

Anticipation Guide

Name: _____

Directions: *Before reading the article*, in the first column, write “A” or “D,” indicating your agreement or disagreement with each statement. As you read, compare your opinions with information from the article. In the space under each statement, cite information from the article that supports or refutes your original ideas.

Me	Text	Statement
		1. The composition of most paper comes from tree fibers.
		2. Cellulose is the most abundant natural polymer.
		3. Both the length and width of wood fibers depends on the type of tree it comes from.
		4. Cellulose is hydrophilic (“water-loving”).
		5. Hydrogen bonding holds toilet paper together.
		6. Cellulose, sugars, and starches are carbohydrates.
		7. Sturdy paper such as mail envelopes have hydrophilic compounds added to them.
		8. Recycling facilities must separate the different types of paper prior to recycling.
		9. Paper towels have fewer covalent bonds than toilet paper.
		10. Natural paper is bright white.

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Graphic Organizer

Directions: As you read, complete the graphic organizer below to compare different ingredients in paper. The last row refers to a hydropulper, which is explained in the article.

	What is it?	Structure	Properties	Interesting fact
Cellulose				
Wood fibers				
Microfibrils				
Sizing agents				
Hydrapulper		<i>How does it work?</i>		

Summary: In the space below, or on the back of this paper, write a short sentence (20 words or less) summarizing the article.

Student Reading Comprehension Questions

Name: _____

Directions: Use the article to answer the questions below.

1. In the table below, list three properties and a use for each that make paper useful for humans.

Property	Use

2. What are three characteristics of tree fibers that provide paper's versatility?

3. Complete the table below regarding types of wood fibers.

Type of wood fiber	Source	Length of fiber	Use

4. What force binds the long polymeric chains of cellulose to each other, forming rigid crystalline regions?
5. What is the composition of tree cell walls?
6. (a) Define hydrophilic, and (b) explain what effect this property has on cellulose.

Student Reading Comprehension Questions, cont.

7. Why do some paper products, like toilet paper, come apart easily in water?

8. How does a hydropulper work to help recycle paperboard products?

9. (a) What are sizing agents used on paper, and (b) how do they work?

10. What is done to paper towels to make them (a) strong, and (b) absorbent?

11. What substance is added to printer paper to make it appear brighter or whiter?

Critical-Thinking Questions

Write your answers on another piece of paper if needed.

1. Cellulose is a polysaccharide found in plants, while glycogen is a polysaccharide found primarily in animals. Research and then prepare a table comparing the composition and structure of cellulose and glycogen, including their monomers, bonding links, strengths, solubilities, sources, and uses.

2. The article mentions, but it does not completely describe, holocellulose, cellulose, and hemicellulose. Research and explain the composition and relationships among these three components.