



**Reporting Measure:** Probability of Compound Events

| Level                   | Description   |
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| Above & Beyond<br>(4.0) | <p>The student will:</p> <ul style="list-style-type: none"> <li>Decide which method of determining compound probability is most suitable for a given situation and defend the selection (for example, a table facilitates quick visual comparisons when comparing the probabilities of multiple compound events from the same sample space, but random number generator simulations easily accommodate probability calculations for compound events consisting of many simple events).</li> </ul>   |
| 3.5                     | In addition to score 3.0 performance, partial success at score 4.0 content  |
| Proficient<br>(3.0)     | <p>The student will:</p> <p><b>PCE1—Calculate the probability of compound events from a representation of the sample space</b> (for example, determine the theoretical probability of a compound event from an organized list, tree diagram, or table representing the sample space).</p> <p><b>PCE2—Calculate the probability of compound events using simulation</b> (for example, calculate the experimental probability of compound events using random number generators, dice rolls, coin flips, or other random processes).</p>  |
| 2.5                     | No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content  |
| Getting There<br>(2.0)  | <p><b>PCE1</b>—The student will recognize or recall specific vocabulary (for example, <i>compound event</i>, <i>organized list</i>, <i>tree diagram</i>) and perform basic processes such as:</p> <ul style="list-style-type: none"> <li>Create an organized list to represent the sample space of compound events. For example, create an organized list to represent all the possible outcomes of flipping a coin three times.</li> <li>Create a tree diagram to represent the sample space of compound events. For example, create a tree diagram to represent all the possible combinations of wearing brown, blue, or black pants with a red, green, or white shirt.</li> <li>Create a table to represent the sample space of compound events. For example, create a table with 6 rows and 6 columns to represent all the possible outcomes of rolling a pair of six-sided dice.</li> <li>Identify the number of outcomes that result in a given compound event from an organized list, tree diagram, or table.</li> <li>Identify the size of the sample space from an organized list, tree diagram, or table. For example, explain that the size of the sample space represented by a table is equal to the number of cells in the table or that the size of the sample space represented by a tree diagram is equal to the sum of the number of leaves in the last row of each branch.</li> </ul> <p><b>PCE2</b>—The student will recognize or recall specific vocabulary (for example, <i>random number generator</i>, <i>random process</i>, <i>simulation</i>) and perform basic processes such as:</p> <ul style="list-style-type: none"> <li>Calculate the probabilities of the simple events that make up a given compound event. For example, when examining the compound event of wearing a given shirt with a given pair of pants out of 5 possible shirts and 3 possible pairs of pants, calculate the chance of picking a given shirt as <math>\frac{1}{5}</math> and the probability of picking a given pair of pants as <math>\frac{1}{3}</math>.</li> <li>Simulate the probability of a simple event with a random process by identifying an outcome of the process that has an equal probability of occurring. For example, when</li> </ul> |

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|                            | <p>simulating a simple event that has a <math>\frac{1}{5}</math> probability of occurring, assign one possible face of a five-sided die to the event or assign the digits 1 and 2 to the event when generating random numbers between 1 and 10.</p> <ul style="list-style-type: none"> <li>• Simulate the probability of a compound event using multiple random process outcomes. For example, represent a compound event that consists of two simple events by tossing two dice or generating two-digit random numbers.</li> <li>• Calculate theoretical and experimental probabilities.</li> </ul> |
| <b>1.5</b>                 | Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content  |
| <b>Beginning<br/>(1.0)</b> | With help, partial success at score 2.0 content and score 3.0 content  |