Marking guidelines

Criteria	E	D	C	B	A
Part 1 – conducting an experiment	Student completes 20 trials and attempts to record the results.	Students completes 20 number of trials and accurately records the results. Student lists some elements of the sample space. Student records a tally or total for each element in their sample space.	Student conducts a 50 trials to determine a mostly accurate sample space. Student calculates the relative frequency for all values listed in their sample space. Student attempts to explain why some totals occur more or less frequently than others.	Student lists a sample space that includes all possible outcomes either as a result of comprehensive trials, or through the development of a mathematical model. Student uses appropriate mathematical language to provide some correct reasons why a particular total may occur more or less often than others.	Student lists a sample space that includes all possible outcomes either as a result of comprehensive trials, or through the development of a mathematical model. Student uses precise mathematical language and calculations to demonstrate extensive understanding of probability concepts, and to explain why a particular total occurs the most or the least.
Part 1 – creating a game	Student creates a game involving 2 dice and uses limited mathematical language to explain the rules of the game. No consideration is given to whether or not the game is fair. Student tests the game and keeps a simple record of who wins.	Student creates a game involving 2 dice and uses probability words to explain how they have made the game unfair. Student conducts a limited test of the game and attempts to use the results to support their explanation of the chances of winning for each player.	Student creates a game involving 2 dice and uses the results from their experiment to determine rules for the game, such that the game is unfair. Student uses some mathematical language to explain the chances of each player winning the game. Student conducts a suitable test of their game and accurately records and compares the results with their predicted outcome.	Student creates a game that incorporates the relative frequencies to clearly favour one player over another. Student uses appropriate mathematical language and calculations to explain the chances of each player winning the game. Student performs an adequate test of the game and compares the chances of winning with their predicted outcome.	Student creates a complex game that incorporates the relative frequencies to clearly favour one player over another. Student uses precise mathematical language and calculations to explain the chances of each player winning the game. Student performs a comprehensive test of the game and compares the relative frequencies from their test with those obtained from the chance experiment.

Commented [1]: we would need a better definition of this

Commented [2]: should we specify how many tests? If so how many would be adequate? comprehensive?

Part 1 –drawing conclusions	Student provides isolated statements, using very limited mathematical language, about strategies for play or conclusions regarding motivation. Lines of reasoning are difficult to follow.	Student provides statements, using limited mathematical language, about choices they would make, strategies used and conclusions regarding motivation. Statements have some mathematical basis and lines of reasoning are clear though not always logical or complete.	Student uses mathematical language to communicate reasoning and explain choices made, strategies for play and conclusions regarding motivation. Statements reference relative frequencies as evidence and lines of reasoning are clear and somewhat logical or complete.	Student uses appropriate mathematical language to effectively communicate reasoning, explain choices made, strategies for play and conclusions regarding motivation. Statements effectively reference relative frequencies, and the lines of reasoning are logical and complete.	Student clearly explains using precise mathematical language consistently and effectively to communicate reasoning, explain solutions and justify their results. Student uses mathematical arguments to generalise at which point they would choose not to play the game. The lines of reasoning are concise, logical, and complete.
Part 2 – determining points	Student uses the letters H and T to successfully list at least one outcome for the remaining for rounds.	Student uses the letters H and T to successfully list at least a few outcomes for the remaining for rounds Student attempts to describe an additional outcome to the example given.	Student attempts to explain, using limited mathematical language, why there are a maximum 4 remaining rounds. Student accurately describes some additional outcomes to the example given.	Student provides adequate reasoning, using some mathematical language, to support the conclusion of a maximum of 4 remaining rounds. Student compiles a sufficiently complete list of outcomes.	Student constructs a concise argument, using precise mathematical language, to support the conclusion of a maximum of 4 remaining rounds. Student compiles a complete and organised list of the possible outcomes for the remaining rounds.
Part 2 – determining prizes	Student provides statements using limited mathematical language stating how to divide the prize. Arguments are made with no mathematical basis and no correct reasoning nor justification is present.	Student selects a partially correct mathematical strategy to divide the prize in at least one of the given scenarios. Student provides statements using limited mathematical language to describe the choices made. Some correct reasoning is present, and arguments are made with some mathematical basis.	Student selects an appropriate strategy in most scenarios, to divide the prize. Student provides statements with adequate mathematical basis. A systematic approach to reasoning is used, incorporating appropriate mathematical language.	Student selects an appropriate strategy in all scenarios, to divide the prize. Student constructs arguments that support the decision of how to divide the prize, referring to factors from the scenarios and using appropriate terminology.	Student applies an efficient strategy to provide an appropriate solution to each of the problems posed. Student constructs detailed arguments using evidence to justify and support decisions made.