

Ohio Standards Connections

Data Analysis and Probability

Benchmark D

Describe the probability of chance events as more, less or equally likely to occur.

(Grades Pre-Kindergarten - 2)

Indicator 8

Describe the likelihood of simple events as possible/impossible and more likely/less likely; e.g., when using spinners or number cubes in classroom activities.

(Grade 1)

Mathematical Processes Standard

Benchmark D

Evaluate the reasonableness of predictions, estimations and solutions.

(Grades Pre-Kindergarten - 2)

Benchmark G

Use invented and conventional symbols and common language to describe a problem situation and solution.

(Grades Pre-Kindergarten - 2)

Benchmark H

Recognize the mathematical meaning of common words and phrases, and relate everyday language to mathematical language and symbols.

(Grades Pre-Kindergarten - 2)

Lesson Summary:

In a class discussion the students will identify events or situations as being likely to occur or unlikely to occur. Then, they work in pairs to generate likely and unlikely statements to share with the class.

Estimated Duration: 60 – 120 minutes

Pre-Assessment:

Initiate a discussion with the students and ask them to identify situations in their everyday lives that are likely to happen (We will eat lunch today.) and that are unlikely to happen (I will grow another leg.). During this discussion, assess the students' understanding of simple probability words such as likely, unlikely, probable, impossible, certain, chance and prediction.

Commentary:

Often the terms "probably" and "impossible" are used broadly; e.g., "You can probably go to your friend's house." or "He is so impossible!" It is very likely that you will need to clarify the meaning of these and possibly other "probability" words for your students.

Scoring Guidelines:

This is an informal assessment and does not require scoring.

Post-Assessment:

There is no formal post-assessment. It is recommended that the teacher continue to collect student statements of situations that are likely and unlikely. Record these on a chart posted in the room.

Instructional Procedures:

Instructional Tip:

The students will need four spinners for this lesson. They may use pre-cut blank spinners, student-made spinners or transparent spinners. Students may create their own spinners as a pre-lesson activity a few days before beginning the lesson. Transparent spinners may be purchased from most school supply stores and templates for spinners may be included in instructional materials. Images placed between the transparent pieces can be easily viewed. The coloring and numbering is to be completed during the lesson.

Day One

1. Provide materials for students to make different spinners. Use crayons or markers to create the sections on the spinner.
2. Instruct the students to make a spinner with five parts, with the numbers 1, 3, 5, 7 and 9 in the sections.

Is It Likely or Is It Unlikely? — Grade One

3. Ask the students if you could land on a four on the spinner. Why or why not?
4. Ask other questions such as, "Is it likely or unlikely to land on a two on the spinner?"

Instructional Tip:

This is the time to introduce the terms possible or impossible if the students did not use them in their explanations.

5. Instruct the students to make another spinner with five sections. Have them put a four in one section and the same number in the other sections, such as all 2s, 3s or 5s.
6. Ask the students if it is possible or impossible to land on a four on the spinner. Why or why not?
7. Instruct the students to make a spinner using their crayons for which it is possible for the spinner to land on a designated color. Also instruct them to make a spinner where it is impossible to land on a designated color. Have some of the students share their spinners and explanation with the class.
8. Facilitate a discussion about the types of spinners that were made and the explanations.

Day Two

1. Show the students statements written on sentence strips and ask the class to sort these into categories, "Likely" and "Unlikely." You may create your own statements or use the following:
 - a . All students in the class will wear shoes to school tomorrow.
 - b . The lunchroom will serve pizza next week.
 - c . We will have a day off school next week.
 - d . No one will be absent tomorrow.
 - e . Only boys will be born next week in the United States.
 - f . Our football team will win the game next week.
 - g . We will have no homework tonight.
 - h . We will see the sun shining in the sky tomorrow.
 - i . There will be a full moon tonight.
2. Once it is apparent the students know the difference between likely and unlikely, direct them to work in pairs at their desks. Each pair should write a number of likely and unlikely statements. From these, they are to choose one likely statement and one unlikely statement to write on individual sentence strips. Remind them to avoid using the words "Likely" and "Unlikely" or similar words as they will be sharing these with the class and asking the class to determine the category in which their statement belongs.

Commentary:

The students may also draw pictures of events which are likely or unlikely to occur.

3. Once the students have had sufficient time to generate and record their statements, invite a student to read his/her statement to the class. The remaining students will determine whether the statement fits under the likely or unlikely category. Encourage discussion about these statements.
4. Post the students' responses on a chart paper that has been divided in half with the titles, "Likely" and "Unlikely" written at the top.

Differentiated Instructional Support:

Instruction is differentiated according to learner needs, to help all learners either meet the intent of the specified indicator(s) or, if the indicator is already met, to advance beyond the specified indicator(s).

- Students may be challenged by the concept or the task and will need appropriate accommodations. For example, some students may understand the concept and are able to generate the statements but need assistance in recording their statements.
- For those students challenged by the concept, you may want them to simply identify some event or situation they know will occur and identify one event or situation that they think would probably not occur.
- Some students may easily grasp the concept and are ready to generate multiple statements and record these in a blank book.
- Some students may be ready to move on to identifying the likelihood of various events, such as picking a red marble from a bag when there are four red marbles and one black marble; e.g., which color he/she most likely would get when picking a marble without looking.
- Some students may be ready for a simple investigation. Have students spin their spinners or roll a number cube and use tally marks to record the results in a chart. The results can be used to describe and answer questions about likelihood similar to those in the lesson such as, possible or impossible, likely or unlikely, more likely or less likely.

Extension:

These are ideas for all students to continue learning on this topic – in the classroom or outside of the classroom.

- Generally, students at this developmental level need multiple opportunities to identify events or situations as likely or unlikely to occur. In addition to addressing this concept in an ongoing manner throughout the school year, the terms certain and impossible may be introduced.

Homework Options and Home Connections:

- Inform the parents of what students are learning and explain to them how some probability terms are misused. Ask the students to work with their family and identify five likely events/situations and five unlikely events/situations.

Materials/Resources Needed:

For the teacher: Chart paper, sentence strips (2 per student), materials to make spinners or pre-made spinners for students to color, or transparent spinners with inserts (optional), overhead projector, overhead

transparency of spinners.

For the students: Mathematics journal or paper, pencil, sentence strips, materials to make spinners or pre-made spinners, crayons or markers.

Key Vocabulary:

- likely
- unlikely
- probably
- possibly
- chance
- impossible