# Gravity and Friction

Grade 3

Name _____ Date _____

**Remember: Gravity** pulls things **down** toward Earth. **Friction slows** things down when surfaces rub. Rough surfaces = more friction.

**Try it:** roll a toy car on carpet and then on a smooth floor. Where does it go farther?

## Gravity and Friction



**Gravity** is a force that pulls objects toward each other. Earth's gravity pulls everything toward the ground. That is why a ball you throw up always comes back down, and why you don't float away!

Gravity works without touching, so it is a non-contact force. The Moon has weaker gravity than Earth, so astronauts there can bounce high with each step.

**Friction** is a force that slows things down when two surfaces rub together. Rough surfaces, like carpet or sandpaper, make a lot of friction. Smooth surfaces, like ice, make very little.

Friction can be helpful. It keeps your shoes from slipping and helps bike brakes stop the wheels. But friction can also be a problem: it makes machines wear out and makes it hard to slide heavy boxes.

## 1. Check your understanding

Circle the best answer.

**1. Which way does Earth's gravity pull things?**

(a) Up (b) Toward the ground (c) Sideways

**2. Why can astronauts bounce high on the Moon?**

(a) The Moon's gravity is weaker. (b) The Moon has no ground.
(c) They wear springs.

**3. Which surface has the least friction?**

(a) Carpet (b) Sandpaper (c) Ice

**4. How does friction help a bike stop?**

(a) Brakes rub the wheels and slow them. (b) It makes the bike lighter.
(c) It pulls the bike up.

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## 2. Gravity or friction?

Circle the force that explains each event.

| | | | |
|---|---|---|---|
| 1 | An apple falls from a tree. | gravity | friction |
| 2 | A sled slows down on a patch of grass. | gravity | friction |
| 3 | Rain falls from the clouds. | gravity | friction |
| 4 | Rubbing your hands together makes them warm. | gravity | friction |
| 5 | A dropped pencil lands on the floor. | gravity | friction |
| 6 | Rough tires grip the road. | gravity | friction |

## 3. Think like a scientist

Answer in a complete sentence.

1. **Why is it easier to slide on ice than on a sidewalk?**

# Answer Key

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## 1. Check your understanding

**1. Which way does Earth's gravity pull things?**

(a) Up (b) **Toward the ground** (c) Sideways

**2. Why can astronauts bounce high on the Moon?**

(a) **The Moon's gravity is weaker.** (b) The Moon has no ground. (c) They wear springs.

**3. Which surface has the least friction?**

(a) Carpet (b) Sandpaper (c) **Ice**

**4. How does friction help a bike stop?**

(a) **Brakes rub the wheels and slow them.** (b) It makes the bike lighter.
(c) It pulls the bike up.

## 2. Gravity or friction?

| | | | |
|---|---|---|---|
| 1 | An apple falls from a tree. | **gravity** | friction |
| 2 | A sled slows down on a patch of grass. | gravity | **friction** |
| 3 | Rain falls from the clouds. | **gravity** | friction |
| 4 | Rubbing your hands together makes them warm. | gravity | **friction** |
| 5 | A dropped pencil lands on the floor. | **gravity** | friction |
| 6 | Rough tires grip the road. | gravity | **friction** |

## 3. Think like a scientist

Sample answer.

1. **Why is it easier to slide on ice than on a sidewalk?**
   Ice is smooth, so there is less friction to slow you down. The sidewalk is rough and has more friction.