



# Holyoke Public Schools Mathematics Curriculum Map Grade 2

## Counting, Coins, and Combinations

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## 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

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

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

<sup>1</sup> Send home at the end of each unit

<sup>2</sup> Use grade level math journals

<sup>3</sup> All documents should be kept for the entire year

## Counting, Coins, and Combinations

### Probing Questions for Accountable Talk

As students progress through this unit, they should be asked the following questions to assess their knowledge about problem situations that involve symbolic expressions and equations.

*How did you know that?*

*How can you use ...?*

*Can you show another way?*

*What patterns do you notice?*

### Classroom routines

What time is it?- Session 1.1

Today's Number- Session 1.5

Quick Images- Session 3.1

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:

- Count a set of objects up to 60 in at least one way
- Determine the difference between two numbers (up to 45)
- Interpret addition and subtraction story problems (read a story problem and determine what needs to be figured out)
- Have at least one strategy for solving addition and subtraction (as removal) story problems
- Demonstrate fluency with the Plus 1, Plus 2, and Make 10 addition combinations
- Understand what it means to double a quantity

## Math Content Standards:

(2.N.1) Name and write (in numerals) whole numbers to 1000, identify the place values of the digits, and order the numbers.

(2.N.4) Compare whole numbers using terms and symbols, e.g., less than, equal to, greater than ( $<$ ,  $=$ ,  $>$ ).

(2.N.6) Identify the value of all U.S. coins, and \$1, \$5, \$10, and \$20 bills. Find the value of a collection of coins and dollar bills and different ways to represent an amount of money up to \$5. Use appropriate notation, e.g., 69¢, \$1.35

(2.N.7) Demonstrate an understanding of various meanings of addition and subtraction, e.g., addition as combination (plus, combined with, more); subtraction as comparison (how much less, how much more), equalizing (how many more are needed to make these equal), and separation (how much remaining).

(2.N.9) Know addition facts (addends to ten) and related subtraction facts, and use them to solve problems.

\*(2.N.12) Estimate, calculate, and solve problems involving addition and subtraction of two-digit numbers. Describe differences between estimates and actual calculations.

(2.P.2) Identify different patterns on the hundreds chart.

(2.P.6) Write number sentences using  $+$ ,  $-$ ,  $<$ ,  $=$ , and/or  $>$  to represent mathematical relationships in everyday situations.

(2.P.7) Describe functions related to trading, including coin trades and measurement trades, e.g., five pennies make one nickel or four cups make one quart.

(2.G.6) Predict the results of putting shapes together and taking them apart.

(2.M.1) Identify parts of the day (e.g., morning, afternoon, evening), days of the week, and months of the year. Identify dates using a calendar.

## Performance Standards:

**M1a** Adds, subtracts whole numbers, with and without calculators

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

# UNIT: COUNTING, COINS, AND COMBINATIONS

## End-of-Unit Project

GRADE: 2

### 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 the use of algebraic notation and reasoning. It is written in MCAS form to give students the experience of answering an open-response question.

- **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.**

End of the Unit Assessment (Resource Binder) M42, M43, M44

**\*Assessment Checklist should be kept with the tracking sheet**

# UNIT: COUNTING, COINS, AND COMBINATIONS

Investigation 1 (1.1 – 1.5)

DAYS: 5

GRADE: 2

<p><b>Evidence of Learning Artifacts</b></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> – analog clock, digital clock, o'clock, greater than, less than</p> <p><i>Work Time</i> – Student Sheets 1- 14</p> <p><i>Journal Entries</i> –</p> <p><b>Inv. 1.2</b> Show at least two ways that you can make a combination of 10.</p> <p><b>Inv. 1.4</b> What were two things you notice about the 100's chart?</p> <p><i>Reflection</i> – Explain at least two strategies you would use to count a number of objects.</p>
<p><b>Accountable Talk</b></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>How did you know that? How can you use ...? Can you show another way? What patterns do you notice?</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: COUNTING, COINS, AND COMBINATIONS

Investigation 2 (2.1 – 2.8)

DAYS: 8

GRADE: 2

<p><b>Evidence of Learning Artifacts</b></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> – adding, cents, penny, nickel, dime, quarter, data, zero</p> <p><i>Work Time</i> – Student Sheets 15-27</p> <p><i>Journal Entries</i> –</p> <ul style="list-style-type: none"><li><b>Inv. 2.3</b> How many pennies is one nickel and one dime worth?</li><li><b>Inv. 2.4</b> List at least two combinations of 25 cents using pennies, nickels, and dimes.</li><li><b>Inv. 2.6</b> Write the number that comes after 109. How do you know?</li></ul> <p><i>Reflection</i> – Describe a strategy that you used to solve the “Enough for the Class” problems.</p>
<p><b>Accountable Talk</b></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>How did you know that? How can you use ...? Can you show another way? What patterns do you notice?</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: COUNTING, COINS, AND COMBINATIONS

Investigation 3 (3.1 – 3.5)

DAYS: 5

GRADE: 2

<p><b>Evidence of Learning Artifacts</b></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><b>Vocabulary</b> – addend, sum, addition combination, single-digit number</p> <p><b>Work Time</b> – Student Sheets 28- 33</p> <p><b>Journal Entries</b> –</p> <p><b>Inv. 3.1</b> If I have 4 cookies how many more do I need to make 10 cookies? How do you know?</p> <p><b>Inv. 3.3</b> Suppose I chose a 3 in the game <i>Tens Go Fish</i>, how could you figure out what to ask for to make 10?</p> <p><b>Inv. 3.4</b> Write a combination of 10 using more than two addends. Describe the strategy you used to create this combination.</p> <p><b>Reflection</b> – What patterns do you notice about our list of combinations of two numbers that make 10?</p>
<p><b>Accountable Talk</b></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>How did you know that? How can you use ...? Can you show another way? What patterns do you notice?</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: COUNTING, COINS, AND COMBINATIONS

Investigation 4 (4.1-4.9)      DAYS: 9

GRADE: 2

<p><b>Evidence of Learning Artifacts</b></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> – parts, whole, equation, plus sign, equal sign, more, same, fewer, minus sign, double, dozen, array</p> <p><i>Work Time</i> – Student Sheets 34- 61</p> <p><i>Journal Entries</i> –</p> <p><b>Inv. 4.3</b> Describe at least two strategies you could use to solve a subtraction story problem.</p> <p><b>Inv. 4.6</b> Describe what would happen if I put the number 12 into the Magic Pot.</p> <p><b>Inv. 4.7</b> Double the number 6 and create an array that shows this and write an equation.</p> <p><i>Reflection</i> - Write <i>at least</i> two <b>similarities</b> and two <b>differences</b> between the addition and subtraction story problems that you have solved.</p>
<p><b>Accountable Talk</b></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>How did you know that? How can you use ...? Can you show another way? What patterns do you notice?</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

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

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

- **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.**

Solve the problem. Show your work.

Write an equation.

1. There are \_\_\_\_\_ students in our class.

Suppose that our class fell into the magic pot and it doubled the number of students.

How many students would there be?

Solve the problem. Show your work.

Write an equation.

2. 32 students were sitting at the lunch table.

7 of them went to get a school lunch.

How many students are still sitting at the table?

# On-Demand Tasks

## Counting, Coins, and Combinations

### *Assessment Resources*

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: COUNTING, COINS, AND COMBINATIONS

## On-Demand Assessments

GRADE: 2

### On-Demand Assessments (P)

#### Counting, Coins, and Combinations

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:** (no on Demand for Inv 1)

**Inv. 2:** During session **2.2** use the checklist on page M12 in the Resource Binder to assess your class counting pennies

During session **2.8** page M23 found in the Resource Binder

**Inv. 3:** (no On Demand for Inv 3)

**Inv. 4:** During session **4.8** page M41 found in the Resource Binder



# Assessment Checklist: Counting Pennies

**M12**

Unit 1

Sessions 2.2, 2.3

Student	Knows counting sequence	Counts each object once and only once	Counts by groups of [2, 5, 10]	Double checks

Name \_\_\_\_\_

Date \_\_\_\_\_



**Counting, Coins, and Combinations**

## Assessment: Enough for the Class?

1. There are \_\_\_\_\_ children in our class.
2. I counted the cubes in Bag \_\_\_\_\_.
3. How many cubes are there altogether? \_\_\_\_\_
4. Are there enough for the class?      YES      NO
5. Were there any extra cubes?      YES      NO  
How many? \_\_\_\_\_
6. Do you need more cubes?      YES      NO  
How many? \_\_\_\_\_
7. How did you figure it out? Show your work.

Name \_\_\_\_\_

Date \_\_\_\_\_



Counting, Coins, and Combinations

## Assessment: How Many Cans?

Solve the problem. Show your work.

Write an equation.

The second grade is collecting cans for recycling.

One class collected 17 cans.

The other class collected 16 cans.

How many cans do they have so far?





# Assessment Checklist: Addition Combinations: Set 1

Student	Make 10	Plus 1	Plus 2

**M44**

Unit 1

Session 4.9

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# 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