

Let the Games Begin – Individual Work 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
Intellectual Curiosity (engages in scholarly inquiry and dialogue)		
Reasoning (gathers evidence to support arguments, findings, or lines of reasoning; supports or modifies claims based on inquiry)		
Problem Solving (collects evidence and data systematically and directly relates them to solving a problem)		
Academic Behaviors (self-monitors learning needs and seeks assistance when needed; uses good study habits; strives for accuracy and precision; perseveres to complete and master tasks)		
Work Habits (works independently)		
MATHEMATICS STANDARDS	Student's Self-Assessment	Instructor's Score
Probabilistic Reasoning (computes and interprets probabilities)		
Problem Solving and Reasoning (analyzes given information, formulates a plan or strategy, determines a solutions, justifies the solution, and evaluates the problem-solving process; develops and evaluates convincing arguments)		
Communication and Representation (summarizes and interprets mathematical information provided orally, visually, or in written form within the given context; explains, displays, or justifies mathematical ideas, arguments using precise mathematical language in all communications)		

Score	College Readiness Level
28-32	Exceeding College Ready
24-27	College Ready
12-23	Approaching College Ready
0-11	Initiating College Ready

Total Score: _____

Grade: _____

See Scoring Guide for grade conversion chart.

Comments:

Let the Games Begin – Group Work Scoring Sheet

Group Name(s): _____

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	Group’s Assessment	Instructor’s Score
Intellectual Curiosity (engages in scholarly inquiry and dialogue; accepts constructive criticism and revises personal views when valid evidence warrants)		
Reasoning (considers arguments, conclusions of self, others; constructs well-reasoned arguments to explain phenomena, validate conjectures, support positions; gathers evidence to support arguments, findings, lines of reasoning; support/modifies claims based on the results of an inquiry)		
Problem Solving (analyzes a situation to identify the problem to be solved; develops and applies multiple strategies to solve a problem; collects evidence and data systematically and directly relates them to solving a problem)		
Academic Behaviors (strives for accuracy and precision; perseveres to complete and master tasks)		
Work Habits (works collaboratively)		
FOUNDATIONAL SKILLS	Group’s Assessment	Instructor’s Score
Writing Across the Curriculum (writes clearly and coherently using standard writing conventions; writes in a variety of forms for various audiences and purposes)		
Research Across the Curriculum (synthesizes and organizes information effectively; designs and presents an effective product; presents final product)		
Use of Data (uses statistical and probabilistic skills for planning, collecting, analyzing, interpreting data; presents analyzed data and communicates findings in a variety of formats)		

Score	College Readiness Level
28-32	Exceeding College Ready
24-27	College Ready
12-23	Approaching College Ready
0-11	Initiating College Ready

Total Score: _____

Grade: _____

See Scoring Guide for grade conversion chart.

Comments:

Let the Games Begin – Scoring Guide for Individual Work

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

KEY COGNITIVE SKILLS

A. Intellectual Curiosity

1. Engage in scholarly inquiry and dialogue.

College Ready Description: Student systematically investigates games of chance.

Evidence for Scoring: Student uses the experimental and theoretical probabilities of the *Even or Odd?* game to correctly state and support the expectation that in a graph of the experimental data for more trials, the part of the bar for the outcome “even” would approach 75% more closely.

B. Reasoning

3. Gather evidence to support arguments, findings, or lines of reasoning.

College Ready Description: Student accurately records data and computes relevant statistics.

Evidence for Scoring: Student correctly computes the expected value of the *Even or Odd?* game.

4. Support or modify claims based on the results of an inquiry.

College Ready Description: Student carefully and correctly uses new information to support or modify his or her arguments.

Evidence for Scoring: Student correctly supports or modifies predictions about the *Even or Odd?* game based on the computed expected values.

C. Problem Solving

3. Collect evidence and data systematically and directly relate to solving a problem.

College Ready Description: Student collects data systematically. Student produces a graph representing experimental results that allows interpretation with respect to theoretical probabilities. Student uses all available data to justify an assessment of the fairness of the *Even or Odd?* game.

Evidence for Scoring: Student’s list of possible outcomes for *Even or Odd?* is organized in a way that allows for interpretation. Student creates a graph of the players’ results for *Even or Odd?* and predicts the appearance of the graph after more rounds of play, based on theoretical probabilities. Student uses the theoretical and experimental probabilities, as well as the expected values, to show that the odds are greatly in the *even* player’s favor.

D. Academic Behaviors

1. Self-monitor learning needs and seek assistance.

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 time to complete the assignment with the appropriate amount of detail.

3. Strive for accuracy and precision.

College Ready Description: Student carefully and correctly collects and reports trial data. Student accurately produces graphs, including labeling.

Evidence for Scoring: Student accurately assigns points for each round of play in the *Even or Odd?* game. Student includes labels and a suitable scale on the *Even or Odd?* Probability of Winning graph.

4. Persevere to complete and master tasks.

College Ready Description: Student carefully and correctly investigates and analyzes the *Even or Odd?* game.

Evidence for Scoring: Student writes a well-supported explanation of the fairness of the game and at least one way the game could be made fair.

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.

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

College Ready Description: Student computes and interprets probabilities.

Evidence for Scoring: Student records the experimental probability after playing 25 rounds of the *Even or Odd?* game.

VIII. Problem Solving and Reasoning**A.1, 2, 3, 4, 5. Mathematical problem solving.**

College Ready Description: Student analyzes given information, formulates a plan or strategy, determines a solution, justifies the solution, and evaluates the problem-solving process.

Evidence for Scoring: Student creates a probability game that satisfies the design criteria.

B.1. Logical reasoning.

College Ready Description: Student develops and evaluates convincing arguments.

Evidence for Scoring: Student develops a convincing argument for whether or not the game is fair.

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 creates a game that follows the design criteria.

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 clearly demonstrates their game including the probability behind used to design the game.

Let the Games Begin – Scoring Guide for Group Work

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

KEY COGNITIVE SKILLS**A. Intellectual Curiosity****1. Engage in scholarly inquiry and dialogue.**

College Ready Description: Group demonstrates a clear understanding of the problem by employing data analysis and creativity to design an engaging game that meets all given criteria.

Evidence for Scoring: Group revises its game design based on calculations that show the odds of winning to be too low for the game to be expected to be attractive to carnival attendees.

2. Accept constructive criticism and revise personal views when valid evidence warrants.

College Ready Description: Group thoughtfully considers assessments of the proposal and revises and defends the game design as warranted.

Evidence for Scoring: Group considers feedback that the odds of winning will not appear acceptable to carnival attendees and revises the game to improve the perception of the odds of winning.

B. Reasoning**1. Consider arguments and conclusions of self and others.**

College Ready Description: Group thoughtfully reflects on the assessments received.

Evidence for Scoring: Group reviews its computations and convincingly argues that the game, contrary to the feedback, should be expected to produce an attractive profit for *Carnival-O-Rama*.

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

College Ready Description: Group clearly and convincingly describes how the game design meets the criteria.

Evidence for Scoring: Group presents a positive expected value, as well as data from sufficient testing, to argue that the game will appeal to carnival attendees and yield an attractive profit for *Carnival-O-Rama*.

3. Gather evidence to support arguments, findings, or lines of reasoning.

College Ready Description: Group successfully identifies and collects all needed data and information to determine that the game design meets all criteria.

Evidence for Scoring: Group compares the experimental and theoretical probability and develops an explanation for irregularities identified.

4. Support or modify claims based on the results of an inquiry.

College Ready Description: Group thoughtfully uses gathered evidence to support, and to modify, if needed, the proposed game design.

Evidence for Scoring: Group raises the cost to play the *Carnival-O-Rama* game when the team's original idea is determined to result in a loss to the company.

C. Problem Solving**1. Analyze a situation to identify the problem to be solved.**

College Ready Description: Group correctly breaks the problem down into smaller parts.

Evidence for Scoring: In creating the *Carnival-O-Rama* game, the group determines probabilities of outcomes before attempting to set a price on playing the game.

2. Develop and apply multiple strategies to solve a problem.

College Ready Description: Group uses appropriate mathematical methods, techniques, and strategies to gather and analyze information to inform the game design.

Evidence for Scoring: Group computes expected values to determine a suitable price to charge attendees to play the game.

3. Collect evidence and data systematically and directly relate to solving a problem.

College Ready Description: Group collects all required data and calculations and interprets them effectively to create a successful game design.

Evidence for Scoring: Group provides accurate and convincing support for its game design in a proposal that then gets high scores and positive feedback in the assessments.

D. Academic Behaviors**3. Strive for accuracy and precision.**

College Ready Description: Group carefully and correctly collects trial data and makes computations.

Evidence for Scoring: Group plays enough rounds of its game to make and support a prediction about likely outcomes.

4. Persevere to complete and master tasks.

College Ready Description: Group creates and submits materials that demonstrate thorough understanding of the problem and meet all requirements of the assignment.

Evidence for Scoring: Group presents a complete game proposal, the assessments received, and any responses to the assessments that are warranted.

E. Work Habits

2. Work collaboratively.

College Ready Description: Group is engaged in working to design the game.

Evidence for Scoring: All group members actively participate in the presentation of the proposal and in providing feedback to other groups.

FOUNDATIONAL SKILLS

B. Writing Across the Curriculum

1. Write clearly and coherently using standard writing conventions.

College Ready Description: Group carefully prepares a game proposal that is technically correct and clear.

Evidence for Scoring: Group describes the rules of the game in such a way that other students feel confident, after reading the rules, that they understand how to play, how to win, the cost, and the prize.

2. Write in a variety of forms for various audiences and purposes.

College Ready Description: Group writes persuasive arguments.

Evidence for Scoring: Group writes a convincing proposal for their game.

C. Research Across the Curriculum

5. Synthesize and organize information effectively.

College Ready Description: Group organizes the team's data and calculations to weigh important factors in the design of the game.

Evidence for Scoring: Group easily accesses its documentation of the results of testing the game and of the theoretical probability of winning to evaluate whether the variation in experimental results might affect the player's perception of the odds of winning.

6. Design and present an effective product.

College Ready Description: Group delivers an engaging presentation of a proposal for a game that meets all the given criteria.

Evidence for Scoring: Group receives well-deserved high assessment scores and positive feedback for the proposal.

8. Present final product.

College Ready Description: Group uses appropriate media for presenting information.

Evidence for Scoring: Group presents game and game proposal to the class.

D. Use of Data**2. Use statistical and probabilistic skills necessary for planning an investigation, and collecting, analyzing, and interpreting data.**

College Ready Description: Group carries out a thorough data analysis to devise a game that meets all given criteria.

Evidence for Scoring: Based on initial data analysis, the group modifies the game design to increase the probability of losing, thereby raising the profit the carnival can expect.

3. Present analyzed data and communicate findings in a variety of formats.

College Ready Description: Group thoughtfully composes documents detailing the data collection and analysis.

Evidence for Scoring: Group includes in the game proposal a graphical summary of the game trials performed.

Let the Games Begin – Scoring Instructions

There are two scoring sheets for this CRA: one for individual work and one for group work. Use either or both as desired for your class.

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
32	100		25	87.5		18	78		11	68
31	99		24	85		17	76.5		10	66
30	98		23	84		16	75		9	63
29	96.5		22	83		15	74		8	60
28	95		21	81.5		14	73			
27	92.5		20	80		13	71.5			
26	90		19	79		12	70			