

Just In Time Quick Check
Standard of Learning (SOL) 4.13c

Strand: Probability and Statistics

Standard of Learning (SOL) 4.13c

The student will create a model of practical problem to represent a given probability.

Grade Level Skills:

- Create a model or practical problem to represent a given probability.

Just in Time Quick Check

Just in Time Quick Check Teacher Notes

Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
 - [4.13ab-Probability- How Certain Are You?](#) (Word) / [\(PDF Version\)](#)
 - [4.13ab-Probability: Spinning Color](#) (Word)/ [\(PDF\)](#)
 - [4.13abc -Probability: Sweet as Candy](#) (Word)/ [\(PDF\)](#)
- VDOE Word Wall Cards: Grade 4 [\(Word\)](#) / [\(PDF\)](#)
 - Probability Number Line
 - Certain
 - Likely
 - Unlikely
 - Equally Likely
 - Impossible
- Desmos Activity
 - [Chance Experiments](#)

Supporting and Prerequisite SOL: [4.13a](#), [4.13b](#), [3.14](#), [2.14](#)

SOL 4.13c - Just in Time Quick Check

1. Leah has a bag of purple and green candies. Create a drawing to illustrate the probability of selecting a purple candy from this bag is $\frac{3}{5}$.
2. Joe has a bag of marbles. Create a drawing of Joe's bag of marbles in which the probability of choosing a blue marble is $\frac{7}{7}$.
3. Casey has a box of six pencils. Create a model of Casey's box of pencils in which it is equally likely to select a green pencil and a red pencil if a pencil is chosen from this box.
4. Create a model of a spinner where the probability of landing on an even number is $\frac{3}{4}$.
5. Create a set of 15 tiles. This set of 15 tiles consists of red, yellow, and green tiles where it is most likely to choose a red tile and least likely to choose a green tile.

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Common Errors/Misconceptions and their Possible Indications

6. Leah has a bag of purple and green candies. Create a drawing to illustrate the probability of selecting a purple candy from this bag is $\frac{3}{5}$.

A common error a student may make is to draw a bag of candy containing three purple candies and five green candies. They may also draw a bag of candy containing five purple candies and three green candies. This might indicate that a student does not understand that the numerator of the fraction is the number of favorable outcomes and the denominator of the fraction represents the total number of possible outcomes. This may also indicate that the student struggles with representing a fraction as a simple event. Provide students with examples of models or practical problems using manipulatives.

7. Joe has a bag of marbles. Create a drawing of Joe's bag of marbles in which the probability of choosing a blue marble is $\frac{7}{7}$.

A common misconception is for a student to draw one blue marble. This may indicate the student believes having one blue marble contained in the drawing represents the likelihood of the event being "certain". The student may need more experiences with manipulatives and understanding the probability of a given simple event as a fraction. A teacher may find the Mathematics Instructional Plan (MIP) "How Certain Are You" helpful to use with students who may need additional support.

8. Casey has a box of six pencils. Create a model of Casey's box of pencils in which it is equally likely to select a green pencil and a red pencil if a pencil is chosen from this box.

A common error that a student may make is to draw six pencils but not an equal number of red and green pencils. This may indicate that the student would benefit from practice with the probability term "equally likely." It might be helpful to provide a student with examples of equally likely using manipulatives and correct vocabulary. A teacher may find the Mathematics Instructional Plan (MIP) "How Certain Are You" helpful to use with students who may need additional support.

9. Create a model of a spinner where the probability of landing on an even number is $\frac{3}{4}$.

A student may struggle creating a spinner with three even numbers and one odd number or any ratio of three odd numbers to one even number. This may indicate that a student does not understand that the numerator of three represents the number of favorable outcomes and the denominator of four represents the total number of possible outcomes. A student might benefit from a refresher lesson on representing probability as a fraction using manipulatives and visuals.

Students may also benefit from revisiting the concept of even and odd numbers from 2nd grade. Guide students to use manipulatives to determine if numbers can be grouped in pairs with no remainders or leftovers. Review what it means to be divisible by two. Since this question is open-ended, students may label the spinner with any even and odd numbers of their choice. If students are struggling with the concept of even and odd, you may want to limit the numbers they are working with (for example: Using only the digits 1-9, create a model of a spinner where the probability is...)

10. Create a set of 15 tiles. This set of 15 tiles consists of red, yellow, and green tiles where it is most likely to choose a red tile and least likely to choose a green tile.

A common misconception a student may have is to create a set of tiles where red is the predominant color but not understand that they need more yellow tiles than green so that green is least likely. This may indicate that a student needs to examine the problem and connect the probability terms that should be associated with each color of tile. For example, the total tiles needed is 15. Most likely- red, least likely- green. Therefore, the amount of the remaining tiles need to be yellow and that amount must be more than green. Use tile manipulatives to demonstrate most likely and least likely.

Encourage students to create a graphic organizer to organize the information if needed.

<i>Red</i>	<i>Most (largest number)</i>	<i>?</i>
<i>Yellow</i>		<i>?</i>
<i>Green</i>	<i>Least (smallest number)</i>	<i>?</i>
<i>TOTAL (sum of all numbers must equal 15)</i>		<i>15</i>

A student may have trouble getting to an outcome when using 15 as a total number of possible outcomes. It may be helpful to scaffold a similar problem using a set of 15 tiles that only contain red and green. This set of 15 tiles using only red and green tiles would represent red as the most likely to be chosen.