Name: _____ Date: _____

How Soap Cleans

Circle group

Water alone is not good at cleaning greasy hands. Rinse butter off your fingers with plain water, and the grease just slides around. That is because oil and water do not mix. Soap fixes this problem with a clever trick.

Every soap molecule has two ends. One end loves water. The other end loves oil and grease. When you rub soap on your hands, the oil-loving ends dig into the grease and dirt. The water-loving ends stick out toward the water. Soon the grease is circled by soap and broken into tiny droplets.

Water can grab these droplets now. When you rinse, the water carries the soap, the grease, and the dirt down the drain. Germs are often stuck to dirt and oil, so they go down the drain too. Some germs have an oily outer layer that soap can pull apart.

That is why doctors say to wash your hands for about twenty seconds. Rubbing helps the soap reach every spot. Wash under your nails and between your fingers. A song that lasts twenty seconds is a fun way to count the time.

Questions

1. Why does plain water have trouble cleaning grease?

_____

_____

2. What do the two ends of a soap molecule love?

_____

_____

3. What happens to grease when soap circles it?

_____

_____

4. Why do germs go down the drain with the soap and water?

_____

_____

5. Why is rubbing your hands together important when washing?

_____

_____

Words to know

grease: a thick, oily substance
molecule: a very tiny piece of a substance
droplets: very small drops of liquid
germs: tiny living things that can make people sick
rinse: to wash off with clean water

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: _____

How Soap Cleans

Triangle group

Water by itself is not very good at cleaning greasy hands. If you rinse butter off your fingers with plain water, the grease just slides around. That is because oil and water do not mix. Soap solves this problem, and it does so with a clever trick built into its tiny pieces.

Every soap molecule has two ends. One end loves water, and the other end loves oil and grease. When you rub soap on your hands, the oil-loving ends dig into the grease and dirt. The water-loving ends stick out toward the water around them. Soon the grease is surrounded by soap molecules and broken into very small droplets.

These droplets are now wrapped in a coat that water can grab. When you rinse your hands, the water carries the soap, the grease, and the dirt down the drain. Germs are often stuck to dirt and oil, so they go down the drain too. Some germs also have an oily outer layer that soap can pull apart.

That is why doctors suggest washing your hands for about twenty seconds. Rubbing helps the soap reach every spot, including under your nails and between your fingers. A song that lasts twenty seconds is a fun way to keep track of the time.

Questions

1. Why does plain water have trouble cleaning grease?

_____

_____

2. What do the two ends of a soap molecule love?

_____

_____

3. What happens to grease when it is surrounded by soap molecules?

_____

_____

4. Why do germs go down the drain with the soap and water?

_____

_____

5. Why is rubbing your hands together important when washing?

_____

_____

Words to know

grease: a thick, oily substance
molecule: a very tiny piece of a substance
droplets: very small drops of liquid
germs: tiny living things that can make people sick
rinse: to wash off with clean water

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: _____

How Soap Cleans

Square group

Water by itself performs poorly when it is asked to clean greasy hands. If you rinse butter from your fingers with plain water, the grease merely slides around, because oil and water refuse to mix. Soap overcomes this difficulty with a clever trick that is built into its microscopic pieces.

Every soap molecule has two distinct ends. One end is attracted to water, while the other end is attracted to oil and grease. When you rub soap on your hands, the oil-loving ends burrow into the grease and dirt, and the water-loving ends stick outward toward the surrounding water. Before long, the grease is encircled by soap molecules and broken into extremely small droplets.

These droplets are now wrapped in a coating that water is able to grab. When you rinse your hands, the water carries the soap, the grease, and the dirt down the drain. Germs are frequently stuck to dirt and oil, so they are washed away as well. Certain germs even have an oily outer layer that soap can pull apart.

That is why doctors recommend washing your hands for approximately twenty seconds. Rubbing helps the soap reach every spot, including beneath your nails and between your fingers. Humming a song that lasts twenty seconds is an enjoyable way to keep track of the time.

Questions

1. Why does plain water have trouble cleaning grease?

_____

_____

2. What are the two ends of a soap molecule attracted to?

_____

_____

3. What happens to grease when it is encircled by soap molecules?

_____

_____

4. Why are germs washed away along with the soap and water?

_____

_____

5. Why is rubbing your hands together important when washing?

_____

_____

Words to know

grease: a thick, oily substance
molecule: a very tiny piece of a substance
droplets: very small drops of liquid
germs: tiny living things that can make people sick
rinse: to wash off with clean water

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: How Soap Cleans

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

Circle: How Soap Cleans

Easier · 186 words · Flesch-Kincaid grade 3.4

1. Oil and water do not mix.
2. One end loves water and the other loves oil and grease.
3. It breaks into tiny droplets that water can carry away.
4. Germs are often stuck to dirt and oil, which the soap lifts away.
5. It helps the soap reach every spot.

Triangle: How Soap Cleans

This passage · 213 words · Flesch-Kincaid grade 5

1. Oil and water do not mix.
2. One end loves water and the other loves oil and grease.
3. It breaks into very small droplets that water can carry away.
4. Germs are often stuck to dirt and oil, which the soap lifts away.
5. It helps the soap reach every spot.

Square: How Soap Cleans

Harder · 220 words · Flesch-Kincaid grade 7.5

1. Oil and water refuse to mix.
2. One end is attracted to water and the other to oil and grease.
3. It breaks into extremely small droplets that water can carry away.
4. Germs are frequently stuck to dirt and oil, which the soap lifts away.
5. It helps the soap reach every spot.