Viscosity Lab Investigation

Name: Student A

What you need:

- 4 small plastic cups
  - Fill 1 cup ½ full of Nacho cheese
  - Fill 1 cup ½ full of vegetable oil
- 1 straw per person, cut in half
- 1 lab tray
- 1 ruler
- 1 timer: phone or stopwatch

Part 1 Instructions:

- Each person will grab ½ of a straw.
- One person at a time, place the straw into the cup of oil.
  - Blow bubbles like you would do with a soda.
    - Observe how hard you have to blow, and the force and size of the bubbles once the air gets through.
    - Do the same with the Nacho Cheese.

Record your observations below. All group members will do this.

a. Blowing in the oil:

When we blew in the oil we had to blow lightly. The bubbles got pretty big.

b. Blowing in the nacho cheese:

when we blew in the nacho cheese we had to blow hard. The bubble was pretty big.

Student A

Part 2 Instructions:

1. One team member will be the pourer, while another is the timer.
2. The pourer will first grab the cup with vegetable oil. Holding the ruler vertically (either person can hold the ruler), the pourer will hold the cup approximately 12 inches above an empty cup.
3. The timer will begin the timing as soon and the pourer begins to pour the oil into one of the empty cups.
4. The timer will stop the stopwatch as soon as the cup of oil is empty. Record this time in the table below.
5. Repeat steps 3-5 with the nacho cheese and the other empty cup.
6. Get some chips and eat your cheese if you want!

Liquid	Time (in seconds)
Oil	8 seconds
Nacho Cheese	1 min 63 seconds

Answer the questions below.

1. Describe your flow-test results. Why did you get the results you did?

We got the results on the oil because the viscosity is low. We got the results on the nacho cheese because the viscosity is high. It took the oil 8sec and the cheese 63 se

2. Is the viscosity of the oil higher or lower than the nacho cheese? How do you know?

The viscosity of the oil is lower because it flows faster than the nacho cheese.

3. One way to decrease the viscosity of a liquid is to heat (heat/cool) the fluid?

4. What factors affect the viscosity of a substance?

The factors are heat, and chemical structure

5. What would happen to the viscosity of the oil and the nacho cheese if you heated it up? What if you cooled it down? what happen to the oil when it is heated the viscosity will decreas. Same as the nacho cheese. If they cooled the viscosity will rise.

6. Can magma have different viscosities? What influences the viscosity of magma? (conduct research if you need to)

Yes it can if it's heated or cooled. what influences is heat.

7. If magma in a volcano has a high viscosity, would the eruption be quiet or explosive? Why? (Think of how the fluids reacted to you blowing air into them)

It would be explosive because it flows slower and the force used.

8. Could viscosity affect how often a volcano erupts? Why?

Yes, the gas has to build up.

9. What are some dangers of a volcanic eruption with high viscosity magma?

It's explosive it can shot material far in the air.

10. What are some dangers of a volcanic eruption with low viscosity magma?

That lava flows really fast ☺

Bonus: Do you prefer mashed potatoes with low or high viscosity? Explain.

I Prefer mashed potatoes with high viscosity because if it had low viscosity it would be watery.

Viscosity Lab Investigation

Name: Student B

What you need:

- 4 small plastic cups
  - Fill 1 cup ½ full of Nacho cheese
  - Fill 1 cup ½ full of vegetable oil
- 1 straw per person, cut in half
- 1 lab tray
- 1 ruler
- 1 timer: phone or stopwatch

Part 1 Instructions:

- Each person will grab ½ of a straw.
- One person at a time, place the straw into the cup of oil.
  - Blow bubbles like you would do with a soda.
    - Observe how hard you have to blow, and the force and size of the bubbles once the air gets through.
    - Do the same with the Nacho Cheese.

Record your observations below. All group members will do this.

a. Blowing in the oil: It makes bubbles

b. Blowing in the nacho cheese: It makes a little hole inside the Nacho cheese

Student B

Part 2 Instructions:

1. One team member will be the pourer, while another is the timer.
2. The pourer will first grab the cup with vegetable oil. Holding the ruler vertically (either person can hold the ruler), the pourer will hold the cup approximately 12 inches above an empty cup.
3. The timer will begin the timing as soon and the pourer begins to pour the oil into one of the empty cups.
4. The timer will stop the stopwatch as soon as the cup of oil is empty. Record this time in the table below.
5. Repeat steps 3-5 with the nacho cheese and the other empty cup.
6. Get some chips and eat your cheese if you want!

8.75
5.48
7.81

51.52
38.55
41.07

Liquid	Time (in seconds)
Oil	7.35
Nacho Cheese	43.71

Answer the questions below.

1. Describe your flow-test results. Why did you get the results you did?

The oil is a liquid and the Nacho cheese is a thick liquid. ↑ light

2. Is the viscosity of the oil higher or lower than the nacho cheese? How do you know?

It's ~~higher~~ because it pours faster.

3. One way to decrease the viscosity of a liquid is to heat (heat/cool) the fluid?

4. What factors affect the viscosity of a substance?

How thick it is.

5. What would happen to the viscosity of the oil and the nacho cheese if you heated it up? What if you cooled it down?

It goes ~~up~~ if its hot.

It ~~goes down~~ if its cooled.

6. Can magma have different viscosities? What influences the viscosity of magma? (conduct research if you need to)

Yes the chemical structure.

7. If magma in a volcano has a high viscosity, would the eruption be quiet or explosive? Why? (Think of how the fluids reacted to you blowing air into them)

It would be explosive because it builds up inside of it.

8. Could viscosity affect how often a volcano erupts? Why?

Yes because if the viscosity is high it takes a longer time.

9. What are some dangers of a volcanic eruption with high viscosity magma?

It makes an explosive erruption

10. What are some dangers of a volcanic eruption with low viscosity magma?

It flows really fast.

Bonus: Do you prefer mashed potatoes with low or high viscosity? Explain.

Viscosity Lab Investigation

Name: Student C

What you need:

- 4 small plastic cups
  - Fill 1 cup ½ full of Nacho cheese
  - Fill 1 cup ½ full of vegetable oil
- 1 straw per person, cut in half
- 1 lab tray
- 1 ruler
- 1 timer: phone or stopwatch

Part 1 Instructions:

- Each person will grab ½ of a straw.
- One person at a time, place the straw into the cup of oil.
  - Blow bubbles like you would do with a soda.
    - Observe how hard you have to blow, and the force and size of the bubbles once the air gets through.
    - Do the same with the Nacho Cheese.

Record your observations below. All group members will do this.

a. Blowing in the oil:

reqllyeqsy

b. Blowing in the nacho cheese:

its releqsing qir BOBles

Student C

Part 2 Instructions:

1. One team member will be the pourer, while another is the timer.
2. The pourer will first grab the cup with vegetable oil. Holding the ruler vertically (either person can hold the ruler), the pourer will hold the cup approximately 12 inches above an empty cup.
3. The timer will begin the timing as soon and the pourer begins to pour the oil into one of the empty cups.
4. The timer will stop the stopwatch as soon as the cup of oil is empty. Record this time in the table below.
5. Repeat steps 3-5 with the nacho cheese and the other empty cup.
6. Get some chips and eat your cheese if you want!

Liquid	Time (in seconds)
Oil	2.18
Nacho Cheese	55.03

Answer the questions below.

1. Describe your flow-test results. Why did you get the results you did?

oil: thicker
cheese: thicker

2. Is the viscosity of the oil higher or lower than the nacho cheese? How do you know?

it goes faster Dan's longer.

3. One way to decrease the viscosity of a liquid is to _____ (heat/cool) the fluid?

heat from a microwave

4. What factors affect the viscosity of a substance?

heat

5. What would happen to the viscosity of the oil and the nacho cheese if you heated it up? What if you cooled it down?

nacho goes faster + oil
then heat to oil is slower to cool

6. Can magma have different viscosities? What influences the viscosity of magma? (conduct research if you need to)

yes

7. If magma in a volcano has a high viscosity, would the eruption be quiet or explosive? Why? (Think of how the fluids reacted to you blowing air into them)

yes

8. Could viscosity affect how often a volcano erupts? Why?

I think when it's in the volcano it
is hot + not sticky But when it's out is not
it's sticky

9. What are some dangers of a volcanic eruption

it goes faster

10. What are some dangers of a volcanic eruptior

it goes slow

Bonus: Do you prefer mashed potatoes with low or high viscosity? Explain.

I have no idea