



Holyoke Public Schools
Mathematics Curriculum Map
Grade 3

Collections and Travel Stories

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 1-4	10
End-of-Unit Project.....	14

On-Demand Assessments.....16

HPS Mathematics Scoring Rubric.....24

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

Collections and Travel Stories 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 landmark numbers could you use to.....?*
- *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?*
- *What is your strategy for finding the difference between 2 numbers?*
- *How much farther to 100? 1000?*

Classroom Routines and Ten Minute Math

Continued from previous units

Classroom Routines: What's the Temperature

Ten Minute Math: Today's Number

New to this unit

Classroom Routines: Class Collection: Session 1.4

Ten Minute Math: What Time Is It?: Session 3.1

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, 36 - 38, for the new Ten Minute Math activity “What Time is It” in this unit and pg. 38-39 for Classroom Routines: “Class Collection”.

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:

- Read, write and sequence numbers to 1,000.
- Identify the value of each digit in a 3-digit number (100s, 10s, and 1s)
- Identify how many groups of 10 are in a 3-digit number (e.g., 153 has 15 groups of 10 plus 3 ones)
- Solve addition problems with 3-digit numbers (up to 400) by using strategies that involve breaking numbers apart, either by place value or by adding one number in parts.
- Solve subtraction story problems in contexts that include removing a part from a whole, comparing 2 quantities, or finding the missing part.
- Solve subtraction problems with 2- and 3-digit numbers (up to 300) by using strategies that involve either subtracting one number in parts, adding up, or subtracting back.

Math Content Standards:

- (3.N.8) Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money.
- (3.P.2) Determines which symbol(<, >, or =) is appropriate for a given number sentence, e.g., $7 \times 8 _ 49 + 6$
- (3.P.3) Determine the value of variable (through 10) in simple equations involving addition, subtraction, or multiplication, e.g., $2 + _ = 9$; $5 \times _ = 35$
- (3.P.4) Write number sentences using +, -, x, ÷, <, =, and/or > to represent mathematical relationships in everyday situations.
- (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.M.3) Identify time to the minute on analog and digital clocks using a.m. and p.m. Compute elapsed time, using a clock for times less than one hour (i.e., minutes since), and using a calendar(e.g., days since)
- (3.M.5) Identify and use appropriate metric and US Customary (English) units and tools (e.g., ruler, scale, thermometer, clock) to estimate, measure, and solve problems involving length, area, weight, temperature, and time.

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: Collections and Travel Stories

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.

Types of Subtraction

1. Create two different types of story problems for subtraction.
2. Write an equation for each problem
3. Label the type of subtraction problem using difference, comparison, removal, and /or missing part.
4. Show and explain your answers by qualifying each strategy. (number line, landmark numbers, break apart, counting on etc.)

UNIT: COLLECTIONS AND TRAVEL STORIES

Investigation 1 (1.1 – 1.6)

DAYS: 6

GRADE: 3

<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>(3R) – 3 ring binder; (MNB) – marble notebook; (P) – portfolio</p> <p><i>Vocabulary</i> – landmark numbers, place value, estimate, combinations (3R)</p> <p><i>Work Time</i> – Student Sheets 1 – 21 (3R)</p> <p><i>Journal Entries</i> – (MNB) *Maximum 5 minutes</p> <p>Inv. 1.1 How do landmark numbers make it easier to locate any number you may want to find on the 1000s chart?</p> <p>Inv. 1.3 What strategies do you use to estimate the answer to an addition problem?</p> <p>Inv. 1.5 What strategies did you use to determine how far the class is from the week’s goal?</p> <p><i>Reflection</i> – (P) How many 100’s and how many 10’s are in 245 and 365? Explain your thinking in words, pictures, and numbers.</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>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: COLLECTIONS AND TRAVEL STORIES

Investigation 2 (2.1 – 2.7)

DAYS: 7

GRADE: 3

<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>(3R) – 3 ring binder; (MNB) –marble notebook; (P) – portfolio</p> <p><i>Vocabulary</i> – multiples of 10, multiples of 100 (3R)</p> <p><i>Work Time</i> – Student Sheets 22 - 46 (3R)</p> <p><i>Journal Entries</i> – (MNB) *Maximum 5 minutes</p> <p>Inv. 2.2 Show 2 strategies to solve $93 + 148$? Inv. 2.5 How are starter problems helpful?</p> <p>Inv. 2.6 Solve : $52 + \underline{\hspace{1cm}} = 120$ and show your solution on a number line.</p> <p><i>Reflection</i> –. Using a starter problem create and solve an addition problem with a sum of more than 200. How was this starter problem useful? How could you prove that your solution is correct? (P)</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>What is your estimate for the sum? Can you solve the problem in a different way? Does your answer make sense? What was your strategy?</p> <p><i>These are some recommended questions that you might use. Others can be found be found at the beginning of the map and on the probing question sheet in the district mathematics guide.</i></p>

UNIT: COLLECTIONS AND TRAVEL STORIES

Investigation 3 (3.1 – 3.7)

DAYS: 7

GRADE: 3

<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>(3R) – 3 ring binder; (MNB) –marble notebook; (P) – portfolio</p> <p>Vocabulary – subtraction facts, difference, related problem set, equations (3R)</p> <p>Work Time – Student Sheets 47 -63 (3R)</p> <p>Journal Entries – (MNB) *Maximum 5 minutes</p> <p>Inv. 3.2 Solve this distance riddle.: the distance between 100 and me is 73. What numbers can I be?</p> <p>Inv. 3.5 Find the difference between 26 and 59. Write an addition equation and a subtraction equation to solve the problem.</p> <p>Reflection – Show the relationship between addition and subtraction. Use pictures, words and equations. (P)</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>How did you know...? Can you solve the problem in a different way? Does your answer make sense? What was your strategy?</p> <p><i>These are some recommended questions that you might use. Others can be found be found at the beginning of the map and on the probing question sheet in the district mathematics guide.</i></p>

UNIT: COLLECTIONS AND TRAVEL STORIES

Investigation 4 (4.1 – 4.6)

DAYS: 6

GRADE: 3

<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>(3R) – 3 ring binder; (MNB) –marble notebook; (P) – portfolio</p> <p><i>Vocabulary</i> – add up, subtract back, comparison problems (3R)</p> <p><i>Work Time</i> – Student Sheets 64 - 81 (3R)</p> <p><i>Journal Entries</i> – (MNB) *Maximum 5 minutes</p> <p>Inv. 4.2 Is 326 closer to 300 or 400? Use a number line to justify your answer.</p> <p>Inv. 4.5 Solve 248-67 in two ways. Show your strategies.</p> <p><i>Reflection</i> – In the number 1,062. What is the place value for the zero? Describe how you would solve each step for taking the number 371 from 1,062. Explain what happens to the place value during each step.(P)</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>How did you know...? Can you solve the problem in a different way? Does your answer make sense? 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

Types of Subtraction

- **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.**

1. Create two different types of story problems for subtraction.
2. Write an equation for each problem
3. Label the type of subtraction problem using difference, comparison, removal, and /or missing part.
4. Show and explain your answers by qualifying each strategy. (number line, landmark numbers, break apart, counting on etc.)

On-Demand Assessments

(To be filed in portfolio)

Collections and Travel Stories 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: COLLECTIONS AND TRAVEL STORIES

On-Demand Assessments

GRADE: 3

On-Demand Assessments (P)

Collections and Travel Stories 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: None

Inv. 2: Resource Binder: Session 2.3, M35, Session 2.7, M42

Inv. 3: Resource Binder: Session 3.6, M61-M62

Inv. 4: Resource Binder: Session 4.6, M64-M65

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



Assessment: Numbers on the 1,000 Chart

(page 1 of 2)

Find the following numbers on your 1,000 chart and tell which hundreds chart it is on. (Remember that each hundreds chart is named by the *last* number on the chart.)

1. 318 is on the _____ chart.
2. 635 is on the _____ chart.
3. 771 is on the _____ chart.

Answer the following questions. You may use your 1,000 chart to help you.

4. What number is 30 more than 647? _____
5. What number is 70 less than 891? _____
6. What number is 40 more than 484? _____
7. What number is 60 less than 253? _____
8. What number is 200 more than 118? _____

Name _____

Date _____

Collections and Travel Stories



Assessment: Addition Strategies

Solve each problem below. Show your solutions.

1. $248 + 172 = \underline{\hspace{2cm}}$

- 2.** There are 322 students in the South City Elementary School. In the South City High School, there are 184 students. How many students are there altogether in the two South City schools?

Name _____

Date _____



Assessment: How Far Did They Travel?

(page 1 of 2)

Answer the questions below and show your solutions. Write an equation for each problem. Remember, both families set their trip meters at 0 before they started.

1a. The Johnson family traveled to Yosemite National Park. At the gas station, the trip meter read 37 miles. At the Tourist Information Center, the trip meter read 100 miles. How far did they travel from the gas station to the information center?

1b. When the Johnson family reached Yosemite National Park, the trip meter on their car read 125 miles. How far did they travel from the gas station to the national park?

Name _____

Date _____



Assessment: How Far Did They Travel?

(page 2 of 2)

2a. In May, the Golden family traveled to the Dinosaur National Monument. When they stopped for breakfast, the trip meter read 74 miles. They stopped again at 100 miles to pick up their cousin. How far did they travel from the restaurant to their cousin's house?

2b. When the Golden family reached the Dinosaur National Monument, the trip meter on their car read 153 miles. How far did they travel from their cousin's house to the monument?

Name _____

Date _____

Collections and Travel Stories



End-of-Unit Assessment (page 1 of 2)

Solve the following problems and show your solutions.

1. $237 + 98 = \underline{\hspace{2cm}}$

2. $232 - 165 = \underline{\hspace{2cm}}$

© Pearson Education 3



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