Name: _____ Date: _____

The Tiny Balls Hidden in a Skateboard Wheel

Circle group

Try to slide a heavy box on the floor. It is hard. The floor rubs on the box. This rubbing is friction. Friction slows things down.

Now think of a skateboard. Its wheels turn on a metal rod. The rod is an axle. If the wheel rubbed on the axle, it would not turn well. So a skateboard has bearings.

A bearing is a small metal ring. It holds a row of tiny steel balls. It fits inside the wheel, around the axle. When the wheel turns, the balls roll. They roll between the inner ring and the outer ring. Rolling has much less friction than rubbing. So the wheel spins with ease.

Many things have ball bearings. Bicycle wheels have them. Fans have them. Machines move easily and wear out slowly.

Next time you ride a skateboard, think of the tiny balls.

Questions

1. What is the rubbing that slows things down called?

_____

_____

2. What do a skateboard's wheels turn on?

_____

_____

3. What does a bearing hold?

_____

_____

4. What do the balls do when the wheel turns?

_____

_____

5. Name one other thing with ball bearings?

_____

_____

6. Why is it easier to roll a heavy box than to slide it?

_____

_____

Words to know

friction: the rubbing between two things that slows them down
axle: a rod that a wheel turns around
bearings: rings with small balls that help a wheel spin easily
steel: a strong, hard metal

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: _____

The Tiny Balls Hidden in a Skateboard Wheel

Triangle group

Try sliding a heavy box across the floor. It is hard work, because the floor rubs against the bottom of the box. This rubbing is called friction. Friction makes moving things slow down.

Now think about a skateboard. Its wheels spin around a metal rod called an axle. If the wheel rubbed straight against the axle, it would not turn well. So a skateboard has bearings.

A bearing is a small metal ring that holds a row of tiny steel balls. It fits inside the wheel, around the axle. When the wheel turns, the balls roll between the inner ring and the outer ring. Rolling makes much less friction than rubbing, so the wheel can spin freely.

Ball bearings are hidden inside many things. They help bicycle wheels turn, and they help fans spin. Machines that use them can move easily and wear out more slowly.

The next time you ride a skateboard, remember the tiny balls hard at work.

Questions

1. What is the name for the rubbing that makes moving things slow down?

_____

_____

2. What do a skateboard's wheels spin around?

_____

_____

3. What does a bearing hold inside its ring?

_____

_____

4. What do the balls do when the wheel turns?

_____

_____

5. Name one other thing that uses ball bearings?

_____

_____

6. Why is it easier to roll a heavy box on round wheels than to slide it?

_____

_____

Words to know

friction: the rubbing between two things that slows them down
axle: a rod that a wheel turns around
bearings: rings with small balls that help a wheel spin easily
steel: a strong, hard metal
freely: without being held back

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: _____

The Tiny Balls Hidden in a Skateboard Wheel

Square group

Imagine trying to drag a heavy box across the floor. It is exhausting, because the floor rubs against the bottom of the box. This rubbing is called friction, and friction always makes moving objects slow down.

Now consider a skateboard. Its wheels spin around a metal rod known as an axle. If each wheel scraped directly against its axle, it would turn very poorly. For that reason, a skateboard has bearings.

A bearing is a small metal ring that holds a row of tiny steel balls. It fits inside the wheel and surrounds the axle. Whenever the wheel turns, the balls roll between the inner ring and the outer ring. Rolling produces far less friction than rubbing, so the wheel is able to spin freely.

Ball bearings are tucked away inside many everyday objects. They help bicycle wheels turn, and they help fans spin. Machines that contain them move smoothly and wear out more slowly.

The next time you ride a skateboard, remember the tiny balls that are working so hard beneath you.

Questions

1. What is the name for the rubbing that makes moving objects slow down?

_____

_____

2. What do the wheels of a skateboard spin around?

_____

_____

3. What does a bearing hold inside its ring?

_____

_____

4. What do the balls do whenever the wheel turns?

_____

_____

5. Name one other object that uses ball bearings?

_____

_____

6. Why is it easier to roll a heavy box on wheels than to drag it?

_____

_____

Words to know

friction: the rubbing between two things that slows them down
axle: a rod that a wheel turns around
bearings: rings with small balls that help a wheel spin easily
steel: a strong, hard metal
freely: without being held back

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: The Tiny Balls Hidden in a Skateboard Wheel

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

Circle: The Tiny Balls Hidden in a Skateboard Wheel

Easier · 143 words · Flesch-Kincaid grade 1.6

1. Friction.
2. A metal rod called an axle.
3. A row of tiny steel balls.
4. They roll between the inner ring and the outer ring.
5. A bicycle wheel or a fan.
6. Rolling has less friction than sliding.

Triangle: The Tiny Balls Hidden in a Skateboard Wheel

This passage · 160 words · Flesch-Kincaid grade 3.7

1. Friction.
2. A metal rod called an axle.
3. A row of tiny steel balls.
4. They roll between the inner ring and the outer ring.
5. A bicycle wheel or a fan.
6. Rolling makes less friction than sliding.

Square: The Tiny Balls Hidden in a Skateboard Wheel

Harder · 173 words · Flesch-Kincaid grade 5.6

1. Friction.
2. A metal rod known as an axle.
3. A row of tiny steel balls.
4. They roll between the inner ring and the outer ring.
5. A bicycle wheel or a fan.
6. Rolling produces far less friction than sliding or dragging.