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

Hair and Fiber Evidence

Due Date:

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

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

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

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

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

Hair and Fiber Evidence Guide

keratin

follicle

cuticle

medulla

cortex

fiber

natural fibers

synthetic fibers

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

Hair and Fiber Evidence Review

|  |  |  |  |
| --- | --- | --- | --- |
| keratin | cuticle | cortex | natural fibers |
| follicle | medulla | fiber | synthetic fibers |
|  |  |  |  |

1. The central core of hair is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are fibers from plants or animals.
3. Man-made fibers are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. The outer coating of hair composed of overlapping scales is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the protein that makes hair.
6. The protein-rich structure around the medulla that contains pigment is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
7. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the structure that produces hair.
8. The smallest unit of a textile material is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
9. \_\_\_\_\_Outer coating of hair. a. medulla
10. \_\_\_\_\_Contains the pigment of hair. b. cortex
11. \_\_\_\_\_Central core of hair. c. cuticle

Put in a list from most simple to most complex (use numbers).

1. \_\_\_\_\_yarn
2. \_\_\_\_\_fiber
3. \_\_\_\_\_fabric

Determine whether the fiber is natural (N) or synthetic (S).

1. \_\_\_\_\_rayon
2. \_\_\_\_\_cotton
3. \_\_\_\_\_polyester
4. \_\_\_\_\_wool
5. \_\_\_\_\_nylon

Determine whether the hair structure distinguishes between different humans (H) or between different species (S).

1. \_\_\_\_\_cortex
2. \_\_\_\_\_medulla
3. \_\_\_\_\_cuticle

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

1. \_\_\_\_\_Hair follicles produce hair.
2. \_\_\_\_\_Cross transfer occurs when fibers are transferred from the victim to the suspect.
3. \_\_\_\_\_Nuclear DNA is found in the cortex.
4. \_\_\_\_\_Hair is made of keratin.
5. How is hair like a pencil?
6. Hair is composed of the protein
	1. Follicle
	2. Keratin
	3. Cuticle
	4. Cortex
7. The outer coating of a hair.
	1. Medulla
	2. Root
	3. Cuticle
	4. Cortex
8. Synthetic fibers are made
	1. By plants
	2. By animals
	3. By plants and animals
	4. By humans
9. Wool comes from
	1. Cows
	2. Sheep
	3. Petroleum
	4. Rabbits
10. Fibers make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which is used to make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	1. Wool and yarn
	2. Yarn and polyester
	3. Wool and fabric
	4. Fabric and wool
11. The part of a hair that is used to distinguish between two different people is the
	1. Medulla
	2. Cortex
	3. Root
	4. Cuticle
12. Opacity of hair is
	1. Continuous structure
	2. Texture
	3. Color
	4. How much light is able to pass through the hair.
13. Which part of a hairs structure contains scales?
	1. Medulla
	2. Cortex
	3. Root
	4. Cuticle
14. What is cross transfer and what does it tell investigators?
15. What kind of information can investigators get from analyzing hair?

Label the structures of hair.

1. \_\_\_\_\_cuticle
2. \_\_\_\_\_medulla
3. \_\_\_\_\_cortex

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

Hair and Fiber Evidence Critical Thinking

1. How does hair and fiber evidence help an investigation? What can it tell investigators?
2. How is hair like a pencil?
3. What is the difference between natural and synthetic fibers?
4. What does each part of a hair tell investigators?
5. Where is the DNA of a hair? What can it tell investigators?

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Hair and Fiber Evidence Concept Map

Use the following terms to create a concept map: hair, medulla, scales, cortex, identify individuals, outer layer, central core, cuticle, surround medulla, color.

1. Draw or describe the structure of a human hair.
2. What information can investigators get from the cuticle?
3. Which part of the hair is used to identify people?
4. Which part of the hair determines whether it is human or animal?
5. What is cross transfer?

**Hair and Fiber Evidence**



Across

4. protein that makes hair

6. outer coating of hair composed of overlapping scales

7. structure that produces hair

Down

1. man-made fibers

2. fibers from plants or animals

3. the smallest unit of a textile material

5. central core of hair

6. protein-rich structure around the medulla that contains pigment

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

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|  |
| CORTEX | CUTICLE | FIBER |
| FOLLICLE | KERATIN | MEDULLA |
| NATURAL | SYNTHETIC |  |

