

Playing With Polymers

Name _____

1. What is polymerization? It is the process of chemically bonding _____ to form _____.

2. What are some examples of natural polymers?

- Cotton, silk, wool, and natural rubber are all _____ polymers made from plant or animal products.
- Protein is an essential ingredient in living matter and is made up of monomers called _____. It is also called a _____ chain.
- The _____ found in our cells is also a polymer. The monomer units of DNA are _____ and the polymer is known as a polynucleotide.

3. What are some examples of synthetic (manmade) polymers?

- Some synthetic polymers are manmade _____ and fabrics such as polyester, _____, and rayon.
- _____ is a synthetic polymer used to make a variety of products, such as water bottles, plastic _____, and kitchen utensils as well as safety _____, computers, and rocket engines.
- Polymers are also used in _____ as substitutes for human _____, such as bones and arteries.

4. What substances are used to make synthetic polymers?

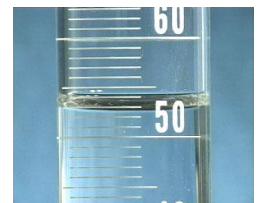
They are made from materials called _____, which are made from _____. Petroleum is made from the remains of _____ and _____ that have been buried beneath sediments at the bottom of the ocean. Over time, _____ and _____ changed the remains into petroleum, which is a _____ resource.

5. Answer these questions about measuring volume.

What instrument do we use to measure liquid volume? _____

What is the name of the “bubble” that forms at the top of the liquid? _____

What is the volume of water in this graduated cylinder? _____ ml

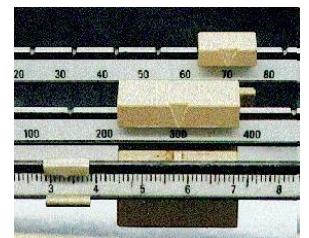


6. Answer these questions about measuring mass.

What instrument do we use to measure mass? _____ - _____

What unit is used to represent mass? _____

What is the mass of the object measured in the picture? _____



7. Fill in each blank as you discuss the safety rules in class.

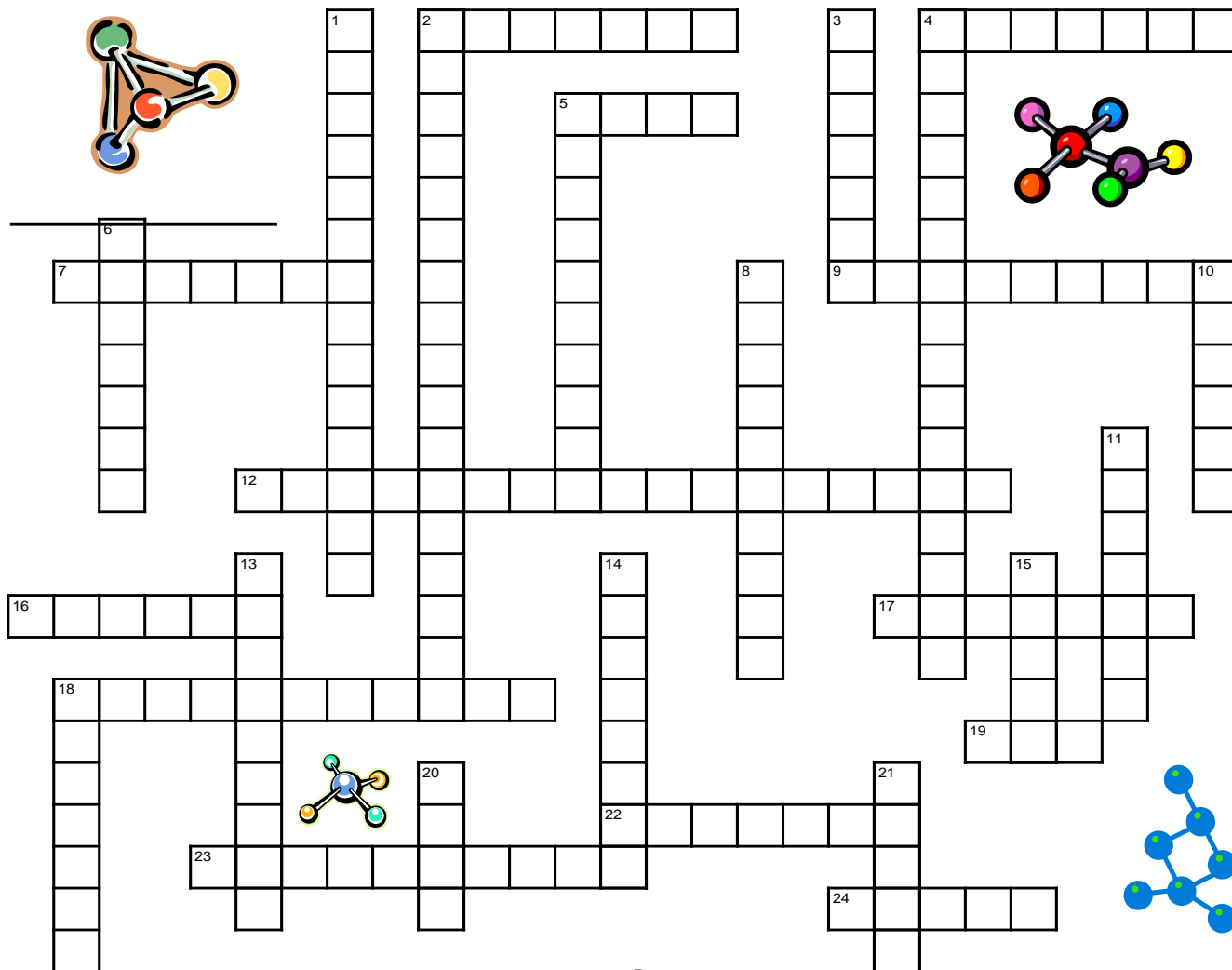
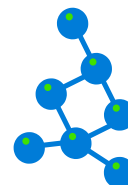
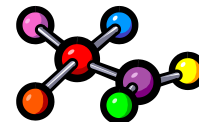
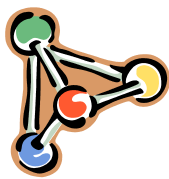
- (1) Read _____ carefully! If you are not sure what to do, ask for help. Do not make up your own recipes!
- (2) _____ should always be worn when experimenting with chemicals.
- (3) Do not _____ directly from the container! If you need to sniff slime, hold it several inches away from your face and use your hand to wave fumes towards your nose.
- (4) No eating or drinking during the lab, which also means that you should NOT eat the slime or _____ any substances used to make slime! Keep your slime out of reach of small _____ and _____.
- (5) Do not put the slime where it doesn't belong, such as on _____, carpeting, or other people!
- (6) Dispose of slime materials properly. All slime must be thrown away in the trash can. Use a dry towel to clean your hands, cup, and plate. DO NOT put any amount of slime in the _____!
- (7) Clean up _____ immediately! Your lab area should be clean when you start and clean when you leave.
- (8) _____ your hands before you leave class.
- (9) _____! No hitting, shoving, or other horseplay is allowed!
- (10) Slime must remain in the _____! You are not allowed to take it to other classes. You will be able to take the slime home on the last day!
- (11) Most of the slime will keep for ___-___ days. After your slime goes bad, throw it away! Do not dump in a sink!
- (12) If you do not follow the rules, you will not be allowed to do the experiments and will earn a _____ grade for this unit. If you agree to follow these safety rules, sign your name in the shaded box below.

I agree to follow the safety rules. I understand that if I do not follow the rules, I will not be allowed to do any experiments and will receive a zero grade for this unit.

Name _____ Date _____

Playing With Polymers

Name _____



Across

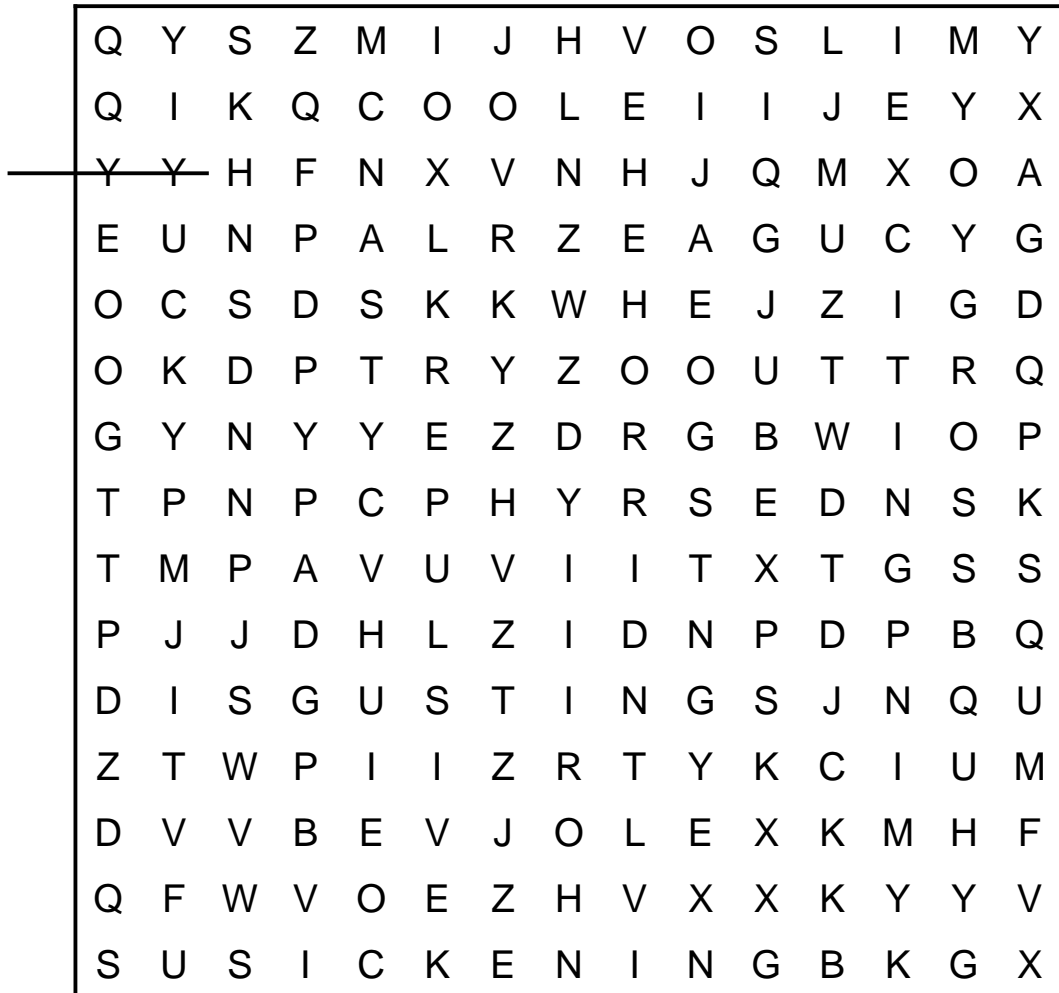
2. Thickening agent used in many foods (or in goobers)
4. Synthetic polymer used to make many products, such as water bottles and toys
5. A natural polymer created by many caterpillars and spiders
7. Links in a polymer chain
9. Manmade polymers, such as plastic, nylon, and polyester
12. Instrument used to measure mass
16. Used to help prevent wrinkles in your clothes
17. Chain of monomers that are chemically bonded together
18. A synthetic polymer used to cover food to prevent spoilage and contamination
19. The code of life found in each of our cells
22. Polymers made from plant and animal products found in nature, such as cotton, wool, silk, and natural rubber
23. Monomer that makes up the DNA molecule

Down

1. Process by which polymers are formed
2. Instrument used to measure volume
3. Slime made from laundry starch and white glue
4. Substance in white glue; used to make Super Slime
5. Slime made from PVA and borax solution
6. A slime made from guar gum and borax solution
8. Building blocks of proteins
10. A natural polymer used to make "soft" clothing
11. A mixture made from water and corn starch
13. A common adhesive used for making slime
14. Polymers may be used in this field as substitutes for human tissues
15. A synthetic polymer that is used to make silky fabrics, such as pantyhose
18. Polymer made up of chains of amino acids; also called a polypeptide chain
20. A natural polymer used for clothing, such as coats and socks
21. Slime made from white glue and borax solution

How could you describe your slime-making experience?

Find 14 words in the puzzle below that could be used to describe your experience!
Write the words on the lines at the bottom of this page.



C _ _ _

G _ _ _ _

R _ _ _ _ _ _ _

D _ _ _ _ _ _ _ _

H _ _ _ _ _

S _ _ _ _ _ _ _

E _ _ _ _ _ _ _

I _ _ _

S _ _ _ _

F _ _

N _ _ _ _

Y _ _ _ _

G _ _ _ _

O _ _ _

Playing With Polymers

Data Chart

Test	Gloop	Boogers	Goobers	Super Slime
Description Color, texture, odor, or other observations				
Slime Rating 1 = not very slimy to 4 = very slimy				
Slow Poke Test Slowly poke your finger into the slime. What happens?				
Quick Poke Test Quickly poke your finger into the slime. What happens?				
Slow Pull Test Slowly pull on the ends of a piece of the slime. What happens?				
Quick Pull Test Quickly pull on the ends of a piece of the slime. What happens?				
Blob Test Roll your slime into a ball and let it sit for a minute. What happens?				
Hang Test How long does it take for the slime to reach the table from a height of 30 cm?				
Bounce Test Roll into a ball and drop it on the table. Rate the bounce – 1 – poor to 5 -great!				

Slime Tests

Description

What does the slime look like? Does it smell? How would you describe its texture/feel?

Slime Rating

How slimy is your slime? Rate it from 1 = not very slimy to 4 = very slimy.

Slow Poke Test

Roll the slime into a ball, and then slowly poke your finger into it. What happens? How far does your finger go into the slime?

Quick Poke Test

Roll the slime into a ball, and then quickly poke the slime with your finger. What happens? How far does your finger go into the slime?

NOTE: *If you are not able to do a test (slime too runny or plops), write a note in that space on your chart to explain why you were not able to do the test.*

Slow Pull Test

Grab a glob of goop with your fingers and slowly pull on the ends. What happens?

Quick Pull Test

Grab a glob of goop with your fingers and quickly pull on the ends. What happens?

Blob Test – Need a timer!

Roll your goop into a ball and then sit the ball of slime on your plate or the table and time how long it takes for it to be a “blob” or flatten out. Write the time in your data chart.

Hang Test - Need a timer and a ruler!

Hold a glob of slime at a height of 30 cm above the table. Time how long it takes for the slime to reach the table. Write the time in your data chart.

Bounce Test - Need a ruler!

Roll your goop into a ball and drop from a height of 30 cm above the table. What happens?