Grade: 7 FCPS 2025-2026 Math Grade 7 Topic 7

7th Grade Topic 7 : Probability	Estimate Time Frame: 18 days
Essential Standards: 7.SP.5, 7.SP.6, 7.SP.7, 7.SP.8 Assessment Resource: enVision Topic 7 and Formative Assessment Lesson (FAL): Evaluating Statements About Probability	

FCPS Supporting Links	Additional Supporting Links
Pacing Guide 7th Grade Topic 7 Standards Resource with Sample Formative Assessments enVision 7th Grade Topic 7 Standards Crosswalk Resource FCPS P-12 Mathematics Guidance Document FCPS Achievement & Trauma-Informed Strategies in the Classroom	Kentucky Academic Standards KSA Blueprint Target of the Standards - conceptual, procedural & application Three-Reads Routine Notice and Wonder Routine **MILC Resources Topic 7: Probability** ***enVision Teacher Guide: page 362A to 362D for specific Topic 7 Focus-Coherence-Rigor***

Big Ideas
Investigate chance processes and develop, use, and evaluate probability models.

Essential Questions	Common Preconceptions/Misconceptions
How can a model help me solve a probability problem? How can you investigate chance processes and develop, use, and evaluate probability models?	Student thinking about theoretical probability is extended to developing a model (MP.4) that lends structure (MP.7) to an otherwise abstract idea. Students may use this model to explain why a penny comes up heads half the time and tails the other half; however, in an experiment where this event is repeated multiple times, the experimental probability may not be exactly ½ and ½. (MP.8). Compound probability may be more difficult for students to understand; tree

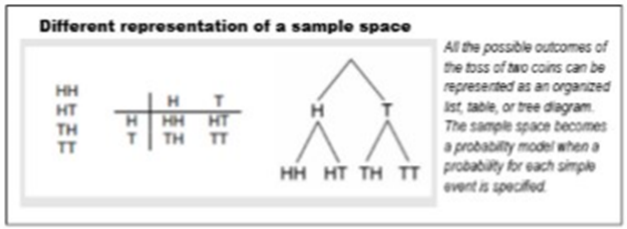
	diagrams, lists, etc., may help students understand the concept. Difficult-to-understand compound events may necessitate a simulation tool, for example, a random digit generator.	
Standards for Mathematical Practices	**Kentucky Interdisciplinary Literacy Practices (KILP)**	
MP.1. Make sense of problems and persevere in solving them. **MP.2. Reason abstractly and quantitatively.** MP.3. Construct viable arguments and critique the reasoning of others. **MP.4. Model with mathematics.** **MP.5. Use appropriate tools strategically.** **MP.6. Attend to precision.** **MP.7. Look for and make use of structure.** **MP.8. Look for and express regularity in repeated reasoning.** ***enVision Teacher Guide: page 362E for specific Topic 7 Math Practice suggestions***	1. Recognize that text is anything that communicates a message. 2. Employ, develop, and refine schema to understand and create text. 3. View literacy experiences as transactional, interdisciplinary and transformational. 4. Utilize receptive and expressive language arts to better understand self, others, and the world. **5. Apply strategic practices, with scaffolding and then independently, to approach new literacy tasks.** **6. Collaborate with others to create new meaning.** **7. Utilize digital resources to learn and share with others.** **8. Engage in specialized, discipline-specific literacy practices.** **9. Apply high level cognitive processes to think deeply and critically about text.** 10. Develop a literacy identity that promotes lifelong learning. *Incorporating texts into math instruction fosters interdisciplinary learning for a more engaging educational experience.*	
Essential Standards	**Sample Learning Intentions & Success Criteria**	**HQIR/Resource Considerations**
Cluster: Investigate chance processes and develop, use and evaluate probability models.		
KY.7.SP.5 Describe the probability of a chance event as a number between 0 and 1, which tells how likely the event is, from impossible (0) to certain (1). A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	We are learning to understand likelihood and probability. • I can use a number between 0 and 1 to describe the likelihood that an event will occur. • I can use a word: impossible, unlikely, equally likely, likely, or certain to describe	• Topic 7 Lesson 7-1 • Brainingcamp Task (Lesson 7-1) "That's Not Fair!" • enVision Language Support Handbook

☒ **Conceptual** ❑ Procedural ❑ Application Clarifications: Emphasis is on the descriptive language used to describe numerical probabilities; impossible event, unlikely event, equally likely event, likely event, and certain event. Students understand all probabilities must fall between 0 and 1. **MP.5, MP.6, MP.7, KILP.1, KILP.8**	the likelihood that an event will occur. • I can calculate the probability that an event will occur.	• Formative Assessment Lesson (FAL): Evaluating Statements About Probability
KY.7.SP.6 Approximate the probability of a chance event by collecting data on the chance process that produces it, observing its long-run relative frequency, and predicting the approximate relative frequency given the probability. ☒ **Conceptual** ☒ **Procedural** ❑ Application **Clarifications:** Estimate the likelihood of an event, test the estimate by trial, and collect data. Students observe the accuracy of the estimate will increase with the frequency of repeated trials. Coherence KY.7.SP.6→ KY.HS.SP.10 **MP.1, MP.2, KILP.2, KILP.6, KILP.7**	We are learning to use the experimental probability of an event to solve real-world problems. • I can find the theoretical probability of an event. • I can find the experimental probability of an event. • I can use experimental probability to predict the approximate relative frequency.	• Topic 7 Lesson 7-2 • 7th grade book Topic 7: Let's Investigate! Take a Spin (do in place of 7th grade 7-2) • Topic 7 Lesson 7-3 • Brainingcamp Task (Lesson 7-3) "Bug on a Rug" • enVision Language Support Handbook
KY.7.SP.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. ☒ **Conceptual** ☒ **Procedural** ❑ Application a. Develop a uniform probability model by assigning equal probability to all outcomes and use the model to determine probabilities of events.	We are learning to develop a probability model and use it to find probabilities of events then compare the model to observed frequencies. • I can compare the experimental and theoretical probabilities of an event. • I can determine the total number of possible outcomes for an event and use it to find the probability of a particular outcome. • I can create a probability model with a	• Topic 7 Lesson 7-4 • 3-Act Math Topic 7: Photo Finish (do this after lesson 7-4) • 3-Act Math Option: Basketball Shooting Free Throws • Brainingcamp Task (Lesson 7-4) "What Did You Expect?"

Clarifications: If a student is selected randomly from a class, find the probability that Jane will be selected and the probability that a girl will be selected. b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. **Clarifications:** Find the approximate probability a spinning penny will land heads up, or a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies? **Prerequisite Skills: KY.7.RP.3** **Coherence KY.7.SP.7→ KY.HS.SP.14** **MP.4, MP.7, MP.8, KILP.2, KILP.4, KILP.7**	sample space and list of events. • I can use the probability model to determine the probabilities of events.	• enVision Language Support Handbook
KY.7.SP.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. ☒ **Conceptual** ☒ **Procedural** ☒ **Application** a. Explain just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. ☒ **Conceptual** ❑ Procedural ❑ Application Clarifications: If the probability of heads occurring on a coin is ½, then the probability of three heads in a row is ½ ½ ½ = ⅛ b. Represent sample spaces for compound events described in everyday language using organized lists, tables, and tree diagrams.	We are learning how to determine the outcomes of compound events. • I can write the compound probability as a number between 0 and 1. We are learning about probabilities of compound events. • I can simulate a compound event to generate a sample. • I can use a tree diagram, a table, or an organized list to represent the sample space for a compound event. • I can find the probability of a compound event using sample space models.	• Topic 7 Lesson 7-5 • Brainingcamp Task (Lesson 7-5) "How Many Ways?" • Topic 7 Lesson 7-6 • Topic 7: Let's Investigate! Roll With It (do in place of Lesson 7-6) • Topic 7 Lesson 7-7 • enVision Language Support Handbook

Conceptual **Procedural** ❑ Application

Clarifications: For a simulation of tossing two fair coins:



c. Design and use a simulation to generate frequencies for compound events.

Conceptual **Procedural** **Application**

Coherence KY.7.SP.8→ KY.HS.SP.14

MP.2, MP.4, MP.7, KILP.5, KILP.7, KILP.8

Attending to the Standards for Mathematical Practice

Thinking of probability as being on a continuum ranging from a probability of 0 to a probability of 1 allows students to visualize the structure of ranking the chances of an event occurring (MP.7). When they relate these broader terms to actual calculated probability, this lends precision to otherwise vague concepts (MP.6). In addition, students note the opposite is also true; a calculated probability close to ½ means the event is neither unlikely nor likely, or equally likely (MP.5). Looking at the process that generates a set of probabilities (experimental probability) in a specific scenario gives students the opportunity to examine a situation in depth (MP.1) and reason about why the conclusion they draw may or may not be accurate (MP.2). Student thinking about theoretical probability is extended to developing a model (MP.4) that lends structure (MP.7) to an otherwise abstract idea. Students may use this model to explain why a penny comes up heads half the time and tails the other half, but in an experiment where this event is repeated multiple times, the experimental probability may not be exactly ½ and ½. (MP.8). Compound probability may be more difficult for students to understand; tree diagrams, lists, etc. may help students understand the concept (MP.7). Difficult to understand compound events may necessitate a simulation tool, for example a random digit generator (MP.4).

Supporting Standards
N/A

Vocabulary
chance event - Anything that happens suddenly or by chance without an apparent cause, ex: Winning the lottery. **compound event -** An event whose probability of occurrence depends upon the probability of occurrence of two or more independent events. An event that consists of two or more events that are not mutually exclusive. **event** - A single outcome or group of outcomes. **experimental probability** - Another name for the relative frequency of an event. **outcomes** - The possible results. **probability -** A number between 0 and 1 is used to quantify the likelihood of processes that have uncertain outcomes (such as tossing a coin, selecting a person at random from a group of people, tossing a ball at a target, or testing for a medical condition). **probability model -** A probability model is used to assign probabilities to outcomes of a chance process by examining the nature of the process. The set of all outcomes is called the sample space, and their probabilities sum to 1. See also: uniform probability model. **random sample -** A sample in which every element in the population has an equal chance of being selected. relative frequency - The ratio of the number of times an event occurs to the total number of trials. **sample space** - The set of all possible outcomes. **simulation** - A model of a real-world situation that can be used to find probabilities. **theoretical probability -** The probability/likelihood of an event happening based upon mathematical calculations: P(event) = Number of favorable outcomes / total number of possible outcomes.

*****Disclaimer: Success Criteria is the evidence students must produce to demonstrate learning. This example is not comprehensive.

** Mathematical Practices (A.MP.1- 8) should be evidenced at some point throughout each unit, depending on the explored tasks. It is important to note that MP. 2 should support learning in every lesson.

******* Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (★). The star symbol sometimes appears on the heading for a group of standards; in that case, it should be understood to apply to *all* standards in that group.