Name: _____ Date: _____

The Hidden Lip on Every Train Wheel

Circle group

A train rolls on two steel rails. No one turns a wheel to keep it on the track. So how does it stay there?

The secret is the shape of the wheels. Each wheel has a wide, flat part. It rests on top of a rail. On the inside edge is a thin lip that sticks out below. The lip is called a flange. It hangs down on the inner side of the rail, like a small fence.

If the train starts to slide sideways, the flange hits the rail. The rail holds the wheel in place. The train stays on the track.

The flat part is also tilted a little, like the side of a wide cone. If a train drifts to one side, the slope gently steers it back to the middle.

Because of these shapes, a train can roll for miles with no one steering.

Questions

1. What does a train roll on?

_____

_____

2. What is the thin lip on a train wheel called?

_____

_____

3. Where does the flange hang?

_____

_____

4. What does the flange do if the train slides sideways?

_____

_____

5. What does the tilt of the flat part do?

_____

_____

6. Why does a train not need a steering wheel on straight track?

_____

_____

Words to know

rails: long metal bars that a train rolls along
flange: the thin lip on a train wheel that keeps it on the rail
sideways: toward one side instead of forward
tilted: leaning a little to one side
drifts: moves slowly off course

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 Hidden Lip on Every Train Wheel

Triangle group

A train rolls along two steel rails. Nobody turns a steering wheel to keep it on the track. So how does a train stay put?

The secret is in the shape of the wheels. Each wheel has a wide, flat part that rests on top of a rail. On the inside edge, it also has a thin lip that sticks out below. This lip is called a flange. It hangs down on the inner side of the rail, like a small fence.

If the train starts to slide sideways, the flange pushes against the rail. The rail holds the wheel in place, and the train stays on the track.

The flat part of the wheel is also tilted a little, like the side of a very wide cone. When a train drifts to one side, this slope gently steers it back toward the middle.

Because of these two shapes, a train can roll for miles with no one steering at all.

Questions

1. What does a train roll along?

_____

_____

2. What is the thin lip on a train wheel called?

_____

_____

3. Where does the flange hang?

_____

_____

4. What does the flange do if the train starts to slide sideways?

_____

_____

5. What does the tilt of the flat part of the wheel do?

_____

_____

6. Why does a train not need a steering wheel on straight track?

_____

_____

Words to know

rails: long metal bars that a train rolls along
flange: the thin lip on a train wheel that keeps it on the rail
sideways: toward one side instead of forward
tilted: leaning a little to one side
drifts: moves slowly off course

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 Hidden Lip on Every Train Wheel

Square group

A train travels along two parallel steel rails, yet nobody turns a steering wheel to keep it on the track. How does a train manage to stay where it belongs?

The secret lies in the shape of its wheels. Each wheel has a wide, flat surface that rests on top of a rail. Along its inside edge, the wheel also has a thin lip that projects downward. This lip is called a flange, and it hangs on the inner side of the rail like a small fence.

If the train begins to slide sideways, the flange presses against the rail. The rail holds the wheel firmly in place, and the train remains on the track.

The flat surface of the wheel is also tilted slightly, much like the side of a very wide cone. Whenever a train drifts toward one side, this gentle slope steers it back toward the middle.

Thanks to these two shapes, a train can roll for miles without anyone steering at all.

Questions

1. What does a train travel along?

_____

_____

2. What is the thin lip on a train wheel called?

_____

_____

3. Where does the flange hang?

_____

_____

4. What does the flange do if the train begins to slide sideways?

_____

_____

5. What does the slight tilt of the flat surface do?

_____

_____

6. Why does a train not need a steering wheel on straight track?

_____

_____

Words to know

rails: long metal bars that a train rolls along
flange: the thin lip on a train wheel that keeps it on the rail
sideways: toward one side instead of forward
tilted: leaning a little to one side
drifts: moves slowly off course

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 Hidden Lip on Every Train Wheel

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

Circle: The Hidden Lip on Every Train Wheel

Easier · 148 words · Flesch-Kincaid grade 1.2

1. Two steel rails.
2. A flange.
3. On the inner side of the rail.
4. It hits the rail, and the rail holds the wheel in place.
5. It gently steers the train back to the middle.
6. The shape of the wheels keeps it on the rails.

Triangle: The Hidden Lip on Every Train Wheel

This passage · 161 words · Flesch-Kincaid grade 2.7

1. Two steel rails.
2. A flange.
3. On the inner side of the rail.
4. It pushes against the rail, and the rail holds the wheel in place.
5. It gently steers the train back toward the middle.
6. The shape of the wheels keeps it on the rails.

Square: The Hidden Lip on Every Train Wheel

Harder · 166 words · Flesch-Kincaid grade 4.9

1. Two parallel steel rails.
2. A flange.
3. On the inner side of the rail.
4. It presses against the rail, and the rail holds the wheel in place.
5. It steers the train back toward the middle.
6. The shape of its wheels keeps it on the rails.