

# Paper Pool Project Rubric

This rubric employs a point scale for four different areas of assessment, for a total of 21 possible points. (The rubric does not assess students' work on the optional extension questions on the length of the path of the ball or the symmetry of the path.) Use the rubric as presented here, or modify it to fit your needs and your district's requirements for evaluating and reporting students' work and understanding.

## Mathematics (0-8 points)

### *Rules or patterns for predicting the stopping corner (0-4 points)*

- 4** Student states at least one correct sophisticated rule and addresses all possible situations for where the ball will stop.
- 3** Student states one correct sophisticated rule or several specific rules that address several possible situations for where the ball will stop.
- 2** Student states at least two correct specific rules.
- 1** Student shows evidence of searching for a pattern but states no original pattern or rule or student states one specific rule.
- 0** Student does not engage in the task *or* gives no patterns or rules.

### *Rules or patterns for predicting the number of hits (0-4 points)*

- 4** Student states at least one correct sophisticated rule and addresses all possible situations for the number of hits.
- 3** Student states one correct sophisticated rule or several specific rules that address several possible situations for the number of hits.
- 2** Student states at least two correct specific rules.
- 1** Student shows evidence of searching for a pattern but states no original pattern or rule or student states one specific rule.
- 0** Student does not engage in the task *or* gives no patterns or rules.

### **Problem Solving and Reasoning (0-4 points)**

- 4 Student shows complete reasoning to support sophisticated rules for both situations.
- 3 Student shows adequate reasoning to support at least one sophisticated rule or student gives complete reasoning to support specific rules for both situations.
- 2 Student shows reasoning about rules through words or organizational instruments but the reasoning is weak - tests an inadequate variety of situations and draws conclusions that would require testing more cases or examining more varied arrangements or student has only one or two specific rules and does not address both situations.
- 1 Student shows reasoning about rules through words or organizational instruments but the reasoning is faulty - it employs incorrect logic or nonsensical statements in the context of the problem or student only reasons through one specific rule.
- 0 Student does not engage in the task.

### **Communication (0-4 points)**

- 4 Report is clearly written and easy to follow.
- 3 With some extra effort, the reader can follow the student's report.
- 2 Significant effort is needed to follow the student's report.
- 1 Student does not address the task.
- 0 Student does not communicate in any form.

### **Checklist (0-5 points)**

- 2 Student gives a correct new table for each rule and gives at least two rules. (One rule and one correct corresponding table is worth 1 point.)
- 2 Students use organizational tool(s) to search for patterns and rules. (Quality is the determining factor for giving a paper 0, 1, or 2 points.)
- 1 Student completes the Lab sheets.