

MA.1.DP.1.2

Overarching Standard: *MA.3.DP.1 Collect, represent, and interpret numerical and categorical data.*

Benchmark of Focus

MA.1.DP.1.2: Interpret data represented with tally marks or pictographs by calculating the total number of data points and comparing the totals of different categories.

Benchmark Clarifications

Clarification 1: Instruction focuses on the connection to addition and subtraction when calculating the total and comparing, respectively.

Related Benchmark/Horizontal Alignment

- MA.1.NSO.1.1
- MA.1.NSO.2.2

Vertical Alignment

Previous Benchmarks

MA.K.DP.1.1

Next Benchmarks

MA.2.DP.1.2

Purpose and Instructional Strategies

The purpose of this benchmark is for students to begin to understand different displays of data and the information that they can represent. In Kindergarten, students collected and sorted objects into categories. In grade 1, students compare the categories by counting the objects in each of the categories. Students report their results either verbally or with a written numeral or a drawing.

- Instruction includes providing opportunities for students to use addition and subtraction strategies when interpreting a data representation. (MTR.5.1)
- Instruction includes questions that focus on the context of the situation. (MTR.7.1)
- Instruction includes opportunities for students to choose a representation (pictograph or tally marks) for their data set and have discussions of the efficiency of the representation.

Common Misconceptions or Errors

- Students may misread or misinterpret data by not understanding the context of a question.
- Students may try to solve an addition or subtraction problem by making an unnecessary data display.
 - For example, the following question does not require making a data display; Jacob has 10 toy trucks and Courtney has 8 toy trucks. How many more trucks does Jacob have than Courtney?
- Students may make minor errors when answering questions from the data. In these cases, it is helpful to have students write an equation that could be used to solve the problem.
- When calculating the total number in the data set students may not recognize that they need to add all categories together.

Strategies to Support Tiered Instruction

- Teacher provides the following pictogram and accompanying questions. Teacher reads each question with students, checking for understanding along the way while focusing on accurately counting the items in each category. Additionally, the teacher provides opportunities for creating addition or subtraction equations to solve each question. Finally, the teacher ensures understanding of the relationship between the total number of items in a data set and addition.
 - Example:

Favorite Sports of First Graders	
football	
tennis	
baseball	
soccer	

Part A. How many students chose football as their favorite sport? (For Part A, help students to count and record the number of footballs in the graph.)

Part B. How many students voted for tennis, soccer and football as their favorite sport? (For Part B, help students to count all the pictures in the pictogram, and create the addition equation $4 + 3 + 5 = 12$.

Teacher provides students with equation frame $_ _ + _ _ + _ _ = _ _$ if needed.)

Part C. How many more students prefer baseball over soccer? (For Part C, help students count the number of first graders that chose baseball and soccer, then create the subtraction equation $6 - 3 = 3$. Teacher will review key vocabulary with students, including what “more” means in the context of the question.)

Part D. How many fewer students prefer tennis than baseball? (For Part D, help students count the number of first graders that chose tennis and baseball, then create the subtraction equation $6 - 4 = 2$. Teacher will review key vocabulary with students, including what “fewer” means in the context of the question.)

- Teacher provides the following graph and has students answer the accompanying questions. The teacher reads each question with students, checking for understanding along the way focusing on accurately counting the tally marks in each category. Additionally, the teacher provides opportunities for creating addition or subtraction equations to solve each question. Finally, the teacher ensures understanding of the relationship between the total number of items in a data set and addition.
 - Example:



Part A. How many students chose outdoors as their favorite place to play? (For Part A, help students to count and record the number of tally marks in the graph, focusing on what the slanted tally mark means and groups of five.)

Part B. How many more students voted for outdoors than indoors? (For Part B, help students count the group of tally marks in both indoors and outdoors to create the subtraction equation $10 - 8 = 2$.)

Part C. How many students voted in all? (For Part C, help students count the total number of students that chose indoors and outdoors to create the addition equation $10 + 8 = 18$.)

- Teacher provides data that shows which type of cookie students like the most: chocolate chip, sugar, or peanut butter. The table below shows which cookie type each student picked. Organize that data using a pictograph.
 - For example, students can draw circles to represent each cookie.

Javarri <i>Chocolate Chip</i>	Rose <i>Sugar</i>	Benjamin <i>Sugar</i>	Nylah <i>Peanut Butter</i>
Cynthia <i>Sugar</i>	Johnnie <i>Peanut Butter</i>	Zoey <i>Chocolate Chip</i>	Lisa <i>Chocolate Chip</i>
Trenton <i>Sugar</i>	Penelope <i>Peanut Butter</i>	Kayden <i>Chocolate Chip</i>	Charles <i>Chocolate Chip</i>

Cookie	

Cookie	

Cookie	

- Teacher focuses on student comprehension of the above graphs to ensure students are understanding what information is being displayed and what is being asked. Teacher will have students explain the data to them, including what each picture or tally mark represents, and how many they see in each category.

- Teacher will provide opportunities for practicing counting each group of items (by picture or tally mark) and recording that number in digit form to reinforce making connections between counting the objects and recording the numerals.
- Teacher will pose addition and subtraction related questions to students about the data.
 - For example, teacher will provide students with equation frames (such as $_ _ + _ _ = _ _$ for addition equations or $_ _ - _ _ = _ _$ for subtraction equations) to help them create equations to match the graphs.

Questions to ask students:

- **How does a pictograph help you understand and answer questions about data?**
 - Sample answer that indicates understanding: *The pictograph makes it easy to see which category has the most or least and then I can answer questions about it if I need to.*
- **Based on the tally chart, how many shapes were collected and sorted?**

Shape	Total
	
	
	

- Sample answer that indicates understanding: *There were 5 triangles, 4 hexagons, and 2 rectangles. I can add them all together to find the total number of shapes. There were 11 shapes collected and tallied.*
- **Have students look at a pictograph to compare two categories. Ask how many more or how many less is in one category than the other.**
 - Sample answer that indicates understanding: *The student correctly counts the number in each category then adds or subtracts them to find how many more or how many less.*

Instructional Tasks

Instructional Task 1 (MTR.7.1)

Czerise surveyed her classmates to find out what kind of pet they owned. Use the list below for the classmates Czerise didn't get a chance to put on her pictograph to complete her pictograph. Then answer the questions below.

Stephanie - dog
Tyrone - dog
Jessica - cat

Ginger - cat
Susan - fish
Jeremiah - fish

Joe - dog
Jeff - fish
Hayley - dog

Cat	
Dog	
Fish	

Part A: How many students have a dog?

Part B: How many fewer students have a fish than a cat?

Part C: How many pets do Czerise's classmates have in all?

Enrichment Task 1

Refer to *Instructional Item 2* below, complete the same task with 53 tally marks for hot dogs and 65 tally marks for hamburgers.

Instructional Items

Instructional Item 1

Look at the pictograph below. Each picture represents one student's choice.

Favorite Weather of First Graders	
rainy	
sunny	
cloudy	

Part A: How many students chose a rainy day as their favorite weather?

Part B: How many more students chose a sunny day over a cloudy day?

Part C: How many students prefer days that are not sunny?

Part D: Which is the most popular weather among first graders?

Instructional Item 2

The lunchroom was serving hot dogs or hamburgers for lunch. The tally marks show the choices the students made. Each tally mark represents one student's choice.

Choices for Lunch	
Hot dog	
Hamburger	

Part A: How many students want hot dogs for lunch?

Part B: How many students want hamburgers for lunch?

Part C: How many fewer students want hot dogs than hamburgers?

Additional Resources:

[CPALMS Resources](#)

Resources/Tasks to Support Your Child at Home:

Online Video: [Organize and Interpret Data](#) – pause the video to support your child in making sense of and answering questions about the data.

Pictograph Game: [Books](#) – work with your child to answer questions about the pictograph. Encourage them to explain how addition and subtraction might help them answer the questions.

Make a chore chart with your child and track how often certain chores are completed with tallies. Ask questions about how many times they did all the chores in one week, or two weeks. Ask how many more times they did one chore over the other.