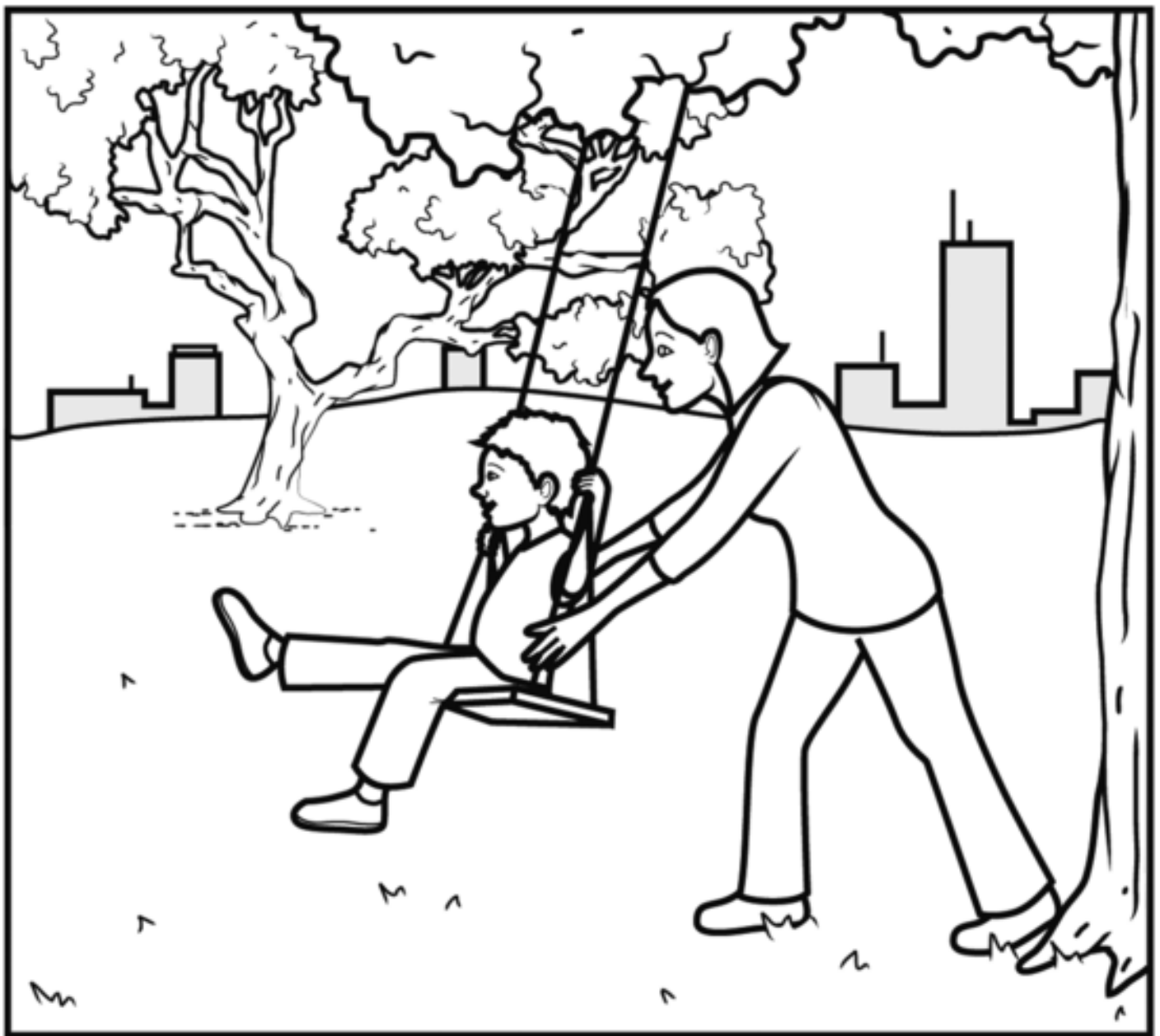


# Force and Motion Are Around Us

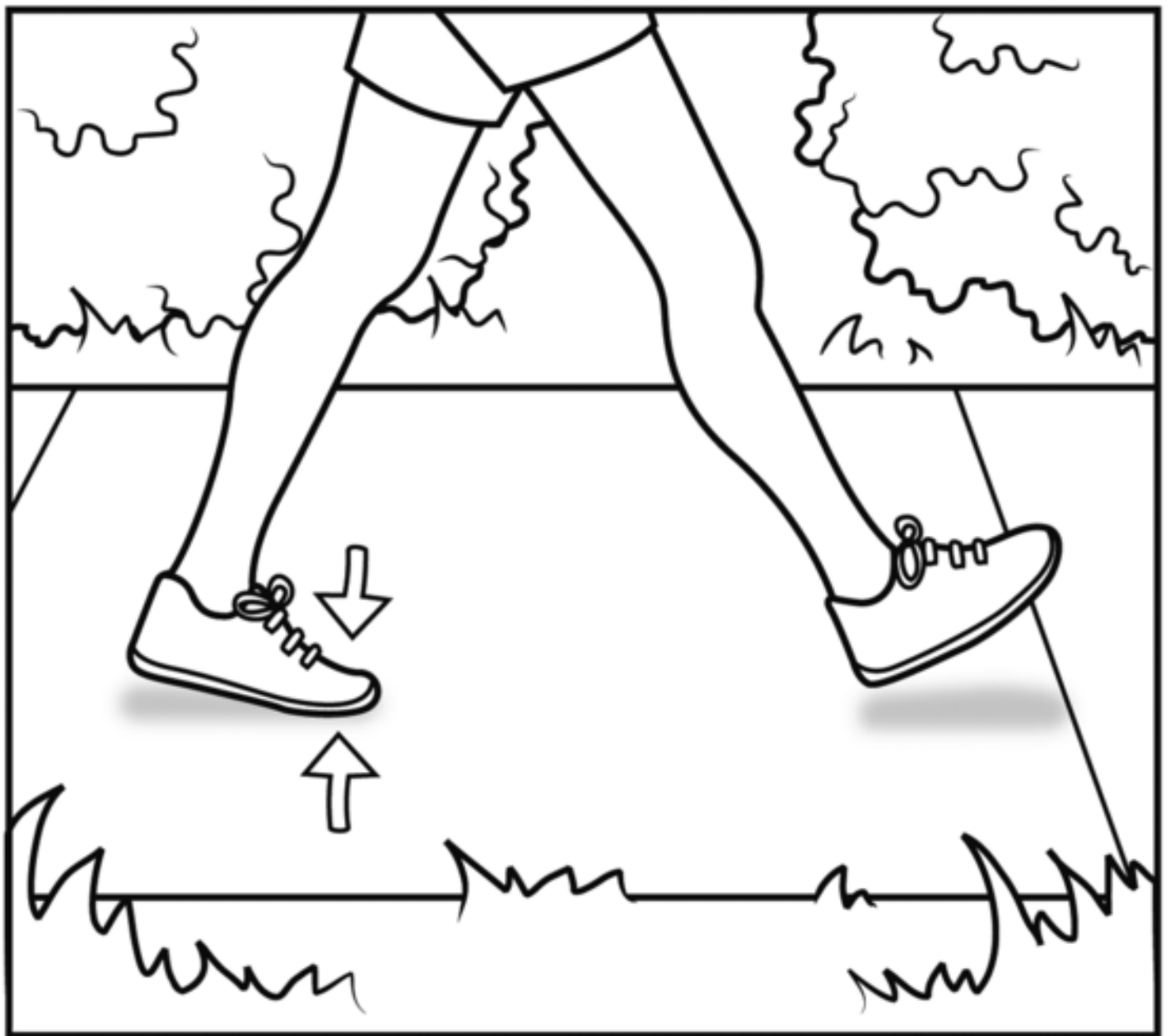




Force and motion is around us whether we're  
at work or play.

We use force to help us move things every  
single day.

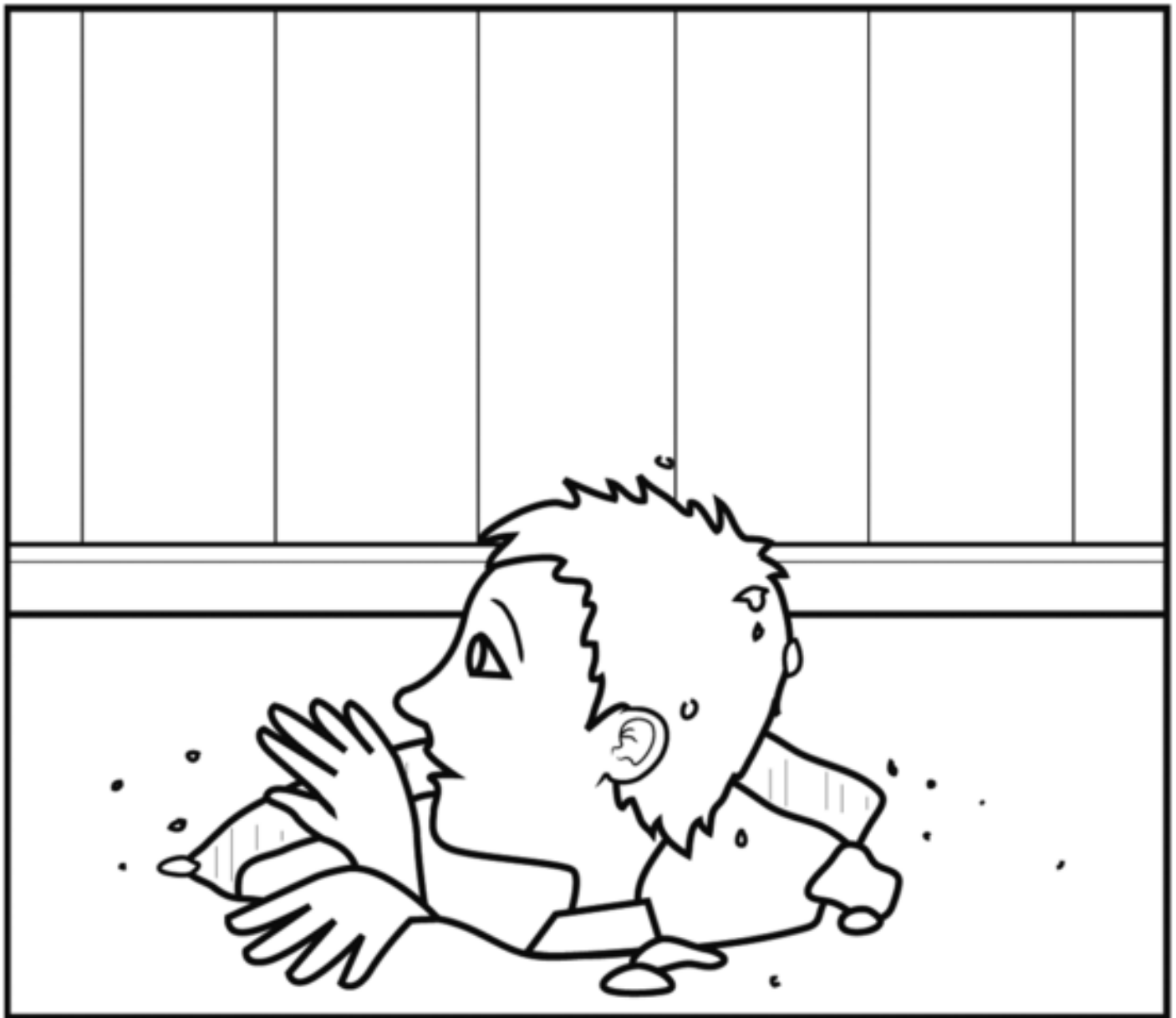
The scientific meaning of a force is a push or  
pull,  
and force can help us move things when a load  
is full.



When you start to take a step you're pushing  
on the floor.

The floor actually pushes back so walking is  
not such a chore.

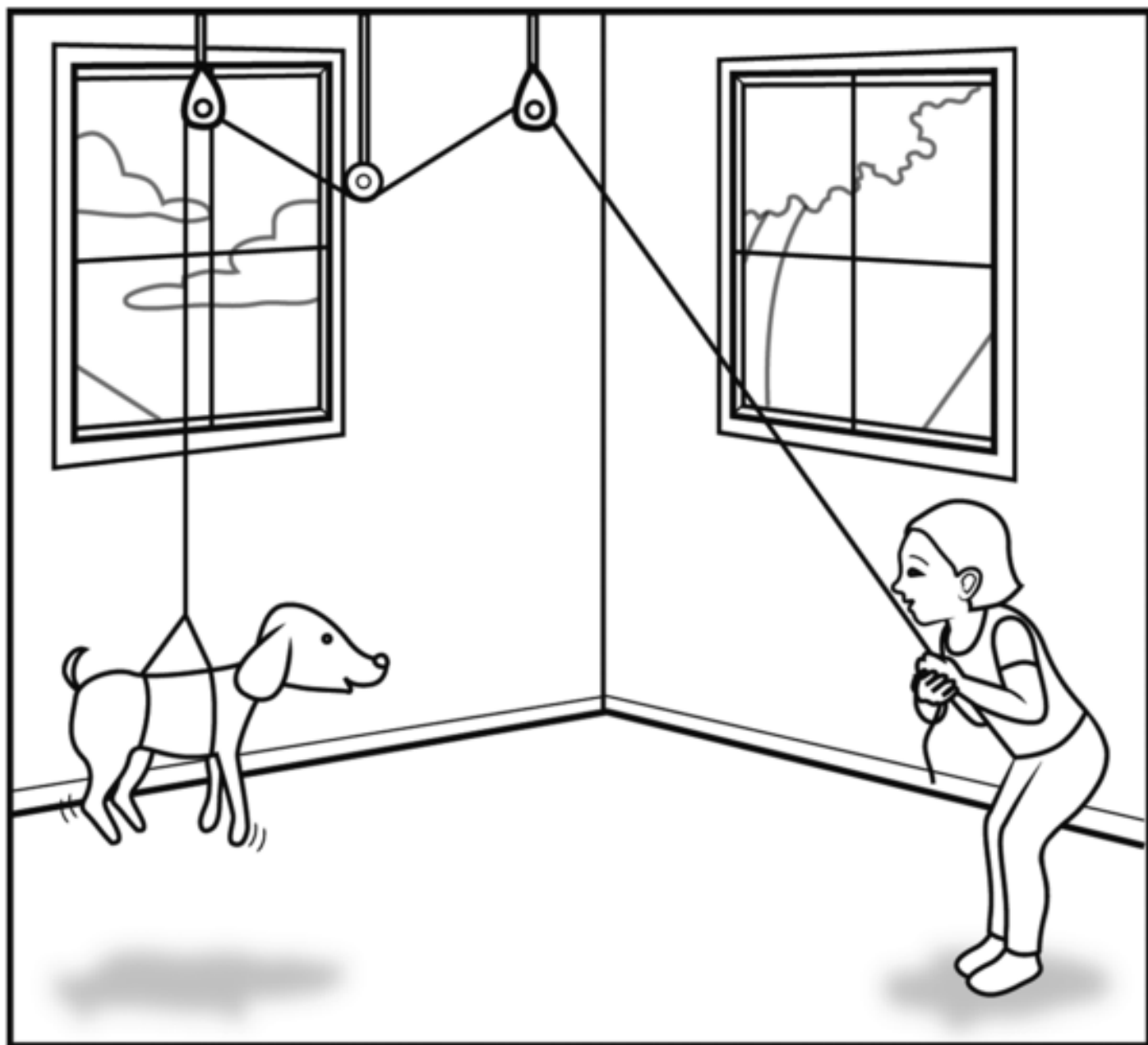
If you were to walk in quicksand, you'd sink up  
to your knees,  
but strolling on a sidewalk makes walking there  
a breeze.



Forces always occur in pairs, like a pair of unmatched shoes, but these forces are quite different. We don't want to confuse.

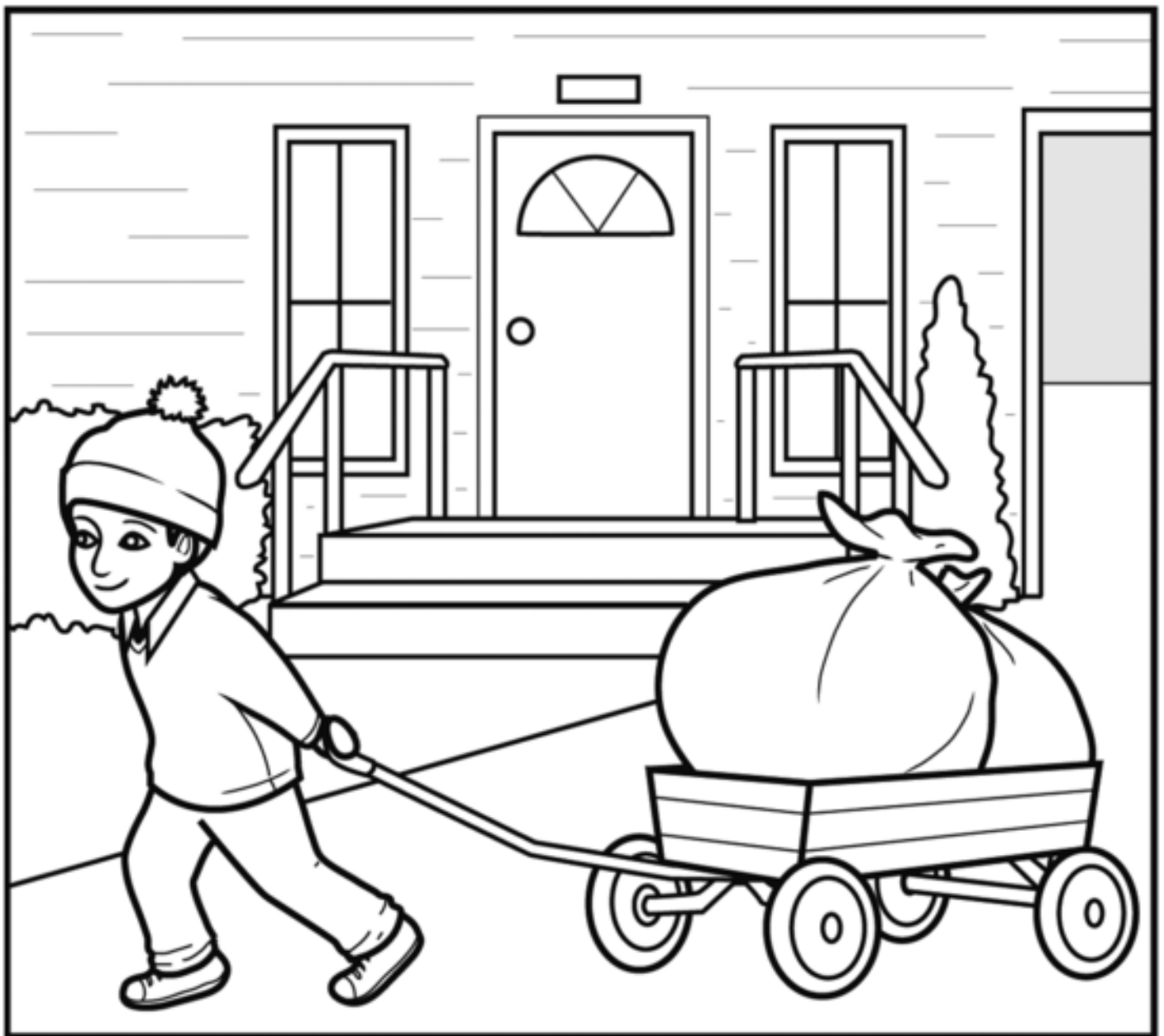
When you walk across the floor, the floor then pushes back.

If it didn't, you'd be standing in a hole in the middle of your track.



When we push, gravity pulls, or maybe friction interferes in the opposite direction of our pushing this other force appears.

We can sometimes use a pulley or we can use a four-wheeled cart to overcome the friction. We think that's pretty smart!

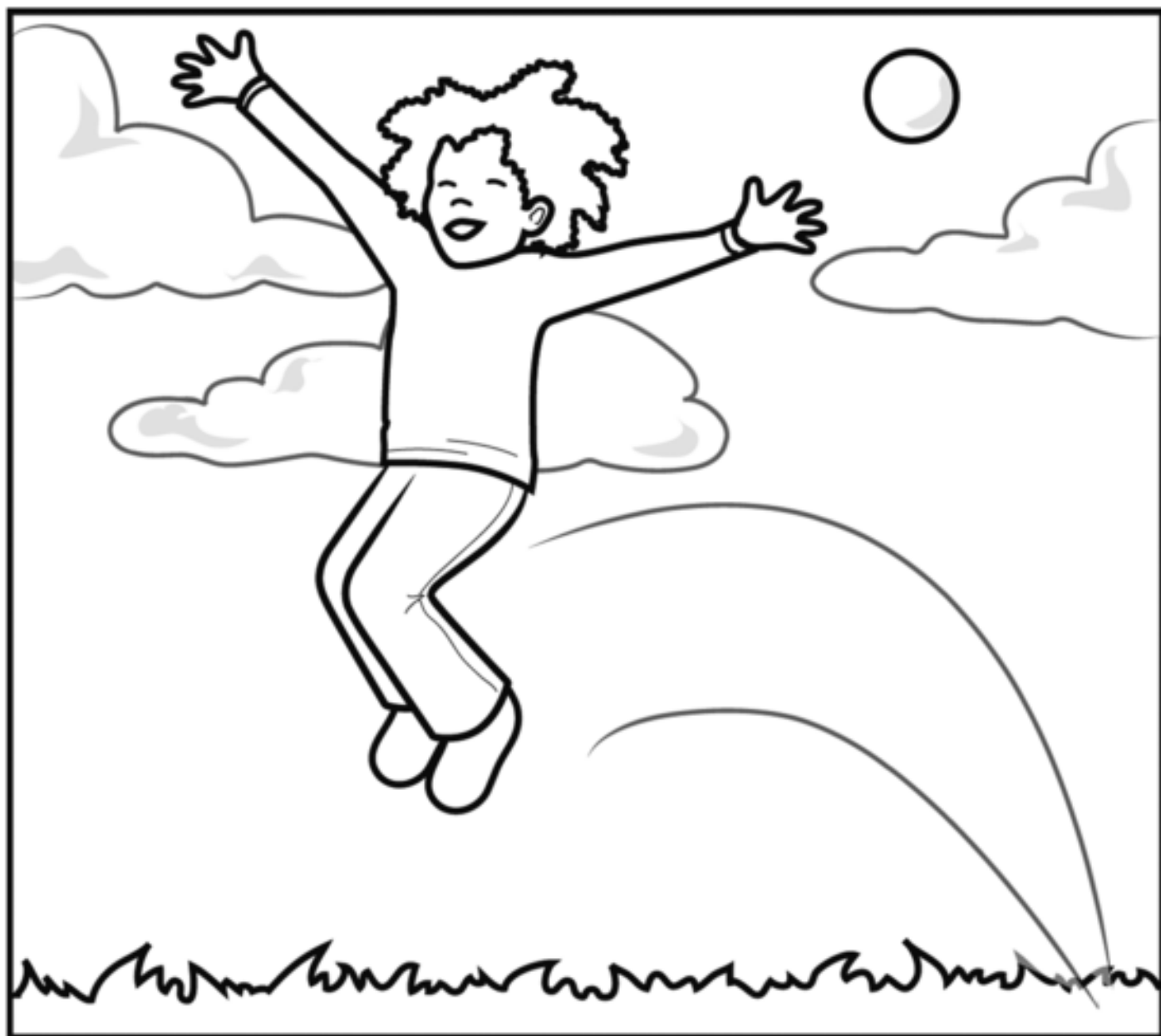


When two materials rub together, friction is induced.

When these materials rub together, heat will be produced.

Friction works against the movement. It slows things a little bit.

Wheels help overcome that friction. That's why the wheel is such a hit.

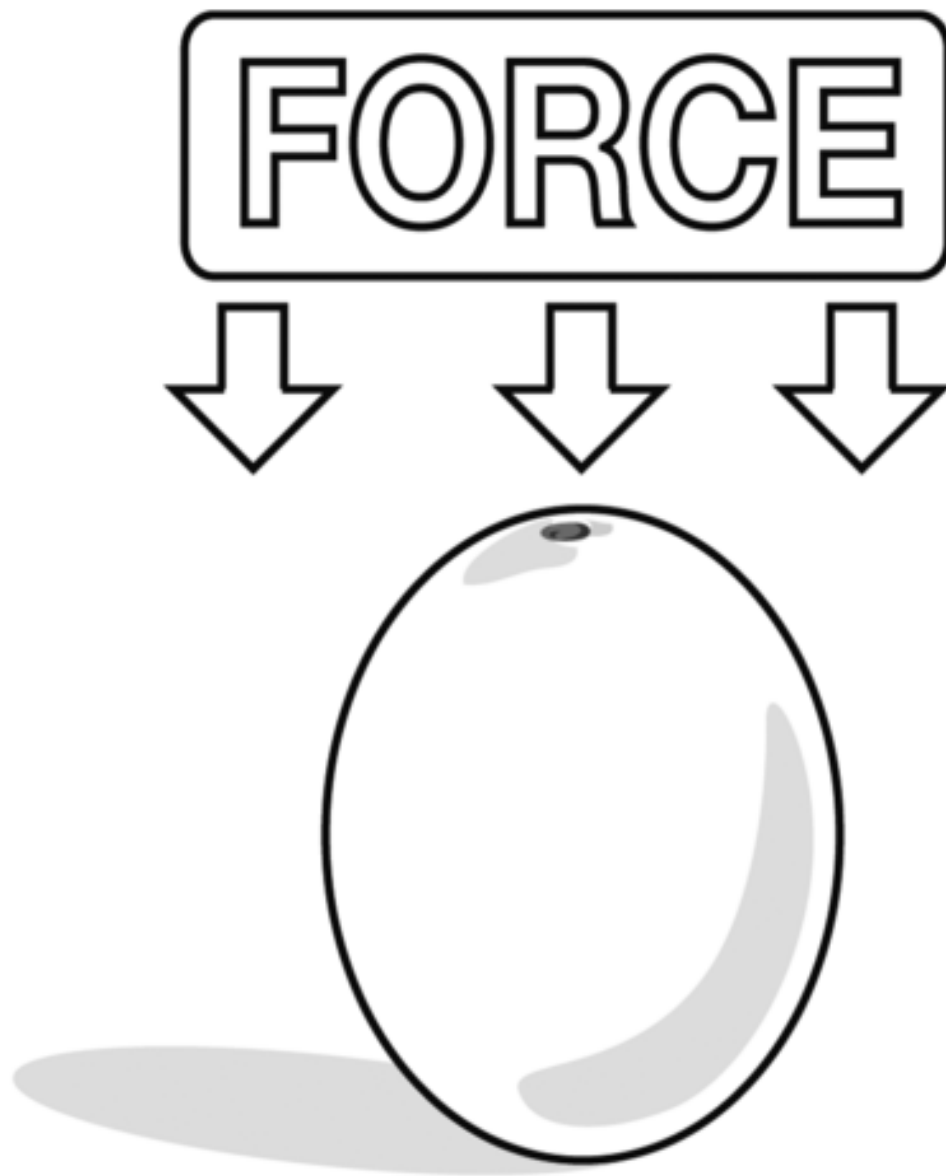


Another force that pulls on things is known as gravity.

Gravity pulls things toward the Earth, but it's not something you can see.

Gravity is what pulls you down when you jump up high.

When you throw a ball, it falls, and gravity's the reason why.

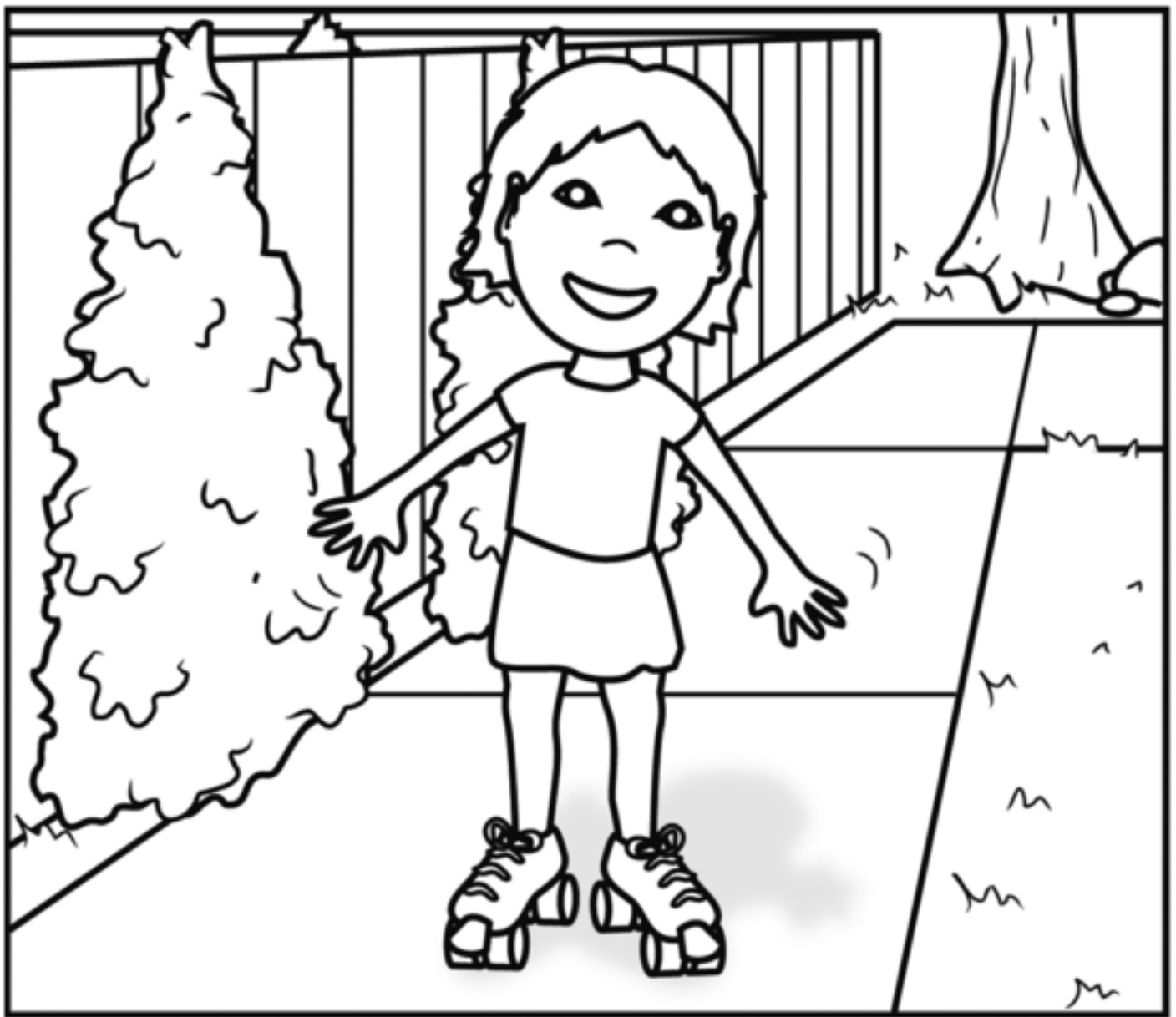


Forces can cause movement. A force's strength is called its *magnitude*, and forces have certain directions. This is a fact we can conclude.

Forces can act on an object. Forces can move or change a shape.

How much force do you think you'd need to squash a purple grape?





Forces can be large or small or somewhere in between.

Many forces come from places that often can't be seen.

We cannot see gravity, and yet we know it's there.

Force and motion are around us. Forces are everywhere.

1. What is the scientific meaning of force?
  - a. a shove
  - b. a windstorm
  - c. drawing together
  - d. a push or pull

Answer: \_\_\_\_\_

2. Forces always occur in \_\_\_\_\_.
- 

3. What force is produced when two materials rub together?
- 

4. Which of these things can we use to help us overcome friction?
  - a. sound
  - b. wheels
  - c. temperature
  - d. heat

Answer: \_\_\_\_\_

5. What force pulls things towards the earth?
  - a. friction
  - b. heat
  - c. cooling
  - d. gravity

Answer: \_\_\_\_\_

6. What is magnitude?

- a. a tremor
- b. a force's strength
- c. mass
- d. temperature

Answer: \_\_\_\_\_