Name: _____ Date: _____

What Happens Inside Bicycle Brakes

Circle group

A moving bike has energy of motion. To stop, that energy must go somewhere. Brakes use a force called friction.

Friction happens when two things rub together. You squeeze the brake lever. A cable pulls two rubber pads onto the wheel. The pads grip the spinning rim. The rubbing makes friction. The friction slows the wheel.

Where does the energy go? It turns into heat. Pads and rims get warm after a long stop. Rubbing always makes some heat. Rub your hands together fast and you will feel it.

Rain changes how brakes work. Water makes a slippery film between the pad and the rim. There is less friction. A rider must slow down sooner in the rain. Worn pads are a problem too. They can be too smooth to grip.

A careful rider checks the brakes before every ride.

Questions

1. What force do bike brakes use?

_____

_____

2. What does the cable do when you squeeze the lever?

_____

_____

3. What does the bike's energy of motion turn into?

_____

_____

4. Why do brakes work less well in rain?

_____

_____

5. Why should a rider slow down sooner in the rain?

_____

_____

6. Why does a careful rider check the brakes?

_____

_____

Words to know

friction: the force that slows things down when they rub together
lever: a bar you press or pull to make a part move
rim: the outer edge of a wheel
worn: damaged or made thin from being used a lot

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

What Happens Inside Bicycle Brakes

Triangle group

A moving bicycle has energy of motion. To stop, that energy must go somewhere. Your brakes do the job by using a force called friction.

Friction is the pull that happens when two surfaces rub together. When you squeeze the brake lever, a cable pulls two rubber pads against the wheel. The pads grip the spinning metal rim. The rubbing between pad and rim makes friction, and the friction slows the wheel down.

Where does the energy of motion go? It turns into heat. Brake pads and rims get warm after a long stop, because rubbing always makes some heat. You can feel this on your hands when you rub them together quickly.

Wet weather changes how brakes work. Water makes a thin slippery film between the pad and the rim, so there is less friction. A rider who uses brakes in the rain has to start slowing down sooner. Worn pads are a problem too, since they may be too smooth to grip well.

This is why a careful rider checks the brakes before every ride. Good friction is what keeps a bike under control when it needs to stop.

Questions

1. What force do bicycle brakes use to slow a wheel?

_____

_____

2. What does the cable do when you squeeze the brake lever?

_____

_____

3. What does the bike's energy of motion turn into when you brake?

_____

_____

4. Why does rain make brakes work less well?

_____

_____

5. Why should a rider start slowing down sooner in the rain?

_____

_____

6. Why does a careful rider check the brakes before every ride?

_____

_____

Words to know

friction: the force that slows things down when they rub together
lever: a bar you press or pull to make a part move
rim: the outer edge of a wheel
worn: damaged or made thin from being used a lot

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

What Happens Inside Bicycle Brakes

Square group

A bicycle in motion carries energy of movement, and in order to stop, that energy has to go somewhere. Brakes accomplish this task by taking advantage of a force known as friction.

Friction is the resistance that occurs when two surfaces rub against each other. When you squeeze the brake lever, a cable pulls two rubber pads firmly against the wheel. The pads grip the spinning metal rim, and the rubbing between pad and rim creates friction, which gradually slows the wheel down.

So where does all that energy of motion end up? It is converted into heat. Brake pads and rims become warm after a long stop, since rubbing always produces some heat. You can notice the same effect on your own hands when you rub them together briskly.

Wet weather alters the way brakes perform. Water forms a thin, slippery film between the pad and the rim, which reduces friction, so a rider who brakes in the rain needs to begin slowing down earlier. Worn pads can cause trouble as well, because they may have become too smooth to grip properly.

For this reason, a careful rider inspects the brakes before every ride. Good friction is what keeps a bicycle under control when it has to stop.

Questions

1. Which force do bicycle brakes rely on to slow a wheel?

_____

_____

2. What happens to the rubber pads when you squeeze the brake lever?

_____

_____

3. Into what is the bicycle's energy of motion converted when you brake?

_____

_____

4. Why do brakes perform less well in wet weather?

_____

_____

5. Why does a rider need to start slowing down earlier in the rain?

_____

_____

6. Why does a careful rider inspect the brakes before every ride?

_____

_____

Words to know

friction: the force that slows things down when they rub together
lever: a bar you press or pull to make a part move
rim: the outer edge of a wheel
worn: damaged or made thin from being used a lot

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: What Happens Inside Bicycle Brakes

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: What Happens Inside Bicycle Brakes

Easier · 140 words · Flesch-Kincaid grade 2.5

1. Friction.
2. It pulls the rubber pads onto the wheel.
3. Heat.
4. Water makes a slippery film, so there is less friction.
5. Wet brakes grip less, so it takes more distance to stop.
6. Good friction keeps the bike under control, and worn pads may not grip.

Triangle: What Happens Inside Bicycle Brakes

This passage · 191 words · Flesch-Kincaid grade 4.3

1. Friction.
2. It pulls the rubber pads against the wheel.
3. Heat.
4. Water makes a slippery film between the pad and the rim, so there is less friction.
5. Brakes grip less well when wet, so it takes more distance to stop.
6. Good friction keeps the bike under control, and worn pads may not grip well.

Square: What Happens Inside Bicycle Brakes

Harder · 209 words · Flesch-Kincaid grade 7.1

1. Friction.
2. A cable pulls them firmly against the wheel.
3. Heat.
4. Water forms a slippery film between pad and rim, which reduces friction.
5. Wet brakes grip less, so stopping takes more distance.
6. Good friction keeps the bike under control, and worn pads may not grip properly.