



Holyoke Public Schools Mathematics Curriculum Map Grade 2

Pockets, Teeth, and Favorite Things

Table of Contents

Curriculum Map Outline.....	4
Mathematic Evidence of Learning Artifacts.....	5
Probing Questions for Accountable Talk.....	6
Additional Probing Questions.....	7
Goals, Content Standards, & Performance Standards.....	8
End-of-Unit Project Preview.....	9
Investigations 1-2.....	10
End-of-Unit Project.....	12

On-Demand Assessments.....16

HPS Mathematics Scoring Rubric.....22

Curriculum Maps

GOALS:

1. To ensure that students are exposed to a rigorous curriculum in every school and every grade.
2. To have consistent instruction and assessment district wide.
3. To prepare students for the MCAS test.
4. To explain what is expected to be covered in each CMP or Investigations Unit.

EXPECTATIONS:

The district's expectation is for students to successfully meet the Massachusetts Mathematics Standards. In order to help facilitate this, teachers are required to follow the curriculum maps. The successful implementation of these maps requires teachers to thoroughly read each lesson in the TE and work through the project and problems in the map and the text prior to planning their lessons. Work should be kept in the binder with the curriculum map. Working through the math is an essential part of lesson planning, as it helps the teacher to better understand the concept being taught and the students' possible misunderstandings.

FEEDBACK TO STUDENTS:

Feedback needs to happen daily in the classroom. There are many ways to give feedback. Conferencing, observations, questions asked during your opening, work time and closing are all forms of feedback.

MAP COMPONENTS:

1. GENERAL PROBING QUESTIONS
2. UNIT SPECIFIC PROBING QUESTIONS
3. GOALS OF UNIT, CONTENT STANDARDS, & PERFORMANCE STANDARDS
4. PROJECT- to be done at end of unit and kept in the portfolio.
 - o STUDENT MASTER – for project
5. INVESTIGATIONS:
 - o NOTEBOOK - includes: 3 Ring Binder, Bound Notebook, Portfolio
 - o ACCOUNTABLE TALK – using probing questions
5. ON-DEMAND ASSESSMENTS - to be done during teaching of unit.
 - o STUDENT MASTERS- for on-demand assessments.

Mathematics

Evidence of Learning Artifacts

Artifact	K - 1	2 - 5	6 - 8
<i>3 Ring Binder (3R)*</i>	<ul style="list-style-type: none"> ○ Student Work¹ 	<ul style="list-style-type: none"> ○ Vocabulary ○ Student sheets¹ <p style="text-align: center;"><u>All work should be dated and listed by investigation</u></p>	<ul style="list-style-type: none"> ○ Math books ○ Vocabulary ○ Core Problems¹ ○ Lab sheets <p style="text-align: center;"><u>All work should be dated and listed by investigation</u></p>
<i>Marble Notebook (MNB)</i>	<ul style="list-style-type: none"> ○ Journal entries² 	<ul style="list-style-type: none"> ○ Table of Contents ○ Problem of the day ○ Journal entries ○ Class work <p style="text-align: center;"><u>All work should be dated and listed by investigation in the Table of Contents</u></p>	<ul style="list-style-type: none"> ○ Table of Contents ○ Work time ○ Journal entries <p style="text-align: center;"><u>All work should be dated and listed by investigation in the Table of Contents</u></p>
<i>Portfolio³ (P)</i>	<ul style="list-style-type: none"> ○ On-demand tasks ○ Projects ○ Teacher anecdotal notes 	<ul style="list-style-type: none"> ○ On-demand tasks ○ Reflections ○ Projects <p style="text-align: center;"><u>All work should be dated and listed by investigation</u></p>	<ul style="list-style-type: none"> ○ On-demand tasks ○ Reflections ○ Projects <p style="text-align: center;"><u>All work should be dated and listed by investigation</u></p>

* Folders may be used in place of binders for these grade levels

¹ Send home at the end of each unit

² Use grade level math journals

³ All documents should be kept for the entire year

Pockets, Teeth, and Favorite Things Probing Questions for Accountable Talk

As students progress through this unit, they should be asked the following questions to assess their knowledge about how to organize data and how to interpret it.

How did you decide on your rule?

What does the overlapping part on the Venn diagram represent?

How would you organize your data?

What categories did you use to organize your data?

What does the x represent on your line plot?

How can you find the mode on a line plot?

What conclusions can you draw from this line plot/data?

Classroom Routines

Classroom Routines:

Quick Images- Sessions 1.1, 1.4, 1.7, 2.3, 2.6

Today's Number- Sessions 1.2, 1.5, 2.1, 2.4, 2.7

What Time Is It? - Sessions 1.3, 1.6, 2.2, 2.5, 2.8

Classroom Routines occur at regular intervals, perhaps during morning meeting, or at another convenient time. These short activities, designed to take no longer than **10 minutes**, support and balance the in depth work of each curriculum unit. After their first introduction in a math session, **they are intended for use outside of math time**. Some teachers use them to bring the whole class together just before or after lunch or recess or at the beginning or end of the day.

Implementing Investigations in Grade 2: Please review page 25- 40 for Classroom Routines.

Additional Probing Questions for Accountable Talk

The teacher's role in probing for understanding is to ask questions that will:

- Clarify student understanding
- Get at the objective of the lesson
- Go deeper into the mathematics
- Uncover misconceptions and misunderstandings
- Compare and contrast

The students' role is to be an active participant by:

- Explaining their strategies
- Asking clarifying questions to teacher and other students
- Being active listeners
- Using the language of mathematics

When probing for understanding the teacher and students can use one or more of these suggested questions:

- Why are you using $< >$?
- What are the ways you could $< >$?
- What else do you know?
- How do you know that?
- Can you show that?
- What convention did you use here?
- What can you do if you do not know?
- What standard does this work apply to?
- Is this always true?
- How does this connect to other mathematics we have learned?
- What is the same and what are the differences between $< >$?
- Can you back that up?
- Where is the math in your sketch?
- What does the answer mean?
- Does the answer make sense?
- Could you have used another operation to solve this task?
- Can you give examples?
- Can you say it another way?
- What's the math?
- Tell me about the task in your own words?
- What are you trying to find?
- How did you make your estimate?
- Will your answer be an over-estimate or an under-estimate? Why?
- I noticed that you used $< \dots >$ to help you understand the task. Can you show us what you did and tell us how it helped you?
- Where do you see $< >$ in your $<$ model, diagram, number line, chart, etc. $>$?
- How can we see $< >$ in your $<$ model, diagram, number line, chart, etc. $>$?
- You have used a representation that is different from others that I've seen. Can you show us your $<$ model, diagram, number line, chart, etc. $>$, and tell us how it helped you?
- How did you decide to solve the task? Why did you choose that method?
- Did you try any method that didn't work?
 - Tell us what you tried.
 - Why didn't it work?
 - Would it ever work?

Goals, Content Standards, & Performance Standards

Unit Goals:

- Use a Venn diagram to sort data by two attributes
- Identify categories for a set of categorical data and organize the data into chosen categories
- Order and represent a set of numerical data
- Describe a numerical data set, including the highest and lowest values and the mode
- Read and interpret a variety of representations of numerical and categorical data
- Compare two set of numerical data
- Demonstrate fluency with Plus 10 combinations

Math Content Standards:

(2.D.1) Use interviews, surveys, and observations to gather data about themselves and their surroundings.

(2.D.2) Organize, classify, represent, and interpret data using tallies, charts, tables, bar graphs, pictographs, and Venn diagrams; interpret the representations.

(2.D.3) Formulate inferences (draw conclusions) and make educated guesses (conjectures) about a situation based on information gained from data.

(2.D.4) Decide which outcomes of experiments are most likely.

Performance Standards:

(M1a) Adds and subtracts whole numbers

(M1b) Demonstrates understanding of the base ten place value system and uses this knowledge to solve arithmetic tasks

(M4a) Collects and organizes data to answer a question or test a hypothesis by comparing sets of data

(M4b) Displays data in line plots, graphs, tables, and charts

(M4c) Make statements and draws simple conclusions based on data

UNIT: Pockets, Teeth, and Favorite Things

End-of-Unit Project

GRADE: 2

End-of-Unit Project (P)

Student work should be placed in portfolio (P).

The project is the culminating assessment which will allow students to apply what they learned in the unit. It is written in MCAS form to give students the experience of answering an open-response question.

End-of-Unit Assessment: Unit 4, M57, M58, M59 from Resource Binder, “Resources Masters and Transparencies”

UNIT: POCKETS, TEETH, AND FAVORITE THINGS

Investigation 1 (1.1 – 1.7)

DAYS: 8

GRADE: 2

<p>Evidence of Learning Artifacts</p> <p>Journal and Reflection questions should be posted and referred to at the beginning of the appropriate <i>Investigation</i>.</p> <p>Journal and Reflection entries need to be done in class as part of the closure and assessment</p>	<p>Vocabulary – data, rule, representation, attribute, category, Venn diagram, survey, questionnaire, tally mark</p> <p>Work Time – Student Sheets 1-13</p> <p>Journal Entries – *Maximum 5 minutes</p> <p>Inv. 1.2 Identify at least three different ways you could sort the Yektti cards.</p> <p>Inv. 1.3 How do you use a Venn diagram?</p> <p>Inv. 1.5 Name three ways you could sort and classify a group of animals?</p> <p>Reflection –(use M46 as a model) Use a Venn diagram to sort the following items: socks, jeans, shorts, bathing suit, baseball hat, ski hat, scarf, sandals, mittens, flip flops, boots, sneakers, tank top, sweater, sweatshirt. The rule for the first circle is “Things to Wear in the Summer” and the rule for the second circle is “Things to Wear in the Winter”.</p>
<p>Accountable Talk</p> <p>To promote learning, explore solutions, and justify reasoning, conversations between students and students or students and teacher must be accountable – accountable to the learning community, to the mathematics discipline, and to rigorous thinking.</p>	<p><i>As a result of this Investigation, students should be able to talk and manipulate the vocabulary of the Investigation in response to this type of question:</i></p> <p><i>How did you decide on your rule?</i></p> <p><i>What does the overlapping part on the Venn diagram represent?</i></p> <p><i>How would you organize your data?</i></p> <p><i>What categories did you use to organize your data?</i></p> <p><i>What does the x represent on your line plot?</i></p> <p><i>How can you find the mode on a line plot?</i></p> <p><i>What conclusions can you draw from this line plot/data?</i></p> <p><i>These are some recommended questions that you might use. Others can be found at the beginning of the map and on the probing question sheet in the district mathematics guide.</i></p>

UNIT: POCKETS, TEETH, AND FAVORITE THINGS

Investigation 2 (2.1 – 2.8)

DAYS: 9

GRADE: 2

<p>Evidence of Learning Artifacts</p> <p>Journal and Reflection questions should be posted and referred to at the beginning of the appropriate <i>Investigation</i>.</p> <p>Journal and Reflection entries need to be done in class as part of the closure and assessment</p>	<p><i>Vocabulary</i> – outlier, line plot, mode</p> <p><i>Work Time</i> – Student Sheets 14-34</p> <p><i>Journal Entries</i> – *Maximum 5 minutes</p> <p>Inv. 2.2 In a cube tower, what does each tower represent and what does each cube represent?</p> <p>Inv. 2.4 Using the Teeth Data line plot, how would you be able to determine how many students participated in the survey?</p> <p>Inv. 2.6 What are two similarities and two differences you noticed between the two classes Teeth Data?</p> <p><i>Reflection</i> – Here is data from Ms. Sanchez’s second grade class about how many teeth each child has lost: <u>Mary</u>: 2 <u>Jose</u>: 1 <u>Luis</u>: 3 <u>Adam</u>: 2 <u>Maria</u>: 4 <u>Sara</u>: 5 <u>Camille</u>: 1 <u>Juan</u>: 3 <u>Anna</u>: 4 <u>Tom</u>: 6 <u>Cassandra</u>: 3 <u>Marissa</u>: 7 <u>Chris</u>: 2 Create a line plot to represent this data and make two different observations about this data.</p>
<p>Accountable Talk</p> <p>To promote learning, explore solutions, and justify reasoning, conversations between students and students or students and teacher must be accountable – accountable to the learning community, to the mathematics discipline, and to rigorous thinking.</p>	<p><i>As a result of this Investigation, students should be able to talk and manipulate the vocabulary of the Investigation in response to this type of question:</i></p> <p><i>How did you decide on your rule?</i></p> <p><i>What does the overlapping part on the Venn diagram represent?</i></p> <p><i>How would you organize your data?</i></p> <p><i>What categories did you use to organize your data?</i></p> <p><i>What does the x represent on your line plot?</i></p> <p><i>How can you find the mode on a line plot?</i></p> <p><i>What conclusions can you draw from this line plot/data?</i></p> <p><i>These are some recommended questions that you might use. Others can be found at the beginning of the map and on the probing question sheet in the district mathematics guide.</i></p>

End-of-Unit Project

Student work should be placed in **portfolio (P)**.

The project is the culminating assessment which will allow students to apply what they learned about addition and subtraction story problems. It is written in MCAS form to give students the experience of answering an open-response question.

NAME: _____

DATE: _____

End-of-Unit Project

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF EACH QUESTION.**
- **Show all work (diagrams, tables, and computations) on your answer sheet.**
- **If you do the work in your head, explain in writing how you did the work.**

Problem 1 How Many Books in a Week?

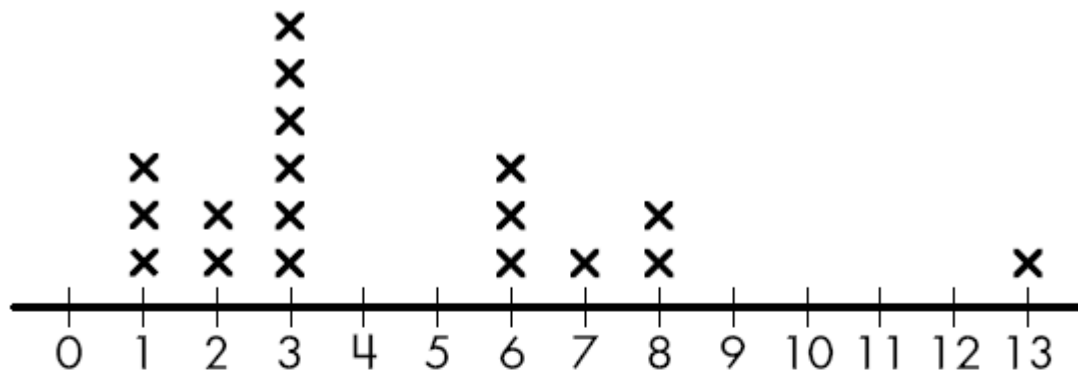
- 1.** You have collected data about how many books each student in your class reads in a week. On another sheet of paper, organize these data and create a representation of them.

- 2.** What do you notice about how many books students in your class read in a week? Write two things you notice.

a. _____

b. _____

Problem 2 Third Graders: How Many Books in a Week?



Number of Books Third Graders Read in a Week

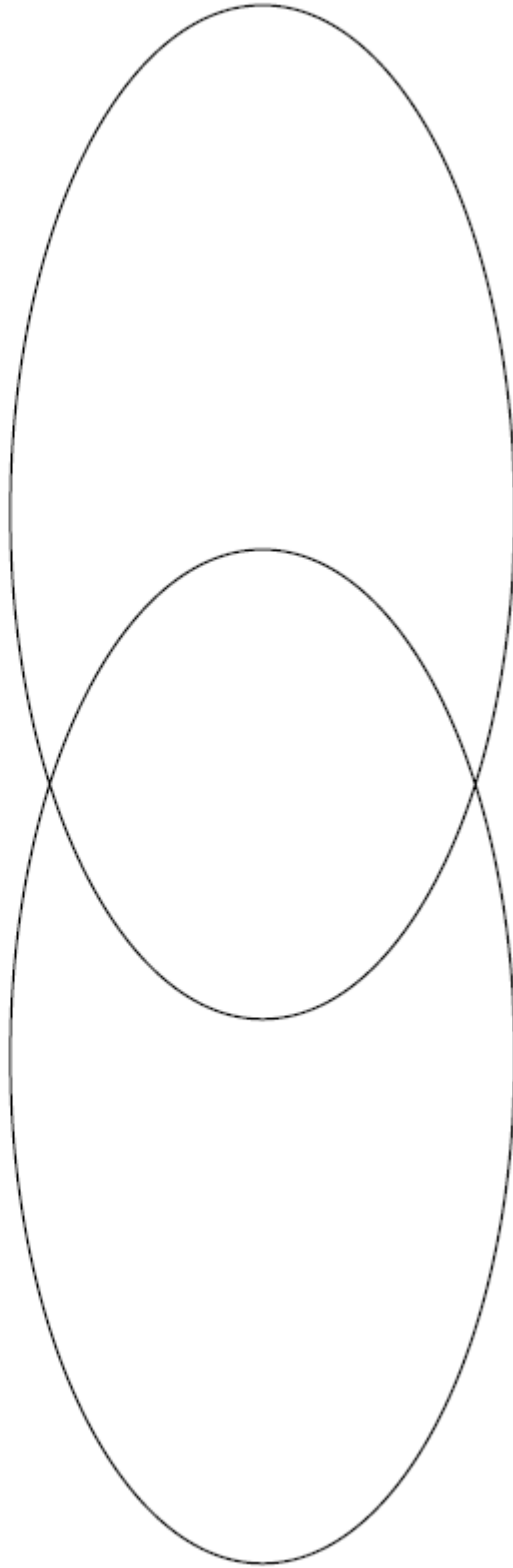
1. What is the most common number of books read in this class in a week? _____
2. How many students read 6 books? _____
3. What is the fewest number of books read by a student in this class? _____
4. What is the greatest number of books read by a student in this class? _____
5. How many students in this class read fewer than 4 books in a week? _____
6. How many students in this class read more than 4 books in a week? _____
7. Look at the representation of how many books students in **your own class** read in a week. What can you say about the number of books students in your class read in a week, compared with the number of books the third graders read? Write two things you notice.

Problem 3 Guess My Rule with Names

Here is a list of names from a first-grade class.

Alex	Evio	Samantha	Arielle	John	Jerome	Alexandra	Wendy	Snow
Lily	Li	Simone	John	Sarah	Andy	Mary	Tamika	Fernando

Use the Venn diagram below. Choose two rules to use to sort the names. Write your rules under the two circles. Then write the names in the correct locations. Remember that some names may fit only one rule, some names may fit both rules, and some names may not fit any rules.



Rule 1: _____

Rule 2: _____

On-Demand Assessments

(To be filed in portfolio)

Pockets, Teeth, and Favorite Things Investigations

In class individualized On-Demand tasks assess knowledge of mathematical facts, operations, concepts, and skills, and their efficient application to problem solving. The results of these different forms of assessment provide rich profiles of students' achievements in mathematics and serve as the basis for identifying curricula and instructional approaches to best develop their talents.

UNIT: POCKETS, TEETH, AND FAVORITE THINGS

On-Demand Assessments

GRADE: 2

On-Demand Assessments (P)

Pockets, Teeth, and Favorite Things Investigations

In class individualized On-Demand tasks assess knowledge of mathematical facts, operations, concepts, and skills, and their efficient application to problem solving. The results of these different forms of assessment provide rich profiles of students' achievements in mathematics and serve as the basis for identifying curricula and instructional approaches to best develop their talents.

Inv. 1: Resource Binder: Session 1.7 M47, M48, *

Inv. 2: Resource Binder: Session 2.5 M51

***Please refer to the section in the Teacher's Unit Guide entitled, "Professional Development" for examples of student work for each assessment.**

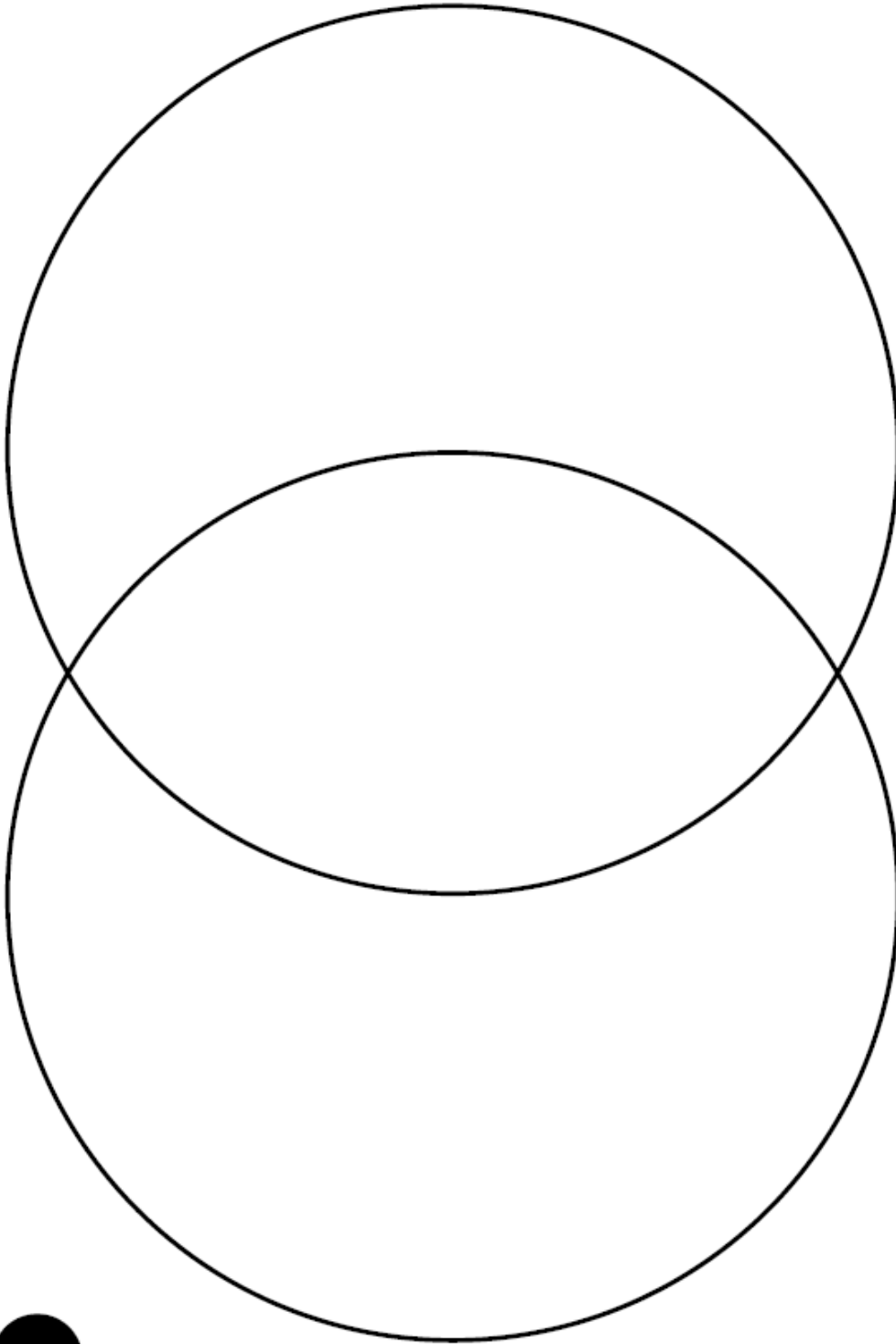
***Assessment Checklists should be kept with the tracking sheet**

Name _____

Date _____

Pockets, Teeth, and Favorite Things

Venn Diagram for *Guess My Rule*



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M46 Unit 4

Sessions 1.4, 1.7

Name _____

Date _____



Assessment: What Is Your Favorite Food? (page 1 of 2)

Sally and Jake's class was having a party. Sally and Jake wanted to figure out what food to have at the party, so they asked their classmates this survey question:

What's your favorite food?

These were their classmates' answers:

pizza	ice cream	peanut butter and jelly	hamburgers	watermelon
cookies	spaghetti	soup	hot dogs	cereal
pizza	grapes	cookies	pancakes	apples
bananas	ice cream	green beans	candy	turkey sandwich

Organize the students' responses into categories to help Sally and Jake decide what kinds of food to have at the party. You can cut out their answers to sort them. Then make a representation of these data on a separate sheet of paper.

Name _____

Date _____



Assessment: What Is Your Favorite Food? (page 2 of 2)

Write two things you would tell Sally and Jake you learned about the favorite foods of students in their class.

1. _____

2. _____



Assessment Checklist: Plus 10 Combinations

Student	0 + 10 10 + 0	1 + 10 10 + 1	2 + 10 10 + 2	3 + 10 10 + 3	4 + 10 10 + 4	5 + 10 10 + 5	6 + 10 10 + 6	7 + 10 10 + 7	8 + 10 10 + 8	9 + 10 10 + 9	10 + 10

Sessions 1.7, 2.1, 2.5

Unit 4 **M51**



Holyoke Public Schools

Mathematics Scoring Rubric

Score point 4:

The response shows a **comprehensive** understanding of the mathematical concept(s) and/or procedures embodied in the task(s). It indicates that the student has **completed the task(s) correctly**, using mathematically sound procedures. It contains **clear, complete explanations** and/or **adequate work required**.

Score point 3:

The response shows a **general** understanding of the mathematical concept(s) and/or procedures embodied in the task(s). It indicates that the student has **completed the task(s)**, using mathematically sound procedures. It contains **complete explanations** and/or **adequate work required**.

Score point 2:

The response shows a **basic** understanding of the mathematical concept(s) and/or procedures embodied in the task(s). It addresses **most aspects of the task(s)**, using mathematically sound procedures. It may contain a correct solution but provides **incomplete procedures, reasoning and/or explanations**. It may reflect **some misunderstandings** of the underlying mathematical concepts and/or procedures.

Score point 1:

The response shows a **minimal** understanding of the mathematical concepts and/or procedures embodied in the task(s). It addresses **some elements of the task(s) correctly** but reaches an **inadequate solution and/or provides reasoning that is faulty or incomplete**. It exhibits **multiple flaws related to a misunderstanding of important aspects** of the task(s), **misuse** of mathematical procedures, or faulty mathematical reasoning. It reflects a **lack of essential understanding** of the underlying mathematical concepts. It may contain a correct numerical answer but the **required work is not provided**.

Score point 0:

The response is **completely incorrect, irrelevant, or incoherent**, or contains a correct response arrived at using an **obviously incorrect procedure**.

NOTES