Name: _____ Date: _____

The Zipper's Hidden Wedge

Circle group

A zipper is a smart machine. Each side has a row of tiny teeth. Each tooth has a bump and a small pocket. A bump fits into a pocket. Then the teeth lock.

You pull the slider to close the zipper. Inside the slider is a wedge. It pushes the teeth together. They lock, one by one.

Pull the slider down. The wedge pushes the teeth apart. Then the zipper opens.

At the ends are small stops. They keep the slider on the tape.

The teeth lock side by side. So a zipper holds tight. It is on jackets, bags and tents.

Questions

1. What runs along each side of the zipper tape?

_____

_____

2. What is the part you pull called?

_____

_____

3. What does the wedge do when you pull the slider down?

_____

_____

4. What do the stops at the ends do?

_____

_____

5. Why does a zipper hold tight?

_____

_____

6. Why might a zipper not close if one tooth is bent?

_____

_____

Words to know

teeth: the tiny pieces on a zipper that lock together
slider: the part of a zipper that you pull up and down
wedge: a piece that is thick at one end and thin at the other, used to push things apart
lock: to fit together so tightly that the pieces stay joined
stops: small pieces that keep something from going too far

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 Zipper's Hidden Wedge

Triangle group

A zipper looks simple, but it is a clever machine. Along each side of the zipper tape runs a row of tiny teeth. Every tooth has a bump on one end and a little pocket on the other. When a bump from the left row slips into a pocket in the right row, the two teeth lock together.

The part you pull is called the slider. Inside it is a channel shaped like the letter Y. As you pull the slider up, the two rows of teeth enter through the arms of the Y. A wedge inside the slider squeezes them together, and they lock one after another, faster than your eye can follow.

When you pull the slider down, the same wedge slides between the teeth and pushes them apart. That is how the zipper opens. Small metal pieces called stops sit at the ends of the rows. They keep the slider from sliding right off the tape.

Because the teeth lock side by side, a zipper holds tight. Yet it opens with one smooth pull. That is why you find zippers on jackets, backpacks and tents.

Questions

1. What runs along each side of the zipper tape?

_____

_____

2. What is the part you pull called?

_____

_____

3. What does the wedge do when you pull the slider down?

_____

_____

4. What do the stops at the ends of the rows do?

_____

_____

5. Why does a zipper hold tight?

_____

_____

6. Why might a zipper fail to close if one tooth is bent?

_____

_____

Words to know

teeth: the tiny pieces on a zipper that lock together
slider: the part of a zipper that you pull up and down
wedge: a piece that is thick at one end and thin at the other, used to push things apart
lock: to fit together so tightly that the pieces stay joined
stops: small pieces that keep something from going too far

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 Zipper's Hidden Wedge

Square group

At first glance a zipper seems simple, but it is actually a remarkably clever machine. Along each side of the zipper tape runs a row of tiny teeth, and every tooth has a bump on one end and a small pocket on the other. Whenever a bump from the left row slips into a pocket in the right row, the two teeth lock together firmly.

The part that you pull is called the slider, and inside it is a channel shaped like the letter Y. As you pull the slider upward, the two rows of teeth enter through the arms of the Y. A wedge inside the slider squeezes them together, so that they lock one after another, faster than your eye can follow.

When you pull the slider downward, the very same wedge slides between the teeth and forces them apart, which is how the zipper opens. Small metal pieces called stops sit at the ends of the rows, and they prevent the slider from sliding completely off the tape.

Because the teeth lock side by side, a zipper holds extremely tight, and yet it opens with a single smooth pull. That combination explains why zippers appear on jackets, backpacks, tents and many other things we use every day.

Questions

1. What runs along each side of the zipper tape?

_____

_____

2. What is the part that you pull called?

_____

_____

3. What does the wedge do when you pull the slider downward?

_____

_____

4. What purpose do the stops at the ends of the rows serve?

_____

_____

5. Why does a zipper hold so tight?

_____

_____

6. Why might a zipper fail to close if one tooth were bent?

_____

_____

Words to know

teeth: the tiny pieces on a zipper that lock together
slider: the part of a zipper that you pull up and down
wedge: a piece that is thick at one end and thin at the other, used to push things apart
lock: to fit together so tightly that the pieces stay joined
stops: small pieces that keep something from going too far

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 Zipper's Hidden Wedge

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

Circle: The Zipper's Hidden Wedge

Easier · 102 words · Flesch-Kincaid grade 1

1. A row of tiny teeth.
2. The slider.
3. It pushes the teeth apart.
4. They keep the slider on the tape.
5. The teeth lock side by side.
6. A bump must fit into a pocket. A bent tooth may not fit, so it cannot lock.

Triangle: The Zipper's Hidden Wedge

This passage · 188 words · Flesch-Kincaid grade 4.1

1. A row of tiny teeth.
2. The slider.
3. It pushes the teeth apart so the zipper opens.
4. They keep the slider from sliding off the tape.
5. Its teeth lock together side by side.
6. A bump has to fit into a pocket to lock. A bent tooth may not fit its partner, so the zipper cannot close there.

Square: The Zipper's Hidden Wedge

Harder · 210 words · Flesch-Kincaid grade 8.7

1. A row of tiny teeth, each with a bump and a pocket.
2. The slider.
3. It slides between the teeth and forces them apart so the zipper opens.
4. They prevent the slider from sliding completely off the tape.
5. Its teeth lock together side by side.
6. A bump has to fit into a pocket to lock, and a bent tooth may not fit its partner, so the zipper could not close at that spot.