

Core Content

Cluster Title: Use the rules of probability to compute probabilities of compound events in a uniform probability model.
Standard S.CP.6: Find the conditional probability of A given B as the fraction of B 's outcomes that also belong to A , and interpret the answer in terms of the model.
Concepts and Skills to Master
<ul style="list-style-type: none"> Find and interpret conditional probabilities using a two-way table, Venn diagram, or tree diagram. Understand the difference between compound and conditional probabilities.

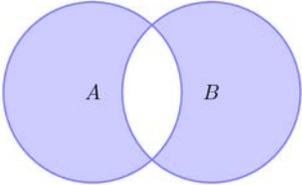
Supports for Teachers

Critical Background Knowledge																	
<ul style="list-style-type: none"> Find probabilities of compound events. (7.SP.8) Summarize categorical data in two-way frequency tables. (I.4.S.ID.5) 																	
Academic Vocabulary																	
random variable, probability model																	
Suggested Instructional Strategies	Resources																
<ul style="list-style-type: none"> Make a “human Venn diagram” where the sample space is all the students in the class. Use lengths of rope to create three overlapping circles. Assign an event to each of the three circles, such as: ate breakfast, brought a cell phone to school, and got at least 7 hours of sleep. Have students place themselves in the appropriate locations. Using correct probability notation, identify each of the spaces in the Venn diagram (don’t forget to include the space outside the circles). Analyze, explore and record the results in terms of conditional probabilities. Connect to probability models from other standards. 																	
Sample Formative Assessment Tasks																	
<p>Skill-Based Task: From the table, determine the probability of getting the flu, and compare that to the probability of getting the flu given that an individual takes high doses of vitamin C.</p> <table border="1"> <thead> <tr> <th></th> <th>Cold</th> <th>No Cold</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Placebo</td> <td>31</td> <td>109</td> <td>140</td> </tr> <tr> <td>Vitamin C</td> <td>17</td> <td>122</td> <td>139</td> </tr> <tr> <td>Total</td> <td>48</td> <td>231</td> <td>279</td> </tr> </tbody> </table>		Cold	No Cold	Total	Placebo	31	109	140	Vitamin C	17	122	139	Total	48	231	279	<p>Problem Task: Life is like a box of chocolates. Suppose your box of 36 chocolates have some dark and some milk chocolate, divided into cream or nutty centers. Out of the dark chocolates, 8 have nutty centers. Out of the milk chocolates, 6 have nutty centers. One-third of the chocolates are dark chocolate. What is the probability that you randomly select a chocolate with a nutty center? Given that it has a nutty center, what is the probability you chose a dark chocolate? Show how you determined your answers.</p>
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Cluster Title: Use the rules of probability to compute probabilities of compound events in a uniform probability model.
Standard S.CP.7: Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.
Concepts and Skills to Master
<ul style="list-style-type: none"> Define the probability of event (A or B) as the probability of their union. Understand and use the formula $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$.

Supports for Teachers

Critical Background Knowledge													
<ul style="list-style-type: none"> Find probabilities of compound events (7.SP.8). 													
Academic Vocabulary													
or, and, $P(A)$, \cup , \cap													
Suggested Instructional Strategies	Resources												
<ul style="list-style-type: none"> Make a connection between the formula for the addition rule and a probability model. 													
Sample Formative Assessment Tasks													
<p>Skill-Based Task Given the following table, which includes data regarding boating preferences of boys and girls, use the Addition Rule to find $P(L \cup G)$.</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>Lake (L)</th> <th>River (R)</th> </tr> </thead> <tbody> <tr> <td>Girls (G)</td> <td>21</td> <td>29</td> </tr> <tr> <td>Boys (B)</td> <td>32</td> <td>18</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Lake (L)	River (R)	Girls (G)	21	29	Boys (B)	32	18				<p>Problem Task Sally shaded the following Venn diagram to illustrate the Addition Rule. What was wrong with her reasoning? How could you represent the addition rule pictorially?</p> <div style="text-align: right;">  </div>
	Lake (L)	River (R)											
Girls (G)	21	29											
Boys (B)	32	18											