

Key APS Mathematics Standards:

1. *Selects and develops appropriate display(s) of data (e.g., T-charts, graphs).*
2. *Develops and evaluates inferences, predictions, and arguments that are based on data.*

Level	Understanding	Strategies, Reasoning, & Procedures	Communication
Novice	<p>1. There are no solutions or the solutions have no relationship to the task.</p> <p>2. The student does not understand that they must conduct a probability experiment to determine the likelihood of winning/losing the 'Price is Right' game.</p> <p>3. The student may demonstrate a beginning understanding of the probability experiments by rolling the die and trying to determine which number is most likely to be rolled.</p>	<p>1. The student cannot start the task or s/he has started the task using manipulatives or representations but cannot complete the task.</p> <p>2. The student cannot demonstrate, using manipulatives or representations, how to determine the odds or strategies for winning/losing the 'Price is Right' game</p> <p>Sample Strategies: The student rolls the die and in their sample produces the number 5 the most, then inaccurately concludes that the \$5.55 price is the 'winning' price.</p>	<p>1. There is little or no communication, the student did not label the work, and their thinking is difficult to follow.</p> <p>2. The student cannot write/verbalize his/her results and uses little or no math terms or symbols in their analysis of the data collected from the probability experiments.</p> <p>3. The student has no system for tracking the outcomes of the probability experiments.</p>
Apprentice	<p>1. The student understands that s/he needs to conduct a probability experiment to determine the best strategy for winning/losing the 'Price is Right' game, but cannot establish a method for calculating the best strategy or does not understand the data from the experiment.</p>	<p>1. The student uses an appropriate strategy to start the task but cannot progress the problem to an accurate solution.</p> <p>2. The student can start the task by conducting an experimental probability experiment to determine the best strategies for winning/losing the 'Price is Right' game, but cannot use the data collected to determine the best strategy to win the game.</p> <p>Sample Strategies: The student takes a sampling by rolling the die 15 times, graphs the information, and concludes that since the 3 came up the least, it must be the hardest number to roll.</p>	<p>1. The student has attempted to communicate his/her findings by labeling their work, but does not attempt to summarize their work by stating their final answer.</p> <p>2. The student can state his/her results and uses some math terms or symbols in their analysis of the data collected from the probability experiments.</p> <p>3. The student does not establish an accurate system for tracking the outcomes of the probability experiments.</p>
Practitioner	<p>PROFICIENCY: The student understands that they need to conduct a probability experiment to predict the likelihood of winning/losing the 'Price is Right' game, and that they must determine when it is appropriate to choose to go higher or lower to guess the correct price for the item chosen.</p>	<p>PROFICIENCY: The student uses an accurate and appropriate strategy to solve the task. S/he conducts a theoretical probability experiment to determine the likelihood of choosing whether the cost of the catalog item should be higher/lower than the number rolled on the die.</p> <p>➤ See the teacher instructions for the data table.</p> <p>Sample Strategies: The student creates a chart to show the likelihood of choosing whether the cost of the item is higher/lower than the number on the die, and because the 3 and the 4 have the most 'wins', they are the numbers most likely to win.</p>	<p>PROFICIENCY: The student can represent his/her work in a clear, organized manner, and uses appropriate math terms and symbols in his/her analysis of the data collected from the probability experiments. The student has created an efficient system (charts, T-tables, graphs, etc.) for tracking the outcomes of the probability experiments.</p>
Expert	<p>1. The student understands that they need to conduct a probability experiment to predict the likelihood of winning/losing the 'Price is Right' game, and that they must determine when it is appropriate to choose to go higher or lower to guess the correct price for the item chosen.</p> <p>2. The student conducts both a theoretical and experimental probability experiment to verify their results.</p> <p>3. The student can make a rule or generalization about the outcome of the probability experiments.</p>	<p>1. The student uses an accurate and appropriate strategy to solve the task and presents their solution in more than one way. S/he conducts a theoretical probability experiment to determine the likelihood of winning/losing the 'Price is Right' game, and verifies their solution using an experimental probability model.</p> <p>➤ See the teacher instructions for the data table.</p> <p>2. The student can make a rule or generalization about the data gathered from the probability experiments.</p> <p>For Example: "It is more likely that the contestant will win the game if the items chosen from the catalog cost \$3.33 or \$4.44 because they have the most 'wins'. If I roll a 4, the odds indicate I should choose to go lower."</p>	<p>1. The student can represent his/her work in a clear, organized manner, and uses appropriate math terms and symbols in his/her analysis of the data collected from the probability experiments. The student has created an efficient system for tracking the outcomes of the probability experiments.</p> <p>2. The student includes a written rule or generalization about the data collected from the probability experiments.</p>

Level	Understanding	Strategies, Reasoning, & Procedures	Communication
Novice	<ol style="list-style-type: none"> There are no solutions or the solutions have no relationship to the task. The student does not understand that they must conduct a probability experiment to determine the likelihood of winning/losing the 'Price is Right' game. The student may demonstrate a beginning understanding of the probability experiments by rolling the die and trying to determine which number is most likely to be rolled. 	<ol style="list-style-type: none"> The student cannot start the task or s/he has started the task using manipulatives or representations but cannot complete the task. The student cannot demonstrate, using manipulatives or representations, how to determine the odds or strategies for winning/losing the 'Price is Right' game. Sample Strategies: The student rolls the die and in their sample produces the number 5 the most, then inaccurately concludes that the \$5.55 price is the 'winning' price. 	<ol style="list-style-type: none"> There is little or no communication, the student did not label the work, and their thinking is difficult to follow. The student cannot write/verbalize his/her results and uses little or no math terms or symbols in their analysis of the data collected from the probability experiments. The student has no system for tracking the outcomes of the probability experiments.
Apprentice	<ol style="list-style-type: none"> The student understands that s/he needs to conduct a probability experiment to determine the odds for winning/losing the 'Price is Right' game, but cannot establish a method for calculating the odds or does not understand the data from the experiment. 	<ol style="list-style-type: none"> The student uses an appropriate strategy to start the task but cannot progress the problem to an accurate solution. The student conducts an experimental probability experiment to determine a strategy for determining a winner or loser for the 'Price is Right' game, but cannot determine when it is appropriate to choose a higher or lower number to guess the correct price of the item. Sample Strategies: The student takes a sampling by rolling the die 15 times, graphs the information, and concludes that since the 3 was rolled 4 times there is a 4:15 chance of rolling a 3. 	<ol style="list-style-type: none"> The student has attempted to communicate his/her findings by labeling their work, but does not attempt to summarize their work by stating their final answer. The student can state his/her results and uses some math terms or symbols in their analysis of the data collected from the probability experiments. The student does not establish an accurate system for tracking the outcomes of the probability experiments.
Practitioner	<p>PROFICIENCY: The student understands the probability of rolling any of the digits on the die is a 1:6 chance. The student understands that s/he needs to conduct a probability experiment to determine the odds of winning/losing the 'Price is Right' game, and that they must determine when it is appropriate to choose to go higher or lower to guess the correct price for the item chosen.</p>	<p>PROFICIENCY: The student uses an accurate and appropriate strategy to solve the task. S/he conducts a theoretical or experimental probability experiment to determine the odds of winning/losing the game and can determine when it is appropriate to choose a higher or lower number to guess the correct price of the item.</p> <ul style="list-style-type: none"> See the teacher instructions for the data table. <p>Sample Strategies: The student creates a chart to determine the odds of the game and chooses an item from the catalog that would make it difficult 3:5 (3 out of 5 chances) to win the game (pencils - \$1.11 or baseball \$6.66).</p>	<p>PROFICIENCY: The student can represent his/her work in a clear, organized manner, and uses appropriate math terms and symbols in his/her analysis of the data collected from the probability experiments. The student has created an efficient system (charts, T-tables, graphs, etc.) for tracking the outcomes of the probability experiments.</p>
Expert	<ol style="list-style-type: none"> The student understands the probability of rolling any of the digits on the die is a 1:6 chance. The student understands that s/he needs to conduct a probability experiment to determine the odds of winning/losing the 'Price is Right' game, and that they must determine when it is appropriate to choose to go higher or lower to guess the correct price for the item chosen. The student conducts both a theoretical and experimental probability experiment to verify their results. The student can make a rule or generalization about the outcome of the probability experiments. 	<ol style="list-style-type: none"> The student uses an accurate and appropriate strategy to solve the task and presents their solution in more than one way. S/he conducts a theoretical probability experiment to determine what the odds of winning and losing the 'Price is Right' game, and verifies their solution using an experimental probability model. See the teacher instructions for the data table. <p>The student can make a rule or generalization about the data gathered from the probability experiments.</p> <p>For Example: "If you want the person to lose choose the pencil for \$1.11 or the baseball for \$6.66, because the odds of choosing to go higher or lower are (3:5) 3 chance in 5, which has the lowest probability for winning."</p>	<ol style="list-style-type: none"> The student can represent his/her work in a clear, organized manner, and uses appropriate math terms and symbols in his/her analysis of the data collected from the probability experiments. The student has created an efficient system for tracking the outcomes of the probability experiments. The student includes a written rule or generalization about the data collected from the probability experiments.

Task: The Price is Right, But Are You?

Grade Level: Eighth

Key APS Mathematics Standards:

1. *Conducts a more complex data analysis project: identifies a question, develops a hypothesis, collects and records data, represents data using appropriate grade level statistical tools, and describes and analyzes data.*

Level	Understanding	Strategies, Reasoning, & Procedures	Communication
Novice	<ol style="list-style-type: none"> 1. There are no solutions or the solutions have no relationship to the task. 2. The student does not understand that they must conduct a probability experiment to determine the likelihood of winning/losing the 'Price is Right' game. 3. The student may demonstrate a beginning understanding of the probability experiments by rolling the die and trying to determine which number is most likely to be rolled. 	<ol style="list-style-type: none"> 1. The student cannot start the task or s/he has started the task using manipulatives or representations but cannot complete the task. 2. The student cannot demonstrate, using manipulatives or representations, how to determine the odds or strategies for winning/losing the 'Price is Right' game Sample Strategies: The student rolls the die and in their sample produces the number 5 the most, then inaccurately concludes that the \$5.55 price is the 'winning' price. 	<ol style="list-style-type: none"> 1. There is little or no communication, the student did not label the work, and their thinking is difficult to follow. 2. The student cannot write/verbalize his/her results and uses little or no math terms or symbols in their analysis of the data collected from the probability experiments. 3. The student has no system for tracking the outcomes of the probability experiments.
Apprentice	<ol style="list-style-type: none"> 1. The student understands the probability of rolling any of the digits on the die is a 1:6 chance. 2. The student understands that they must determine when it is appropriate to choose to go higher or lower to guess the correct price for the item chosen and determine the odds of winning/losing, but does not understand the information from the probability experiment to determine the solution. 	<ol style="list-style-type: none"> 1. The student uses an appropriate strategy to start the task but cannot progress the problem to an accurate solution. 2. The student conducts an experimental probability experiment to determine a strategy for determining a winner or loser for the 'Price is Right' game, but cannot determine when it is appropriate to choose a higher or lower number to guess the correct price of the item. Sample Strategies: The student takes a sampling by rolling the die 15 times, graphs the information, and concludes that since the 3 was rolled 4 times there is a 4:15 chance of rolling a 3 	<ol style="list-style-type: none"> 1. The student has attempted to communicate his/her findings by labeling their work, but does not attempt to summarize their work by stating their final answer. 2. The student can state his/her results and uses some math terms or symbols in their analysis of the data collected from the probability experiments. 3. The student does not establish an accurate system for tracking the outcomes of the probability experiments.
Practitioner	<p>PROFICIENCY: The student understands the probability of rolling any of the digits on the die is a 1:6 chance and that they need to conduct a probability experiment to determine the odds of winning or losing the 'Price is Right' game. They must determine when it is appropriate to choose to go higher or lower to guess the correct price for the item chosen.</p>	<p>PROFICIENCY: The student uses an accurate and appropriate strategy to solve the task. S/he conducts a theoretical or experimental probability experiment to determine what the odds of winning and losing the 'Price is Right' game and can justify their choice of picking an item from the catalog.</p> <p>➤ See the teacher instructions for the data table.</p> <p>Sample Strategies: The student creates a chart to determine the odds of the game and chooses an item from the catalog that would make it difficult to win (3:5) the game (pencils - \$1.11 or baseball \$6.66). For Example: if the item cost \$1.11, and a 2 was rolled, they would lose, because the odds indicate to choose 'higher'.</p>	<p>PROFICIENCY: The student can represent his/her work in a clear, organized manner, and uses appropriate math terms and symbols in his/her analysis of the data collected from the probability experiments. The student has created an efficient system (charts, T-tables, graphs, etc.) for tracking the outcomes of the probability experiments.</p>
Expert	<ol style="list-style-type: none"> 1. The student understands the probability of rolling any of the digits on the die is a 1:6 chance and that they need to conduct a probability experiment to determine the odds of winning or losing the 'Price is Right' game. They must determine when it is appropriate to choose to go higher or lower to guess the correct price for the item chosen. 2. The student conducts both a theoretical and experimental probability experiment to verify their results. 3. The student can make a rule or generalization about the outcome of the probability experiments. 	<ol style="list-style-type: none"> 1. The student uses an accurate and appropriate strategy to solve the task and presents their solution in more than one way. S/he conducts a theoretical probability experiment to determine what the odds of winning and losing the 'Price is Right' game, and verifies their solution using an experimental probability model. ➤ See the teacher instructions for the data table. 2. The student can make a rule or generalization about the data gathered from the probability experiments. For Example: "if a 4 - 6 is rolled and it is not the correct price, always choose to go lower, if a 1 - 3 is rolled and it is not the correct price always choose to go higher." 	<ol style="list-style-type: none"> 1. The student can represent his/her work in a clear, organized manner, and uses appropriate math terms and symbols in his/her analysis of the data collected from the probability experiments. The student has created an efficient system for tracking the outcomes of the probability experiments. 2. The student includes a written rule or generalization about the data collected from the probability experiments.

Task Specific Rubric: The Price is Right, But Are You? 6 – 8

APS Mathematics Task Bank

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