

Teacher Guide for the Lesson on **independent event**

Standard:

7.6(I)

Content Objective:

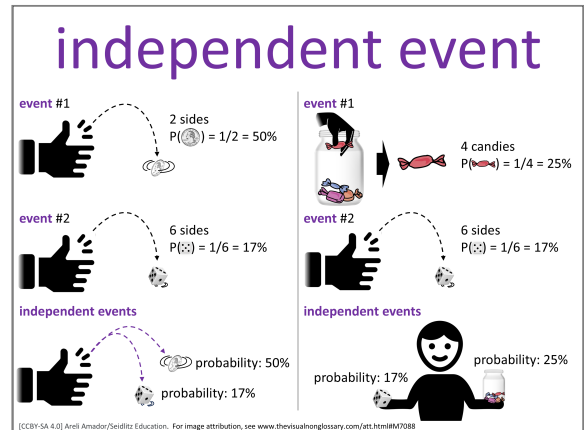
We can analyze **outcomes** of repeated experiments to determine that **independent events** do not change each other's **probability**.

Language Objective: Answer the following question in complete sentences using the sentence stem and the key vocabulary of the lesson:

How can you tell that two **events** are **independent** by analyzing the **outcomes** of a repeated experiment?

*I can tell that two **events** are **independent** by analyzing the **outcomes** of a repeated experiment by...*

Other key vocabularies: [dependent event](#), [events](#), [independent](#), [outcomes](#)



By studying this visual, students might:

Notice	Wonder
<ul style="list-style-type: none"> The probability of each event stays the same each time 	<ul style="list-style-type: none"> Why does the probability stay the same each time
<ul style="list-style-type: none"> Different events are happening like flipping a coin or spinning 	<ul style="list-style-type: none"> How can you tell the events are independent
<ul style="list-style-type: none"> The outcomes are recorded over many trials 	<ul style="list-style-type: none"> What patterns do you notice in the outcomes

<ul style="list-style-type: none"> • Event 1 does not change event 2 	<ul style="list-style-type: none"> • Why does one event not change another event
<ul style="list-style-type: none"> • Patterns repeat in the results 	<ul style="list-style-type: none"> • How can you use results to make predictions

EXTENDING THE DISCUSSION

- After randomly calling on students, if there is anything from this list that was not mentioned, then ask the class, "Did anyone notice...?"
- After students have shared what they notice, ask the class, "Did anyone wonder...?" using the suggestions above or anything else you might think is interesting or relevant to the lesson.

Structured Conversation Prompts

OBSERVATIONAL	RELATIONAL	INFERENCEAL
<p>What is an independent event?</p> <p>An independent event is...</p>	<p>How is an independent event different from a dependent event?</p> <p>An independent event is different from a dependent event because...</p>	<p>How can you tell that two events are independent by analyzing the outcomes of a repeated experiment?</p> <p>I can tell that two events are independent by analyzing the outcomes of a repeated experiment by...</p>

Example Student Responses to the Observational Question

Low-Level	High-Level
<p>An independent event is when one event does not affect another.</p>	<p>An independent event is when the outcome of one event does not change the probability of another event.</p>

RESPONDING TO RESPONSES

Emphasize and celebrate each student's use of the key vocabulary to support a culture of "no wrong answers."

STRUCTURING STUDENT CONVERSATIONS

Have students list observations from the visual as a warm-up, then use the Q-SSS-A process to guide small-group conversations. In the slide decks, brackets can be moved to prepare the structured conversation. In the example to the right, students will be instructed: [Q-SSS-A](#).



- To put a thumb up, then lower their hand when they are ready to answer the question
- To share with their elbow/shoulder partner, and that the student with the darkest shoe will share first
- That they will be randomly called on after the conversation

[Here is an example](#) of structuring a conversation with Q-SSS-A.

Note: the inferential question is the same as the language objective. It is recommended that students answer the inferential question in a small-group discussion before answering it individually as the closure or exit ticket of the lesson.

Structured Reading

READING PURPOSE	PAT LIST	POST-READING DISCUSSION
<p>The purpose for reading is to analyze how results from repeated experiments show that events are independent.</p>	<ul style="list-style-type: none"> • Results from repeated experiments • What happens in event 1 compared to event 2 • Whether the probability changes or stays the same • Patterns in the outcomes • Evidence that shows independent events 	<p>How does the spinner activity show that the events are independent?</p> <p><i>The spinner activity shows that the events are independent because...</i></p>

STRUCTURING THE READING

Communicate the purpose of reading to the students and instruct them to make a note every time they see something on the PAT ("Pay Attention To") list. How you have students note items on the PAT list is up to you. This could include:




- Putting an asterisk in the margin
- Underlining text that supports the PAT list
- Putting a comment in the margin

Follow the reading with the post-reading discussion. Structure this discussion using the Q-SSS-A process just like the structured conversations in this lesson.

Note: you might find the relational question is better discussed before or after the reading. This depends on whether the relational question is directly related to the reading or might make connections across units.

DIFFERENTIATING THE READING

You will notice that three different reading passages are provided with this lesson. Look at the shapes in the top-left of each passage to determine the grade level.

BELOW GRADE LEVEL	ON GRADE LEVEL	ABOVE GRADE LEVEL
 <i>Triangle is bottom-left</i>	 <i>Square is bottom-left</i>	 <i>Circle is bottom-left</i>

In a class with students at diverse reading level proficiencies, you can give the appropriate reading passage to different students, while having all students follow the same PAT list and post-reading discussion.