Name: _____ Date: _____

Rub Your Hands: Where Does the Warmth Come From?

Circle group

On a cold day, what do you do to warm your hands? Many people rub them together. Soon your palms feel toasty. There is no fire and no heater. Where does the warmth come from?

It comes from motion. Everything is made of tiny bits. You cannot see them. They are always jiggling. When a thing is hot, the bits jiggle fast. When it is cool, they jiggle slowly.

When you rub your hands, one hand drags on the other. This rubbing is friction. Friction makes the tiny bits jiggle faster. Your hands get warmer.

You can feel this in other places. A bike tire gets a little warm after a ride. A wood block gets warm when you sand it. A slide can feel warm after many kids slide down.

Rub harder and faster to make more heat. But go gently. Too much rubbing can make your skin sore.

Questions

1. What do many people do to warm their hands on a cold day?

_____

_____

2. What are all things made of?

_____

_____

3. How do the tiny bits jiggle when a thing is hot?

_____

_____

4. What is the rubbing of your hands called?

_____

_____

5. Why do your hands get warmer when you rub faster?

_____

_____

6. What can happen if you rub your skin too long?

_____

_____

Words to know

friction: the rubbing of two things against each other
palm: the inside part of your hand
toasty: nice and warm
jiggle: to move quickly up and down or side to side
gently: in a soft, careful way

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: _____

Rub Your Hands: Where Does the Warmth Come From?

Triangle group

On a cold day, what do you do to warm your hands? Many people rub them together. After a few seconds, your palms feel toasty. There is no fire and no heater. So where does the warmth come from?

It comes from motion. Everything is made of tiny bits too small to see, and they are always jiggling. When something is hot, its tiny bits jiggle fast. When it is cool, they jiggle slowly.

When you rub your hands, the skin of one hand drags across the skin of the other. That rubbing is friction. Friction makes the tiny bits jiggle faster, and so your hands get warmer.

You can feel this in other places too. A bike tire gets a little warm after a long ride on the road. A wooden block gets warm when you sand it with paper. Even a playground slide can feel warm after many kids slide down.

The harder and faster you rub, the more heat you make. But go gently. If you rub too long, your skin can get sore.

Questions

1. What do many people do to warm their hands on a cold day?

_____

_____

2. What are all things made of?

_____

_____

3. How do the tiny bits jiggle when something is hot?

_____

_____

4. What do we call the rubbing of your hands?

_____

_____

5. Why do your hands get warmer when you rub them faster?

_____

_____

6. What can happen if you rub your skin too long?

_____

_____

Words to know

friction: the rubbing of two things against each other
palm: the inside part of your hand
toasty: nice and warm
jiggle: to move quickly up and down or side to side
gently: in a soft, careful way

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: _____

Rub Your Hands: Where Does the Warmth Come From?

Square group

On a bitterly cold day, what do you do to warm up your hands? Many people rub them briskly together. After only a few seconds, your palms feel pleasantly toasty. There is no fire and no heater nearby, so where does all that warmth come from?

The answer is motion. Everything around us is made of tiny bits that are far too small to see, and these bits are constantly jiggling. When an object is hot, its tiny bits jiggle quickly. When it is cool, they jiggle much more slowly.

As you rub your hands together, the skin of one hand drags across the skin of the other. This rubbing is called friction. Friction makes the tiny bits jiggle faster, and that is why your hands grow warmer.

You can feel the same effect in other places. A bike tire becomes slightly warm after a long ride on the road. A wooden block heats up when you sand it with paper. Even a playground slide can feel warm after many children have slid down it.

The harder and faster you rub, the more heat you create. Even so, be gentle, because rubbing for too long can leave your skin sore.

Questions

1. What do many people do to warm their hands on a cold day?

_____

_____

2. What is everything around us made of?

_____

_____

3. How do the tiny bits jiggle when an object is hot?

_____

_____

4. What is the rubbing of your hands called?

_____

_____

5. Why do your hands grow warmer when you rub them faster?

_____

_____

6. What can happen if you rub your skin for too long?

_____

_____

Words to know

friction: the rubbing of two things against each other
palm: the inside part of your hand
toasty: nice and warm
jiggle: to move quickly up and down or side to side

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: Rub Your Hands: Where Does the Warmth Come From?

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

Circle: Rub Your Hands: Where Does the Warmth Come From?

Easier · 150 words · Flesch-Kincaid grade 1.8

1. They rub them together.
2. Tiny bits you cannot see.
3. Fast.
4. Friction.
5. Faster rubbing makes more friction, so the tiny bits jiggle faster and make more heat.
6. It can get sore.

Triangle: Rub Your Hands: Where Does the Warmth Come From?

This passage · 177 words · Flesch-Kincaid grade 2.8

1. They rub them together.
2. Tiny bits too small to see.
3. Fast.
4. Friction.
5. Faster rubbing makes more friction, so the tiny bits jiggle faster and make more heat.
6. It can get sore.

Square: Rub Your Hands: Where Does the Warmth Come From?

Harder · 200 words · Flesch-Kincaid grade 4.6

1. They rub them together.
2. Tiny bits that are far too small to see.
3. Quickly.
4. Friction.
5. Faster rubbing creates more friction, so the tiny bits jiggle faster and make more heat.
6. It can become sore.