Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

DNA

and

Chromatography

Due Date:

**Guide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Review \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Critical Thinking \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Concept Map \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Crossword \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

DNA and Chromatography Guide

DNA

nucleotides

CODIS

chromatography

mixture

compounds

solutions

solute

solvent

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Score\_\_\_\_\_\_\_\_

DNA and Chromatography Review

|  |  |  |  |
| --- | --- | --- | --- |
| DNA | chromatography | compounds | solute |
| nucleotides | mixture | solutions | solvent |
| CODIS |  |  |  |
|  |  |  |  |

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the database maintained by the FBI that is used to find matches to unknown DNA samples.
2. Mixtures in which one substance is dissolved in another are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the molecule that contains the genetic material of the cell.
4. Pairs of nitrogen bases in DNA that make the genetic code are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the physical separation of a mixture into its individual components.
6. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the substance that does the dissolving.
7. The substance that is dissolved is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are two or more elements that are chemically combined.
9. Two or more substances that are mixed together, but not chemically combined are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Match the nitrogen bases.

1. \_\_\_\_\_adenine a. adenine
2. \_\_\_\_\_guanine b. guanine
3. \_\_\_\_\_thymine c. thymine
4. \_\_\_\_\_cytosine d. cytosine
5. \_\_\_\_\_gets dissolved a. solvent
6. \_\_\_\_\_chemically combined b. solute
7. \_\_\_\_\_dissolves c. mixture
8. \_\_\_\_\_not chemically combined d. compound
9. \_\_\_\_\_inks and dyes a. paper chromatography
10. \_\_\_\_\_gasoline b. thin-layer chromatography
11. \_\_\_\_\_plant pigments c. gas chromatography
12. \_\_\_\_\_composition of chemicals d. liquid chromatography

Determine whether the statement is true (T) or false (F).

1. \_\_\_\_\_DNA found at a crime scene is always useful for identification.
2. \_\_\_\_\_DNA can identify victims even when a body can’t be found.
3. \_\_\_\_\_Chromatography tells investigators what items found at a crime scene are made of.
4. \_\_\_\_\_In a solution, the solute dissolves the solvent.
5. \_\_\_\_\_Mixtures can be separated by chromatography, because chromatography is a physical process.
6. Where is DNA located?
   1. Nucleotides
   2. Nitrogen bases
   3. Chromosomes
   4. Backbone
7. The order of nitrogen bases in DNA determines
   1. The nucleotides
   2. The backbone
   3. The deoxyribose
   4. The genetic code
8. DNA found at a crime scene can
   1. Link a suspect to the evidence
   2. Eliminate a suspect
   3. Identify a victim
   4. All of the above
9. Not all DNA collected at a crime scene is useful because
   1. It may get damaged by environmental conditions
   2. Many people have the same DNA
   3. DNA is not reliable for identifying suspects
   4. There is no national database for DNA profiles
10. Mixtures are different from compounds because
    1. Mixtures are made of two or more substance
    2. Mixtures make compounds
    3. Mixtures and compounds are the same thing
    4. Mixtures are not chemically combined
11. Chromatography can help investigators
    1. Match ink from a note and a pen
    2. Match makeup from a victim found on a suspect’s clothes.
    3. Match plants to a crime scene
    4. All of the above
12. CODIS is the
    1. Central organization of DNA identification system
    2. Combined DNA index system
    3. Combined DNA identification system
    4. Collection of DNA identities and surveillance
13. An example of a compound is
    1. Air
    2. Salt
    3. Fog
    4. Soda pop
14. How is DNA used as evidence?
15. Give an example of how chromatography can help solve a crime.
16. Describe the structure of a DNA molecule.

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Score\_\_\_\_\_\_\_\_

DNA and Chromatography Critical Thinking

1. How is DNA used as evidence? Give three examples.
2. What is chromatography used for?
3. What are solutions? How are they different from mixtures?
4. What kind of evidence can investigators get from chromatography?
5. What is CODIS and how is it used?
6. What are the nitrogen bases and how are they paired together?
7. What is the difference between a compound and a mixture?

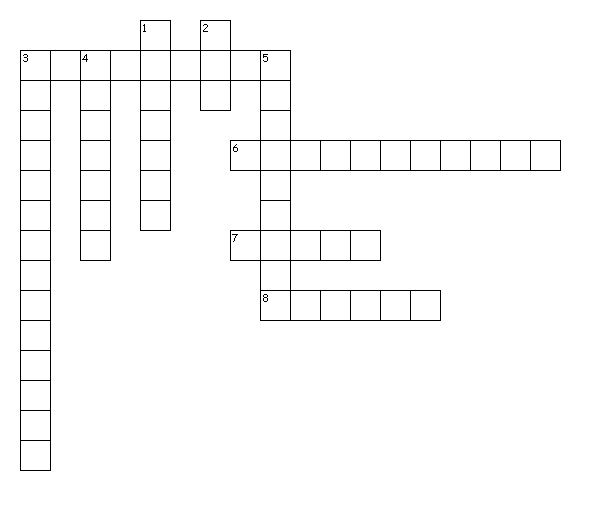
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DNA and Chromatography Concept Map

Use the following terms to create a concept map:paper, plant pigments, inks and dyes, chromatography, gasoline,thin-layer,liquid,composition of chemicals, gas.

1. Describe the structure of DNA.
2. What factors affect DNA?
3. What is chromatography?
4. What is a mixture?
5. What is a compound?

**DNA and Chromatography**



Across

3. two or more elements that are chemically combined

6. pairs of nitrogen bases in DNA that make the genetic code

7. database maintained by the FBI that is used to find matches to unknown DNA samples

8. substance that is dissolved

Down

1. substance that does the dissolving

2. molecule that contains the genetic material of the cell

3. physical separation of a mixture into its individual components

4. two or more substances that are mixed together, but not chemically combined.

5. mixtures in which one substance is dissolved in another

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Y | N | L | L | J | K | T | Q | V | S | J | S | H | C | G | W | S | U | X | H |
| N | H | U | J | Y | W | Z | M | D | W | P | E | L | Y | T | D | O | M | F | G |
| E | G | P | R | W | R | C | N | J | G | C | D | X | U | W | Y | L | Q | X | M |
| G | M | L | A | P | L | U | S | O | C | S | I | V | V | Y | O | V | H | H | Y |
| I | W | I | F | R | O | Q | S | O | L | U | T | I | O | N | S | E | A | I | D |
| Z | S | C | X | P | G | S | I | D | O | C | O | W | S | A | D | N | J | N | T |
| L | J | G | M | T | R | O | L | K | H | I | E | L | S | S | H | T | S | V | D |
| A | S | O | N | U | U | J | T | Z | D | A | L | V | T | V | X | O | B | O | L |
| B | C | B | J | R | L | R | W | A | F | N | C | Y | L | O | L | Q | K | T | R |
| F | E | J | J | X | X | Y | E | U | M | L | U | K | K | U | O | W | E | A | E |
| S | R | W | V | S | G | N | X | M | B | O | N | C | T | O | V | J | H | U | T |
| B | C | F | L | K | E | Y | P | C | A | T | R | E | A | L | G | K | M | B | T |
| I | T | J | Q | M | Z | V | D | O | E | C | U | H | I | E | R | V | G | O | L |
| A | K | C | X | N | Q | J | H | C | Z | K | E | O | C | F | Y | G | P | T | R |
| E | N | X | V | D | P | D | B | B | M | U | J | O | Y | X | R | W | T | M | D |
| E | Y | S | E | C | H | T | L | L | V | M | G | G | C | V | Z | A | D | Z | C |
| G | Y | D | C | G | I | H | X | A | R | O | K | R | H | J | K | V | T | F | K |
| N | S | M | I | A | V | Q | T | G | V | Q | X | H | D | N | V | B | P | I | M |
| K | E | E | L | H | L | T | T | L | X | W | Z | Z | S | M | O | N | O | P | H |
| K | B | X | F | F | Z | H | U | O | D | T | B | A | D | O | H | P | W | P | X |

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|  |
| CHROMATOGRAPHY | CODIS | COMPOUNDS |
| DNA | MIXTURE | NUCLEOTIDES |
| SOLUTE | SOLUTIONS | SOLVENT |

