



Holyoke Public Schools  
Mathematics Curriculum Map  
Grade 3

Trading Stickers, Combining  
Coins

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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

## **Trading Stickers, Combining Coins** **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 addition and subtraction.

*What strategy did you use to combine those two numbers?*

*Is there another way to show . . . ?*

*How many 10s make a 100? 200 . . . ?*

*How did you combine your coins?*

*How many 10s and 1s are in that number?*

*How much farther to 100?*

### ***Classroom Routines and Ten Minute Math***

Classroom Routines: What's the Temperature: Session 1.1

Ten Minute Math: Practicing Place Value: Session 1.1

Ten Minute Math: More or Less? Session 2.3

Grade 3 begins Ten Minute Math activities. Ten Minute Math activities and Classroom Routines offer practice and review of key concepts at each grade level. After their initial introduction, these short activities, designed to take no longer than 10 minutes, support and balance the in-depth work of each curriculum unit.

Implementing Investigations in Grade 3: Please review pages 24, 28 -32, for 2 Ten Minute Math activities in this unit and pg. 40-42 for Classroom Routines: "What's the Temperature".

## 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:

- Demonstrate fluency with the addition combinations up to  $10 + 10$ .
- Add multiples of 10 (up to 100) to and subtract them from 2- and small 3- digit numbers.
- Solve addition problems with 2-digit numbers using strategies that involve breaking numbers apart by place or adding one number in parts.
- Break up 3-digit numbers (less than 200) into 100s, 10s, and 1s in different ways(e.g., 153 equals 1 hundred, 5 tens, and 3 ones; 15 tens and 3 ones; 14 tens and 13 ones, etc.
- Find combinations of 2-digit numbers that add to 100 or \$1.00

## Math Content Standards:

(3.N.1) Exhibit an understanding of the values of digits in the base ten number system by reading, modeling, writing, comparing, and ordering whole numbers through 9,999

(3.N.2) Represent, order and compare numbers through 9,999. Represent numbers using expanded notation (e.g.,  $853 = 8 \times 100 + 5 \times 10 + 3$ ), and written out in words (e.g., eight hundred and fifty-three)

(3.N.8) Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money

(3.N.12) Understand and use the strategies of rounding and regrouping to estimate quantities, measures, and the results of whole number-

(3.M.2) Carry out simple unit conversions within a system of measurement, e.g., hours to minutes, cents to dollars, yards to feet or inches, etc.

(3.P.2) Determine which symbol ( $<$ ,  $>$ , or  $=$ ) is appropriate for a given number sentence, e.g.,  $7 \times 8 \underline{\quad} 49 + 6$

## 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

(M1c) Estimates using landmark numbers

(M2j) Carries out simple unit conversions, such as between cm and m, and between hours and minutes

(M3d) Uses letters, boxes or other symbols to stand for any number, measured quantity, or object in simple situations with concrete materials, i.e., demonstrates understanding and use of a beginning concept of a variable.

UNIT: Trading Stickers, Combining Coins

End-of-Unit Project

GRADE: 3

**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 1, M48 from Resource Binder, “Resources  
Masters and Transparencies”

# UNIT: TRADING STICKERS, COMBINING COINS

Investigation 1 (1.1 – 1.9)

DAYS: 9

GRADE: 3

<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>(3R) – 3 ring binder; (MNB) – marble notebook; (P) – portfolio</b></p> <p><b>Vocabulary</b> – digit, sum, degree, Fahrenheit, Celsius, line-and-dot sketch, equation, tens place, ones place, difference, adding by place, adding one number in parts, number line, unmarked number line, penny, dime, dollar (3R)</p> <p><b>Work Time</b> – Student Sheets 1 – 35 (3R)</p> <p><b>Journal Entries</b> – (MNB) *Maximum 5 minutes</p> <p><b>Inv. 1.3</b> Draw the number 53 using a line-and-dot sketch. How many 10s and how many 1s are in 53?</p> <p><b>Inv. 1.5</b> What happens to your number when you jump down 2 rows on the 100s chart?</p> <p><b>Inv. 1.7</b> What is your strategy and what would your change be if you paid for an item that costs 63 cents with a \$1.00?</p> <p><b>Reflection</b> – Show 2-ways to solve <math>53 + 21</math>. Explain your thinking..</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 convention did you use?</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: TRADING STICKERS, COMBINING COINS

Investigation 2 (2.1 – 2.8)

DAYS: 8

GRADE: 3

<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>(3R) – 3 ring binder; (MNB) –marble notebook; (P) – portfolio</b></p> <p><i>Vocabulary</i> – addition combinations, quarter, nickel (3R)</p> <p><i>Work Time</i> – Student Sheets 36 - 59 (3R)</p> <p><i>Journal Entries</i> – (MNB) *Maximum 5 minutes</p> <p><b>Inv. 2.2</b> Use the following numbers to get as close to 100 as possible. (3, 6, 7, 2, 9, 4)</p> <p><b>Inv. 2.4</b> Are there any combinations that make one dollar, which you “just know” without adding the coins? Name them.</p> <p><b>Inv. 2.6</b> Julie went to the store and purchased the following items: toothpaste for one dollar, shampoo for two dollars and seventy-five cents, and a gumball for a nickel. Show the calculation for Julie’s total amount spent.</p> <p><i>Reflection</i> – When playing Capture 5, if you were on number 20 and wanted to capture the chip on number 37, show 2 different ways you could get there using more than 3 Change Cards.</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...?</p> <p>Can you solve the problem in a different way?</p> <p>Does your answer make sense?</p> <p>What was your strategy?</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 place value and addition. 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.**

**A** Maribel bought 172 stickers at Sticker Station. Find at least 4 combinations of sheets, strips, and singles that she could have bought to equal 172 stickers. Write an equation for each one. Be sure to use all three kinds of stickers for these combinations.

Sheets of 100	Strips of 10	Singles	Equation

**B** Find at least four ways that Maribel could have bought 172 stickers, using only strips of 10 and singles.

Strips of 10	Singles	Equation

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# On-Demand Assessments

(To be filed in portfolio)

## Trading Stickers, Combining Coins 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: TRADING STICKERS, COMBINING COINS

## On-Demand Assessments

GRADE: 3

<p><b>On-Demand Assessments (P)</b></p> <p><u>Trading Stickers,</u> <u>Combining Coins</u> Investigations</p> <p>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.</p>	<p><b><u>Inv. 1:</u></b> Resource Binder: Session 1.9, M21 and M22*</p> <p><b><u>Inv. 2:</u></b> Resource Binder: Session 2.8, M46-M47*</p> <p><b>*Please refer to the section in the Teacher's Unit Guide entitled, "Professional Development" for examples of student work for each assessment.</b></p>
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Name \_\_\_\_\_

Date \_\_\_\_\_



Trading Stickers, Combining Coins

## Assessment: Hundreds, Tens, and Ones

(page 1 of 2)

Solve the following problems. Show how you solved each problem.

### Problem 1: How Many More?

- A** Ivan collects stamps from around the world. The last time he counted, he had 36 stamps in his collection. His uncle just gave him 26 more stamps from Portugal. How many stamps does he have now?
- B** Ivan's goal is to collect 100 stamps. How many more stamps does he need?

Name \_\_\_\_\_

Date \_\_\_\_\_



# Assessment: Hundreds, Tens, and Ones

(page 2 of 2)

## Problem 2: Representing a 2-Digit Number

Gabriel has 78¢. What different combinations of dimes and pennies could he have to equal 78¢? Try to find all the possible combinations. Write an equation for each one.

<b>Dimes</b>	<b>Pennies</b>	<b>Equation</b>

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Name \_\_\_\_\_

Date \_\_\_\_\_



**Trading Stickers, Combining Coins**

## End-of-Unit Assessment (page 1 of 3)

### Problem 1: How Many Marbles?

Solve this problem. Be sure to show how you solved it and to write equations to represent your work.

- A** Cara had 48 marbles in her marble collection. Her grandfather gave her 30 more. How many marbles did she have then?
- B** On Saturday, Cara went to the store and bought a bag of 36 marbles. How many marbles does she have now?

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Name \_\_\_\_\_

Date \_\_\_\_\_

Trading Stickers, Combining Coins

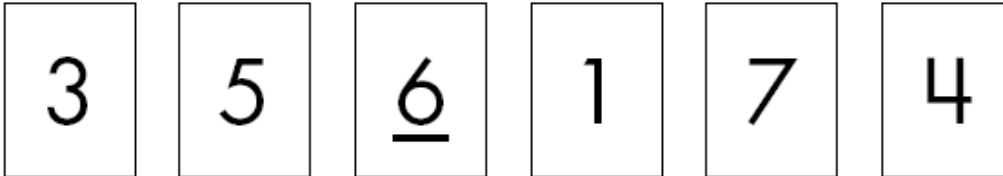


# End-of-Unit Assessment (page 2 of 3)



## Problem 2: A *Close to 100* Problem

**A** Aaron is playing *Close to 100*. These are his Digit Cards:



Show a combination of four cards that Aaron can use to get to 100.

$$\boxed{\phantom{00}} \boxed{\phantom{00}} + \boxed{\phantom{00}} \boxed{\phantom{00}} = \underline{\hspace{2cm}}$$

**B** Explain how you decided which cards to use.



# Holyoke Public Schools

## 2007 - 2008

### 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