



7.DSP.4 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Understand that a probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. Understand that a probability of 1 indicates an event certain to occur and a probability of 0 indicates an event impossible to occur. Identify probabilities of events as impossible, unlikely, equally likely, likely, or certain. (E)

Reporting Category: Geometry, Measurement, Data Analysis, Statistics, and Probability

Subdomain: Solving Problems

7.DSP.4 Instructional Framework

Assessed On:

☐ Checkpoint 1

☐ Checkpoint 2

☐ Checkpoint 3

☒ Summative

Content Limits:

- Limit to rational numbers.
- Probabilities should not be given as percentages.

Clarifications: N/A

Calculator Availability: Allowed

Expected Academic Vocabulary: probability, likelihood, event, impossible, unlikely, equally likely, likely, certain

Examples of Context and Varying Difficulty Levels⁺

Context: Easy

Items focus on impossible (probability 0) and certain (probability 1).

Context: Medium

Items focus on a probability other than 0 or 1 (unlikely, likely, equally likely).

Context: Difficult

Items deal with multiple probabilities as correct answers.

Proficiency Level Descriptors and Example Items

Looking Back:

This concept is not specifically addressed in the Indiana Academic Standards prior to this grade level.

Looking Ahead:

[8.DSP.4 ILEARN Item Specification](#)


Below Proficiency: Classify the likelihood of one event occurring as either impossible, unlikely, equally likely, likely, or certain based on a given probability of 0, $\frac{1}{2}$ or 1.

A bag contains only blue marbles.

What is the likelihood of drawing a red marble?

This is a DOK 1 item because students must classify the likelihood of



<p>a. Certain b. Likely c. Unlikely d. Impossible</p> <p>Answer: d</p>	<p>an event.</p> <p>This is easy because the probability is 0.</p>
<p>A weather forecaster makes a prediction that the probability of rain tomorrow is 1.</p> <p>Based on the prediction, what is the likelihood it will rain tomorrow?</p> <p>a. Certain b. Likely c. Unlikely d. Impossible</p> <p>Answer: a</p>	<p>This is a DOK 1 because students must classify the likelihood of an event based on a given probability of 0, 1/2 or 1.</p> <p>This is an easy item because the probability is 1.</p>
<p>Approaching Proficiency: Classify the likelihood of each event from a given situation occurring as either impossible, unlikely, equally likely, likely, or certain.</p>	
<p>A spinner is equally divided into 8 sections as pictured in Figure A. It has:</p> <ul style="list-style-type: none"> • 2 yellow parts • 2 blue parts • 2 red parts • 2 green parts <p>Figure A: Spinner</p>  <p>Determine whether each statement correctly describes the likelihood of each event. Select True or False.</p>	<p>This is a DOK 1 item because students must classify the likelihood of multiple events occurring.</p> <p>This is a difficult item because it includes multiple probabilities.</p>



	True	False	
It is certain the spinner will land on a blue section.	<input type="checkbox"/>	<input type="checkbox"/>	
It is equally likely the spinner will land on a green section as it will a yellow section.	<input type="checkbox"/>	<input type="checkbox"/>	
It is impossible that the spinner will land on a purple section.	<input type="checkbox"/>	<input type="checkbox"/>	
It is unlikely that the spinner will land on a red, blue, yellow, or green section.	<input type="checkbox"/>	<input type="checkbox"/>	
Answer:			
	True	False	
It is certain the spinner will land on a blue section.	<input type="checkbox"/>	X	
It is equally likely the spinner will land on a green section as it will a yellow section.	X	<input type="checkbox"/>	
It is impossible that the spinner will land on a purple section.	X	<input type="checkbox"/>	
It is unlikely that the spinner will land on a red, blue, yellow, or green section.	<input type="checkbox"/>	X	
At Proficiency: Classify probabilities of events represented as fractions as impossible, unlikely, equally likely, likely, or certain.			
<p>The probability of rain on Friday is $\frac{3}{8}$.</p> <p>What is the likelihood that it will rain on Friday?</p> <ul style="list-style-type: none"> a. Certain b. Likely c. Unlikely d. Impossible <p>Answer: c</p>	<p>This is a DOK 1 item because students must classify the likelihood of an event based on a given fraction.</p> <p>This is a medium-difficulty item because the probability is classified as unlikely, likely, or equally likely.</p>		
<p>The given table shows the probability of different events occurring.</p> <p>Select the likelihood that each event in the table will occur.</p>	<p>This is a DOK 1 item because students must classify the likelihood of multiple events based on a given fractions.</p>		



					This is a difficult item because it includes multiple probabilities.
	Impossible	Unlikely	Likely	Certain	
The probability of choosing a fiction book from a classroom library is $\frac{72}{105}$	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
The probability of getting a blue piece of candy from a candy machine with different-colored candy is $\frac{22}{91}$.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
The probability of a pizza restaurant having your favorite toppings is $\frac{9}{9}$.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
The probability of drawing a purple card from a deck of cards is $\frac{0}{52}$.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Answer:					
	Impossible	Unlikely	Likely	Certain	
The probability of choosing a fiction book from a classroom library is $\frac{72}{105}$	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>	
The probability of getting a blue piece of candy from a candy machine with different-colored candy is $\frac{22}{91}$.	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>	
The probability of a pizza restaurant having your favorite toppings is $\frac{9}{9}$.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X	
The probability of drawing a purple card from a deck of cards is $\frac{0}{52}$.	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Above Proficiency: Compare the likelihood of events given the probabilities of the events.					
<p>Sam and Joe both hiked trails through a park. The probability of Sam hiking at least 5 miles is $\frac{7}{8}$. The probability of Joe hiking at least 5 miles is $\frac{1}{4}$.</p> <p>Who is more likely to hike at least 5 miles?</p> <p>a. Sam is more likely to hike at least 5 miles because $\frac{7}{8}$ is closer to one than $\frac{1}{4}$ is.</p> <p>b. Sam is less likely to hike at least 5 miles because $\frac{7}{8}$ is closer to zero than $\frac{1}{4}$ is.</p> <p>c. Sam and Joe are equally likely to hike at least 5 miles because $\frac{7}{8}$ and $\frac{1}{4}$ are the same probability.</p> <p>d. Neither Sam nor Joe are likely to hike at least 5 miles because $\frac{7}{8}$ and $\frac{1}{4}$ are both close to zero.</p>					<p>This is a DOK 1 item because probabilities are being compared to see which event is more likely to occur.</p> <p>This is a medium-difficulty item because the probability is classified as unlikely, likely, or equally likely.</p>



Answer: a	
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