7

DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Mathematics

Quarter 4
Lesson
6

Lesson Exemplar for Mathematics Grade 7
Quarter 4: Lesson 6 (Week 6)
SY 2024-2025

Development Team

Writers:
- Ma. Luz A. Cruz (Acacia National High School)
- Rener D. Daya (University of Mindanao)

Validator:
- Roldan S. Cardona (Philippine Normal University – North Luzon)

Management Team

Philippine Normal University
Research Institute for Teacher Quality
SiMERR National Research Centre

MATHEMATICS / QUARTER 4 / GRADE 7

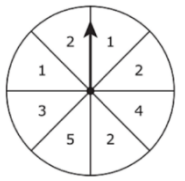
I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	The learners should have knowledge and understanding of outcomes from experiments.
B. Performance Standards	By the end of the quarter, the learners are able to gather data from experiments and represent the data in different forms.
C. Learning Competencies and Objectives	**Learning Competencies** **By the end of the lesson, the learners ...** 1. Collect data from experiments (e.g., number of heads obtained when tossing a coin, number of times, number of prime numbers obtained when rolling a die). 2. Express outcomes in words and/or symbols and represents outcomes in tables and/or graphs. **Objectives** 1. Accurately collect data from experiments. 2. Correctly determine and identify the experiment, outcomes, sample space, and events in a given situation. 3. Accurately count and list the number of occurrences of an outcome in an experiment.
D. Content	Experiments, Sample Space, Simple Events, and Outcomes
E. Integration	

II. LEARNING RESOURCES
National Repository of Online Courses (2023, December 17). *Sample spaces, events and their probabilities.* LibreTexts Mathematics. https://stats.libretexts.org/Bookshelves/Introductory_Statistics/Introductory_Statistics_(Shafer_and_Zhang)/03%3A_Basic_Concepts_of_Probability/3.01%3A_Sample_Spaces_Events_and_Their_Probabilities Big Ideas Math (2023, December 17). *Experimental Probability*. https://www.bigideasmath.com/protected/content/ipe/grade%207/09/g7_09_03.pdf Manitoba Education and Training (2023, December 17). *Experiment, Event, Outcomes, Sample Space.* *https://www.edu.gov.mb.ca/k12/cur/math/support_gr7/full_doc.pdf* Math is Fun (2023, December). *Probability Tree Diagrams.* *https://www.mathsisfun.com/data/probability-tree-diagrams.html* Hossein Pishro-Nik (2023, December 20). *Introduction to Probability, Statistics and Random Processes.* https://www.probabilitycourse.com/chapter1/1_3_1_random_experiments.php

SlideShare a Scrib Company (202, December 20). *Sample space, events, outcomes, and experiments.* https://www.slideshare.net/slideshow/sample-space-events-outcomes-and-experiments/250046126

III. TEACHING AND LEARNING PROCEDURE		NOTES TO TEACHERS
A. Activating Prior Knowledge	**DAY 1** **1. Short Review** Writing fractions 1. There are 32 football players and 16 cheerleaders at your school. Write the ratio of cheerleaders to football players. Use the table above to answer the following: a. fraction of girls to boys in classroom A b. fraction of boys in classroom A to boys in classroom B c. fraction of girls to the total number of students in both classes. 2. Write the fraction in simplest form. a. sunflower to rose. b. rose to the total number of flowers. 3. The spinner face shown is divided into 8 sections. The arrow in the spinner is spun once. a. What fraction of the spinner sections are labeled with a number less than 4? b. What fraction of the spinner sections are labeled with a number greater than 5? c. What fraction of the spinner sections are labeled with numbers between 1 & 4? **2. Feedback (Optional)**	**DAY 1 Time Frame** 15 minutes: review and activity 20 minutes: discussion with worked example 20 minutes: lesson activity and giving feedback **Note:** Time frames are just suggestions. The teacher can make adjustments depending on the pacing of the learners. This section will give a recall of students' ability to write the relation of the given data in fractions and can also express it in the lowest terms. This can be done in pairs, so that students can share while recalling prior knowledge and will find the activity engaging. **Answers:** 1. $\frac{16}{32}$ 2. a. $\frac{22}{10}$ b. $\frac{10}{15}$ c. $\frac{41}{66}$ 3. a. $\frac{1}{2}$ b. $\frac{2}{3}$ 4. a. $\frac{6}{8}$ or $\frac{3}{4}$ b. 0 or none c. $\frac{4}{8}$ or $\frac{1}{2}$

	BOYS	GIRLS
Classroom A	10	22
Classroom B	15	19



B. Establishing Lesson Purpose

1. Lesson Purpose

Essential Questions:

- How do you define a sample space for a given experiment?
- How do you differentiate outcomes in a sample space?
- How do you determine and quantify the number of events in a specific experiment?

2. Unlocking Content Vocabulary

Present this table of terms to the learners to familiarize the terms to be used in this lesson. This could also be a short activity to connect the main lesson.

Define Me!

Terms	Definition
Experiments	
Sample Space	
Event	
Outcome	

Teacher's Key Points:

- **Experiments** are activities that produce an outcome, but their results cannot be precisely predicted.
- **Sample space** is the set of all the possible outcomes of an experiment.
- **Events** are one or more of the outcomes of an experiment.
- **Outcomes** are the possible results of an experiment.

C. Developing and Deepening Understanding

SUB-TOPIC 1: Experiments, Sample Space, Simple Events, and Outcomes

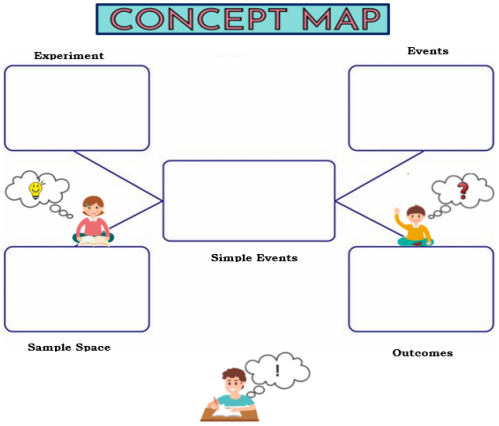
1. Explicitation

Experiments are activities that produce an outcome, but their results cannot be precisely predicted.

Example: A coin is flipped and a die is rolled. What is the probability of getting a head of the coin 4 on the die?

Experiment: Flipping a coin and rolling a die

Head *Tail*



Sample space is the set of all the possible outcomes of an experiment.

Example: A coin is flipped and a die is rolled. What is the probability of getting a head of the coin 4 on the die?

This section is intended for short class discussions for the students to recall and learn new terms that are related to the given topics of the lesson.

The teacher can make use of a concept map of each definition of terms so that they can be able to conceptualize and share their understanding of the terms from "Define Me" activity.

Let the learners also give examples based on their experience for the smooth transitions of the lesson proper.

Sample space: S = = {(1, head), (1, tail),(2, head), (2, tail), (3, head), (3, tail), (4, head), (4, tail), (5, head), (5, tail), (6, head), (6, tail)}

Events are one or more of the outcomes of an experiment.
Example: A die is rolled, and a coin is flipped. What is the probability of getting a 3 on the die and a tail on the coin?
Event: {3, tail}

Outcomes are the possible results of an experiment.
Example: A die is rolled, and a coin is flipped. What is the probability of getting a 5 on the die and a tail on the coin?
Outcomes: Numbers 1, 2, 3, 4, 5, or 6 and head or tail.

2. Worked Example

1. A die is rolled. If it lands on an even number, identify the experiment, outcomes, sample space, and event in this scenario and make a table and tree diagram to illustrate this experiment.

Solution:
Experiment: Rolling a die
Outcomes: 1, 2, 3, 4, 5, or 6
Sample Space: S= {1, 2, 3, 4, 5, 6}
Event: When rolling a die and if it lands on an even number, then the event will be {2, 4, 6}.

Die / Coin	1	2	3	4	5	6
H	1, H	2, H	3, H	4, H	5, H	6, H
T	1, T	2, T	3, T	4, T	5, T	6, T

2. Green, yellow, blue, white, and black marbles are placed in a covered jar. When a marble is randomly drawn from the jar, it turns out to be green. In this context, identify the experiment, outcomes, sample space, and event.

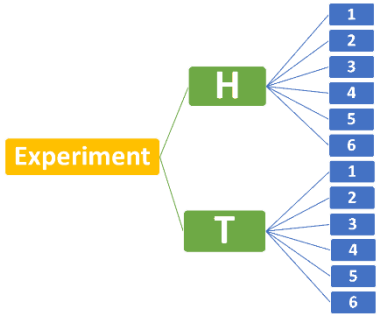


Image Source: https://byjus.com/question-answer/a-die-is-rolled-and-then-a-coin-is-tossed-what-is-the-sample-space

To further the discussion the teacher may use the following examples from each term being defined after filling out the concept map.

Solution:
Experiment: Drawing marble from a jar
Outcomes: When the marbles are drawn, it is possible to get a **Green, yellow, blue, white,** or **black marble.**
Sample Space: S= {**Green, yellow, blue, white, black**}
Event: **Green marble**

3. Write the sample space for the experiment that consists of rolling a single die. Find the events that correspond to the phrases "an even number is rolled" and "a number greater than 2 is rolled."
Solution:
The outcomes could be labeled according to the number of dots on the top face of the die. Then the sample space is the set S = {1, 2, 3, 4, 5, 6}
The outcomes that are even are 2, 4 and 6 , so the events that correspond to the phrase "an even number is rolled" is the set {2, 4, 6} which it is natural to denote by the letter *E* . We write *E* = {2, 4, 6}.
Similarly, the event that corresponds to the phrase "a number greater than 2 is rolled" is the set *T* = {3, 4, 5, 6}, which we have denoted *T*.

DAY 2

3. Lesson Activity

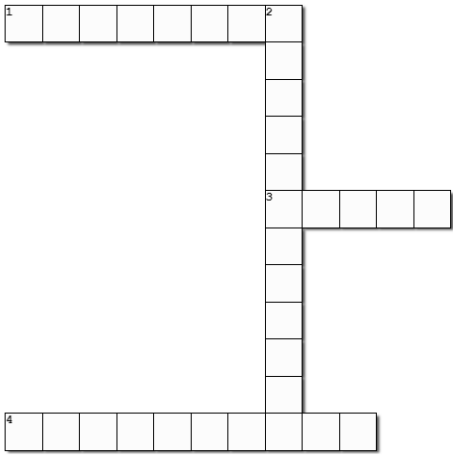
The following activities will help learners enrich their knowledge about illustrating an experiment, outcome, sample space, and event.

A. Fill me! Fill the missing information to complete the table.

Experiment	Outcome	Sample Space
1) _____	Head, Tail	S = {Head, Tail}
Rolling a die once	2) _____	S = {1, 2, 3, 4, 5, 6}
Spinning a wheel	3) _____	S = {Red, Blue, Yellow, Green}
Playing Lottery	Win, Lose	4) _____
Taking Exam	Pass, Fail	5) _____

This is intended for group activity where students can assign different roles (scribe, observer, note-taker, reporter/ presenter, documenter to perform during the process, so that all of them has their own participation. It is suggested that the teacher clarify the instructions to the students. Roam around during the activity so that he/she can accommodate student concerns.

B. Complete the puzzle. This activity can be done individually.



Across
1. The possible results of an experiment.
3. One or more of the outcomes of an experiment.
4. Activities that produce an outcome, but their results cannot be precisely predicted.

Down
2. The set of all possible outcomes of an experiment.

DAY 3

C. My Two Siblings! Identify the outcomes that comprise each of the following events in the experiment of selecting a three-child family at random.

Events	Possible Outcomes	Sample Space
a. At least one child is a girl.	**a.**	**a.**
b. Exactly two of the children are girls.	**b.**	**b.**
c. The firstborn is a girl	**c.**	**c.**
Reasoning:		
Teacher's Feedback:		

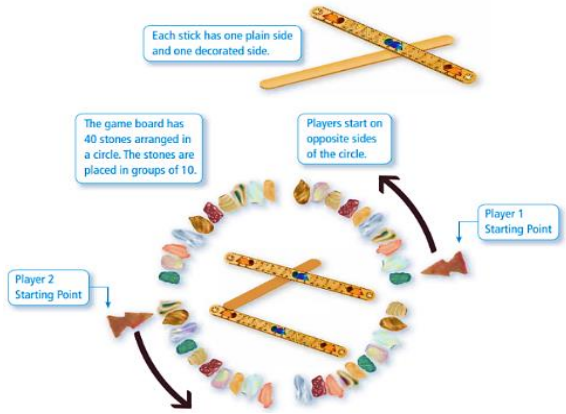
Answer to Lesson Activity A:
1. Tossing a coin once
2. 1, 2, 3, 4, 5, 6
3. Red, Blue, Yellow, Green
4. S = {Win, Lose}
5. S = {Pass, Fail}

It is suggested that the teacher show the step-by-step process in solving for the correct answer.

Answer to Lesson Activity B:
1. Outcomes
2. Sample Space
3. Event
4. Experiment

Answer to Lesson Activity C:
Possible Outcomes
a. {BBG, BGB, BGG, GBB, GBG, GGB, GGG}
b. {BBG, BGB, GBB}
c. {GBB, GBG, GGB, GGG}

Sample Space for a, b, and c is:
S = {BBB, BBG, BGB, BGG, GBB, GBG, GGB, GGG}

	D. Throwing sticks Three sticks will be given to the students, one side is plain, and the other side has design and will do the following process. 1. Take turns throwing three sticks into the center of the circle and moving around the circle according to the chart. 2. If your opponent lands on or passes your playing piece, you must start over. 3. The first player to pass his or her starting point wins. Move chart! 3 decorated — 10 stones 3 plain — 5 stones 2 plain, 1 decorated — 3 stones 2 decorated, 1 plain — 2 stones  Image Source: https://www.bigideasmath.com/protected/content/ipe/grade%207/09/g7_09_03.pd **Guide Questions:** 1. How do you identify the experiment, sample space, outcomes, and event, in the game? 2. What is the purpose serves of the move chart to be related in this lesson? 3. How are the sticks thrown, and what do the different outcomes (plain side vs. design side) signify? 4. What mathematical skills or lessons can be learned from playing this game?	In Lesson Activity D, learners must participate in the game to generate ideas on how the concept relates to this game. After the game, the teacher should provide the learners with guiding questions to help them connect the lesson and gain a better understanding of the mathematical concept.
D. Making Generalizations	**1. Learners' Takeaways** The learners will be asked to complete the table by answering the following questions. 1. What learning have I found in this lesson? 2. What learnings can I share with my friends/classmates? 3. What good traits have I developed from this lesson? 4. What are my overall takeaways from this lesson?	

	2. Reflection on Learning Let the students complete the sentence. The mathematical skill/s that I discover within myself while doing the activities that I want to improve most is/are _____ because _____.	

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		**NOTES TO TEACHERS**
A. Evaluating Learning	**DAY 4** **1. Formative Assessment** A. Identify the experiment, outcome, sample space, and event in the following situations. 1. Two coins are tossed and landed on a head and a tail, respectively. a. Experiment: b. Outcome: c. Sample space: d. Event: 2. A spinner consists of 3 colors: blue, red, and green. What is the chance that if the spinner is spun, the result is green? a. Experiment: b. Outcome: c. Sample space: d. Event: 3. A card is drawn randomly from a box containing cards numbered 1 to 10. How likely is it to get a number that is more than 6? a. Experiment: b. Outcome: c. Sample space: d. Event: 4. A die is rolled once. It landed on a prime number. a. Experiment: b. Outcome: c. Sample space: d. Event:	**DAY 4 Time Frame** 30 – minutes assessment 25 – minutes checking of answers and giving feedback **Formative Assessment Key**: A.1 a. Tossing two coins simultaneously b. landing on a head and the other on a tail c. S= {HH,HT,TH,TT} d. {HT,TH} A.2 a. Spinning the spinner b. The result of the spin, which could be blue, red, or green. c. S= {blue, red, green} d. {green} Chance = 1/3 A.3 a. Drawing a card randomly from a box containing cards numbered 1 to 10. b. any integer from 1 to 10

<table>
<tr>
<td></td>
<td colspan="3">B. Table and Tree Diagram
1. Use a tree diagram to identify all the possible outcomes in arranging the colors black, blue, red, and green without repeating any color.
2. Bitoy plans to have 3 children. List all the possible combinations of the gender of the children he might have using a table.

2. Homework (Optional)
This sub-component allows students to attempt as a form of deliberate practice what was covered in the lesson.</td>
<td>c. S= {1, 2, 3, 4, 5, 6, 7, 8,. 9, 10}
d. {7, 8, 9, 10}
Chance= 4/10 or 2/5

A.4
a. Rolling a die once
b. any specific number rolled on the die 1, 2, 3, 4, 5, or 6
c. S= {1, 2, 3, 4, 5, 6}
d. {2, 3, 5}</td>
</tr>
<tr>
<td rowspan="5">B. Teacher's Remarks</td>
<td>Note observations on any of the following areas:</td>
<td>Effective Practices</td>
<td>Problems Encountered</td>
<td rowspan="5">The teacher may take note of some observations related to the effective practices and problems encountered after utilizing the different strategies, materials used, learner engagement, and other related stuff.

Teachers may also suggest ways to improve the different activities explored/lesson exemplar.</td>
</tr>
<tr>
<td>strategies explored</td>
<td></td>
<td></td>
</tr>
<tr>
<td>materials used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>learner engagement/ interaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Teacher's Reflection</td>
<td colspan="3">Reflection guide or prompt can be on:
• <u>principles behind the teaching</u>
What principles and beliefs informed my lesson?
Why did I teach the lesson the way I did?

• <u>students</u>
What roles did my students play in my lesson?
What did my students learn? How did they learn?

• <u>ways forward</u>
What could I have done differently?
What can I explore in the next lesson?</td>
<td>Teacher's reflection in every lesson conducted/facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.</td>
</tr>
</table>