

**Bull’s Eye Math – Scoring Sheet**

Student Name: \_\_\_\_\_

Place a score (1-4) in each row corresponding to the student’s college readiness level.

**Exceeding College Ready (4):** Substantially exceeds the performance expectations**College Ready (3):** Shows proficiency in all of the performance expectations**Approaching College Ready (2):** Meets only some of the performance expectations**Initiating College Ready (1):** Does not yet meet the performance expectations

KEY COGNITIVE SKILLS	Student’s Self-Assessment	Instructor’s Score
<b>Reasoning</b> (considers arguments and conclusions of self and others; constructs well-reasoned arguments to explain phenomena, validate conjectures, or support positions)		
<b>Problem Solving</b> (analyzes the situation to identify the problem to be solved; develops and applies multiple strategies to solve problems)		
<b>Academic Behaviors</b> (self-monitors learning needs and seeks assistance when needed; uses study habits necessary to manage academic pursuits and requirements; strives for accuracy and precision; perseveres to complete and master tasks)		
<b>Work Habits</b> (works independently; works collaboratively)		
FOUNDATIONAL SKILLS	Student’s Self-Assessment	Instructor’s Score
<b>Writing Across the Curriculum</b> (writes clearly and coherently using standard writing conventions; composes and revises drafts)		
<b>Research Across the Curriculum</b> (designs and presents an effective product)		
<b>Technology</b> (uses technology to gather information)		
MATHEMATICS STANDARDS	Student’s Self-Assessment	Instructor’s Score
<b>Geometric Reasoning</b> (makes connections between geometry, statistics, probability, and measurement)		
<b>Probabilistic Reasoning</b> (computes and interprets probabilities)		
<b>Problem Solving and Reasoning</b> (determines a solution, justifies the solution, and evaluates the problem-solving process; develops and evaluates convincing arguments)		
<b>Communication and Representation</b> (summarizes and interprets mathematical information provided orally, visually, or in written form; explains, displays, or justifies mathematical ideas and arguments using precise mathematical language in written and oral communications)		

See reverse for  
comments.

Score	College Readiness Level
39-44	Exceeding College Ready
32-38	College Ready
17-31	Approaching College Ready
0-16	Initiating College Ready

Total Score: \_\_\_\_\_

Grade: \_\_\_\_\_

See Scoring Guide for grade  
conversion chart.

## Bull’s Eye Math – Scoring Guide

*Note: The letters and numbers of the skills below refer to their designation in the College and Career Readiness Standards.*

### KEY COGNITIVE SKILLS

#### B. Reasoning

##### 1. Consider arguments and conclusions of self and others.

*College Ready Description:* Student makes plausible conjectures about geometric probability and verifies them with probability computations. Student thoroughly supports all conclusions with correct computations.

*Evidence for Scoring:* In the *Square Target* handout, the student suggests making two additional squares white to obtain a probability of 56% that the penny will land on a white square and then shows a computation verifying that this is a correct approach. In designing a target, the student confirms that the claimed probabilities are correct by computing them from geometric formulas.

##### 2. Construct well-reasoned arguments to explain phenomena, validate conjectures, or support positions.

*College Ready Description:* Student writes a thorough report explaining his or her work on the design problem.

*Evidence for Scoring:* In addition to presenting the design and verifying that it meets the criteria, the student includes thoughtful reflections on the process.

#### C. Problem Solving

##### 1. Analyze the situation to identify the problem to be solved.

*College Ready Description:* Student adequately applies previously learned knowledge to the design of a target. Student demonstrates full understanding of all elements of the challenge to design a target, including relevant givens and constraints.

*Evidence for Scoring:* Student correctly applies geometric and probabilistic reasoning to determine proportions of given figures that have specified colors. Student includes at least two sections of each of the given colors, same-colored shapes are congruent, and areas result in the given probabilities.

##### 2. Develop and apply multiple strategies to solve problems.

*College Ready Description:* Student uses appropriate mathematical techniques to compute all areas and probabilities.

*Evidence for Scoring:* Student computes the area of a ring by subtracting the area of the inner circle from the area of the outer circle.

#### D. Academic Behaviors

##### 1. Self-monitor learning needs and seek assistance when needed.

*College Ready Description:* Student keeps a mindful eye on his or her integration of knowledge as it progresses and is able to ask fellow students and the instructor for help.

*Evidence for Scoring:* Student is comfortable admitting he or she does not know an answer and is willing to re-examine the material to relearn.

## 2. Use study habits necessary to manage academic pursuits and requirements.

*College Ready Description:* Student looks over the material he or she needs to incorporate and tries to come up with a logical approach to complete the task in the allotted time.

*Evidence for Scoring:* Student manages their time to complete the report on their final design with the appropriate amount of detail.

## 3. Strive for accuracy and precision.

*College Ready Description:* Student performs mathematical calculations correctly. Student appropriately chooses the level of precision to use.

*Evidence for Scoring:* Student fills in the Archery Target table with correct areas and probabilities. Student may take the opportunity to round areas in the designed target.

## 4. Persevere to complete and master tasks.

*College Ready Description:* Student submits a final design and report that demonstrates a thorough understanding of the problem and meets all requirements of the assignment.

*Evidence for Scoring:* Student provides all relevant area computations and connects them to probabilities.

## E. Work Habits

### 1. Work independently.

*College Ready Description:* Student can work through the problems by themselves.

*Evidence for Scoring:* Student does not wait until the group work to start thinking about the activity.

### 2. Work collaboratively.

*College Ready Description:* Student shows ability to work in a group; this involves comparing ideas, understanding those of others, and offering constructive critiques.

*Evidence for Scoring:* Student works successfully with a partner to complete Square Target and Circular Target handouts.

## FOUNDATIONAL SKILLS

## B. Writing Across the Curriculum

### 1. Write clearly and coherently using standard writing conventions.

*College Ready Description:* Student correctly and effectively uses symbols, diagrams, and text to communicate his or her design process and product. Student uses appropriate terminology to communicate concisely. Student uses proper grammar, mechanics, punctuation, and spelling.

*Evidence for Scoring:* Student’s target specifications in the sketch include clear labels and descriptive text. Student distinguishes between probabilities and areas when writing the report.

**3. Compose and revise drafts.**

*College Ready Description:* Student submits a final report that clearly describes the student’s assumptions, methods, and conclusions and supports those conclusions with appropriate probability computations.

*Evidence for Scoring:* Student’s process for creating the target is clear enough for a third party to reproduce the same shape without reference to a figure.

**C. Research Across the Curriculum****6. Design and present an effective product.**

*College Ready Description:* Student clearly and concisely communicates the target design, the design process, and his or her reflections in a well-sequenced report.

*Evidence for Scoring:* Student presents an attractive and easily understood sketch with accompanying specifications; conveys the nature of the design process (linear, iterative, other); and shares insightful reflections.

**E. Technology****1. Use technology to gather information.**

*College Ready Description:* Student makes appropriate use of a graphing calculator.

*Evidence for Scoring:* Student does multiple calculations that are similar by using 2<sup>nd</sup> enter to repeat the previous entry.

**MATHEMATICS STANDARDS****III. Geometric Reasoning.****C.2, 3. Connections between geometry and other mathematical content strands.**

*College Ready Description:* Student makes connections between geometry, statistics, probability, and measurement.

*Evidence for Scoring:* Student demonstrates the connection between geometry and probability using their target design.

**V. Probabilistic Reasoning****B.1. Computation and interpretation of probabilities.**

*College Ready Description:* Student computes and interprets probabilities.

*Evidence for Scoring:* Student tosses a penny onto a checkered target and determines the probability of the penny landing in a particular square.

**VIII. Problem Solving and Reasoning****A.3, 4, 5. Mathematical problem solving.**

*College Ready Description:* Student determines a solution to a problem, justifies the solution, and evaluates the problem-solving process.

*Evidence for Scoring:* Student experiments with different game target designs and describes why his or her design fits certain criteria.

### **B.1. Logical reasoning.**

*College Ready Description:* Student develops and evaluates convincing arguments.

*Evidence for Scoring:* Student explains why their target meets the design criteria.

## **IX. Communication and Representation**

### **B.2. Interpretation of mathematical work.**

*College Ready Description:* Student summarizes and interprets mathematical information provided orally, visually, or in written form within the given context.

*Evidence for Scoring:* Student writes a report describing the process used to create a game target.

### **C.3. Presentation and representation of mathematical work.**

*College Ready Description:* Student explains, displays, or justifies mathematical ideas and arguments using precise mathematical language in written or oral communications.

*Evidence for Scoring:* Student answers all questions and follows instructions in their report.

## Bull’s Eye Math – Scoring Instructions

Place a score (1-4) in each row of the scoring sheet corresponding to the student’s college readiness level.

**Exceeding College Ready (4):** Substantially exceeds the performance expectations

**College Ready (3):** Shows proficiency in all of the performance expectations

**Approaching College Ready (2):** Meets only some of the performance expectations

**Initiating College Ready (1):** Does not yet meet the performance expectations

Suggested Grade Conversion:

This chart reflects equal weight given to each skill. As key cognitive skills, foundational skills, and discipline content knowledge are all important elements of college readiness, we recommend this grading approach. However, you may certainly choose to implement different weights to particular scales and assign a grade at your discretion.

Score	Grade		Score	Grade		Score	Grade		Score	Grade
44	100		35	90		26	79		17	70
43	99		34	88		25	78		16	68
42	98		33	86		24	77		15	66
41	97		32	85		23	76		14	64
40	96		31	84		22	75		13	62
39	95		30	83		21	74		12	60
38	94		29	82		20	73			
37	93		28	81		19	72			
36	92		27	80		18	71			