

Paper Science

1. **DESCRIPTION:** Teams will complete an experiment with a complementing written test on paper properties.

A TEAM OF UP TO: 2 **EYE PROTECTION:** C **IMPOUND:** No **APPROX. TIME:** 50 Minutes

2. **EVENT PARAMETERS:**

- a. Each team may bring one 8.5" x 11" sheet of paper that may contain information of both sides in any form from any source.
- b. Each team may bring a calculator of any type dedicated to computation and something to write with.
- c. Event supervisors will provide all other materials necessary for the competition.

3. **THE COMPETITION:**

Part I: Written Test

- a. Teams will take a test on concepts relating to paper.
- b. Unless otherwise requested, answers must be in metric units with appropriate significant figures.
- c. Teams will be given a written test consisting of multiple-choice, true-false, completion, or calculation question/problems.
- d. The test will consist of at least five questions from each of the following areas:
 - i. Water-surface interactions
 - ii. Paper properties such as strength, dirt count, recyclability
 - iii. Fiber morphology
 - iv. The history of paper

Part II: Experiment

- e. Teams will be asked to test one of the following of a provided sample.
 - i. Water-surface interaction
 - ii. Paper properties such as strength, dirt count, recyclability
 - iii. Fiber morphology
- f. The teams will need to record the measured values during the experiment on the provided answer sheet.
- g. Unless otherwise requested, answers must be in metric units with appropriate significant figures.
- h. The teams will need to complete the corresponding calculations, if applicable.
- i. Teams will be given a minimum of 20 minutes to complete the experiment.

4. **SCORING:**

- a. High score wins.
- b. Scoring for Part II will take in account whether the measured values are recorded and if they are correct.
- c. Teams that are disqualified for unsafe operation or do not bring proper eye wear will receive zero points for Part II of the competition but will still be allowed to compete in Part I.
- d. Tie Breaker: Selected questions at the end of the written test will be used in the event of a tie.

Recommended Resources: Presentations and other online resources available at

<https://cnr.ncsu.edu/fb/extension-outreach/paper-science-outreach-k-12/course-lectures-and-labs/>