



Holyoke Public Schools

Grade 6

Bits and Pieces III

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CURRICULUM MAPS OUTLINE

Map 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.
5. STUDENT MASTER – for project
6. INVESTIGATIONS
7. NOTEBOOK - includes: 3 Ring Binder, Bound Notebook, Portfolio
8. ACCOUNTABLE TALK – using probing questions
9. ON DEMAND ASSESSMENTS - to be done during teaching of unit.
10. STUDENT MASTERS- for on-demand assessments.

Mathematics Evidence of Learning Artifacts

Artifact	K - 1	2 – 5	6 - 8
3 Ring Binder (3R)*	<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>
Marble Notebook (MNB)	<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>
Portfolio³ (P)	<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

Accountable Talk

Probing Assessment Questions

As students progress through this unit, they should be asked the following questions to assess their specific knowledge of the unit.

- *What is the whole unit in this situation?*
- *About how large will the sum (difference, product, or quotient) be?*
- *How do these decimals compare to fractions that you have worked with?*
- *What are the similarities between benchmark decimals and benchmark fractions?*
- *How are percents useful?*
- *How big are the numbers in this problem?*

Probing Questions – Teacher’s Role

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*

Probing Questions – Student’s Role

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

Probing Questions - Suggestions

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 <...> 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:

- *Build on knowledge about operations with fractions and whole numbers*
- *Develop and use benchmarks and other strategies to estimate the answers to computations with decimals*
- *Develop meaning of and algorithms for operations with decimals*
- *Use the relationship between decimals and fractions to develop and understand why decimal algorithms work*
- *Use the place value interpretation of decimals to make sense of shortcut algorithms for operations*
- *Generalize number patterns to help make sense of decimal operations*
- *Choose between addition, subtraction, multiplication or division as an appropriate operation to use to solve a problem*
- *Understand that decimals are often associated with measurements in real world situations*
- *Use understanding of operations and the meaning of percents to solve percent problems of the form $a\%$ of $b = c$ for any one of the variables a , b , or c .*
- *Create and interpret circle graphs*

Math Content Standards:

- *6N4 Demonstrate an understanding of fractions as a ratio of whole numbers, as parts of unit wholes, as parts of a collection, and as locations on the number line*
- *6.N.5 Identify and determine common equivalent fractions, mixed numbers, decimals, and percents.*
- *6.N.6 Find and position integers, fractions, mixed numbers, and decimals, both positive and negative, on the number line.*
- *6.N.7 Compare and order integers (including negative integers) and positive fractions, mixed numbers, decimals and percents.*
- *6.N.9 Select and use appropriate operations to solve problems involving addition, subtraction, multiplication, division, and positive integer exponents with whole numbers, and with positive fractions, mixed numbers, decimals, and percents.*
- *6N12 Demonstrate an understanding of the inverse relationship of addition and subtraction and use that understanding to simplify fractions and solve problems*

- *6N13 Accurately and efficiently add , subtract, multiply and divide whole numbers and positive decimals*
- *6.N.14 Accurately and efficiently add, subtract, multiply, and divide positive fractions and mixed numbers. Simplify fractions.*
- *6.N.16 Estimate results of computations with whole numbers, and with positive fractions, mixed numbers, decimals, and percents. Describe reasonableness of estimates.*

Performance Standards:

- *M1a Consistently and accurately adds, subtracts, multiplies, and divides rational numbers using appropriate methods and raises rational numbers to whole number powers.*
- *M1c Consistently and accurately applies and converts the different kinds and forms of rational numbers.*
- *M1f Uses ratios and rates to express “part-to-part” and “whole-to-whole” relationships, and reasons proportionally to solve problems involving equivalent fractions, equal ratios, or constant rates, recognizing the multiplicative nature of these problems in the constant factor of change.*
- *M1e Interprets percent as part of 100 and as a means of comparing quantities of different or changing sizes.*
- *M1g Orders numbers with the < and > relationships and by location on a number line; estimates and compares rational numbers using sense of the magnitudes and relative magnitudes of numbers and of base-ten place values(e.g., recognizes relationships to “benchmark” numbers $\frac{1}{2}$ and 1 to conclude that the sum $\frac{1}{2} + \frac{5}{6}$ must be between 1 and $1\frac{1}{2}$ (likewise, $\frac{13}{24} + \frac{57}{68}$)*
- *M6a Computes accurately with arithmetic operations on rational numbers.*
- *M6c Estimates numerically and spatially.*

Investigation 1: Decimals – More or Less

<p><u>Objectives</u> Investigations 1.1-1.4</p>	<p><u>Pacing:</u> 4 days</p>
<p style="text-align: center;"><i>Evidence of Learning Artifacts</i></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><u>Vocabulary</u>²: Appendix 2, Investigation 1</p>
	<p><u>Core Problems</u>²: Bits and Pieces III, Investigation 1 ACE Problems #1-6, 37, 38, 8-18, 19-21, 23-32, 45-46</p>
	<p><u>Work Time</u>¹: Bits and Pieces III, Problems 1.1-1.4</p>
	<p><u>Journal Entries</u>¹: Appendix 3, Inv #1.1, 1.2, 1.3, 1.4</p>
	<p><u>On Demand Tasks</u>³: Appendix 5, Investigation 1</p>
<p><u>Mathematical Reflection</u>³ Appendix 4, MMR1:</p>	
<p style="text-align: center;"><i>Accountable Talk</i></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>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:</p> <ul style="list-style-type: none"> ○ What is the whole (unit) in this situation? ○ Are the numbers greater than or less than 1 in this problem? ○ About how large will the (sum, difference, product or quotient) be? ○ How do these decimals compare with the fractions I know? ○ Why are percents useful in this problem? <p>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.</p>

1. Marble Note Book
2.3 Ring Binder
3. Portfolio

Investigation 2: Decimal Times

<p><u>Objectives</u> Investigations 2.1-2.4</p>	<p><u>Pacing:</u> 6 days</p>
<p style="text-align: center;"><i>Evidence of Learning Artifacts</i></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><u>Vocabulary</u>²: Appendix 2, Investigation 2</p> <hr/> <p><u>Core Problems</u>²: Bits and Pieces III , Investigation 2 ACE Problems: 1-3, 34-39,7-10.7-16,17-24,40,44,25,27-31,33,45</p> <hr/> <p><u>Work Time</u>¹: Bits and Pieces III, Problems #2.1-2.4</p> <hr/> <p><u>Journal Entries</u>¹: Appendix 3, Inv #2.1, 2.2, 2.3, 2.4</p> <hr/> <p><u>On Demand Tasks</u>³: Appendix 5, Investigation 2</p> <hr/> <p><u>Mathematical Reflection</u>³: Appendix 4, MMR2:</p>
<p style="text-align: center;"><i>Accountable Talk</i></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>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:</p> <ul style="list-style-type: none"> What is the whole (unit) in this situation? Are the numbers greater than or less than 1 in this problem? About how large will the (sum, difference, product or quotient) be? How do these decimals compare with the fractions I know? Why are percents useful in this problem? <p>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.</p>

1. *Marble Note Book*
2.3 *Ring Binder*
3. *Portfolio*

Investigation 3: The Decimal Divide

<p><u>Objectives</u> Investigations 3.1-3.4</p>	<p><u>Pacing:</u> 5 days</p>
<p style="text-align: center;"><i>Evidence of Learning Artifacts</i></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><u>Vocabulary</u>²: Appendix 2, Investigation 3</p> <hr/> <p><u>Core Problems</u>²: Bits and Pieces III, Investigation 3 ACE Problems: #1-3, 34-39,7-10.7-16,17-24,40,44,25,27-31,33,45</p> <hr/> <p><u>Work Time</u>¹: Bits and Pieces III, Problems 3.1-3.4</p> <hr/> <p><u>Journal Entries</u>¹: Appendix 3, Inv 3.1, 3.2, 3.3, 3.4</p> <hr/> <p><u>On Demand Tasks</u>³: Appendix 5, Investigation 3</p> <hr/> <p><u>Mathematical Reflection</u>³ Appendix 4, MMR3:</p>
<p style="text-align: center;"><i>Accountable Talk</i></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>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:</p> <ul style="list-style-type: none"> What is the whole (unit) in this situation? Are the numbers greater than or less than 1 in this problem? About how large will the (sum, difference, product or quotient) be? How do these decimals compare with the fractions I know? Why are percents useful in this problem? <p>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.</p>

1. *Marble Note Book*
 2.3 *Ring Binder*
 3. *Portfolio*

Investigation 4: Using Percents

<p><u>Objectives</u> Investigation 3.1-3.4</p>	<p><u>Pacing:</u> 5 days</p>
<p style="text-align: center;"><i>Evidence of Learning Artifacts</i></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><u>Vocabulary</u>²: Appendix 2, Investigation 4</p> <p><u>Core Problems</u>²: Bits and Pieces III, Investigation 4 ACE Problems: #1-4, 28, 29, 5-14, 15-19, 22-24, 27</p> <p><u>Work Time</u>¹: Bits and Pieces III, Problem 3.1, 3.2, 3.3, 3.4</p> <p><u>Journal Entries</u>¹: Appendix 3, Inv #3.1-3.4</p> <p><u>On Demand Tasks</u>³: Appendix 5, Investigation 4</p> <p><u>Mathematical Reflection</u>³: Appendix 4, MMR4:</p>
<p style="text-align: center;"><i>Accountable Talk</i></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>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:</p> <ul style="list-style-type: none"> What is the whole (unit) in this situation? Are the numbers greater than or less than 1 in this problem? About how large will the (sum, difference, product or quotient) be? How do these decimals compare with the fractions I know? Why are percents useful in this problem? <p>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.</p>

1. *Marble Note Book*
2.3 *Ring Binder*
3. *Portfolio*

Investigation 5: More About Percents

<p><u>Objectives</u> Investigations 5.1-5.3</p>	<p><u>Pacing:</u> 4 days</p>
<p style="text-align: center;"><i>Evidence of Learning Artifacts</i></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><u>Vocabulary</u>²: Appendix 2, Investigation 5</p> <hr/> <p><u>Core Problems</u>²: Bits and Pieces III, Investigation 5 ACE Problems: #1-6,37,38; 8-18,19-21;23-32,45,46</p> <hr/> <p><u>Work Time</u>¹: Bits and Pieces III, Problem #5.1, 5.2, 5.3</p> <hr/> <p><u>Journal Entries</u>¹: Appendix 3, Inv 5.1-5.3</p> <hr/> <p><u>On Demand Tasks</u>³: Appendix 5, Investigation 5</p> <hr/> <p><u>Mathematical Reflection</u>³: Appendix 4, MMR5:</p>
<p style="text-align: center;"><i>Accountable Talk</i></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>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:</p> <ul style="list-style-type: none"> What is the whole (unit) in this situation? Are the numbers greater than or less than 1 in this problem? About how large will the (sum, difference, product or quotient) be? How do these decimals compare with the fractions I know? Why are percents useful in this problem? <p>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.</p>

1. *Marble Note Book*
2.3 *Ring Binder*
3. *Portfolio*

Appendix 1 Unit Project

<p style="text-align: center;"><i>Project</i>¹</p> <p>Student work should be placed in portfolio</p>	<p>The project is the culminating assessment, which will allow students to apply what they learned about the use of decimals and percents. It is written in MCAS form to give students the experience of answering an open-response question.</p> <p>The unit project is called ‘Mr. Riley’s Farm’ and the student handout for the project can be found in Appendix 1</p>
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1. portfolio

Unit Project Scoring Guide

Score	Description
<u>4</u>	The student response demonstrates an exemplary understanding of the Number Sense and Operations concepts involved in accurately adding, subtracting, multiplying, and dividing whole numbers and positive decimals.
<u>3</u>	The student response demonstrates a good understanding of the Number Sense and Operations concepts involved in accurately adding, subtracting, multiplying, and dividing whole numbers and positive decimals. Although there is significant evidence that the student was able to recognize and apply the concepts involved, some aspect of the response is flawed. As a result the response merits 3 points.
<u>2</u>	The student response contains fair evidence of an understanding of the Number Sense and Operations concepts involved in accurately adding, subtracting, multiplying, and dividing whole numbers and positive decimals. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 2 points.
<u>1</u>	The student response contains only minimal evidence of an understanding of the Number Sense and Operations concepts involved in accurately adding, subtracting, multiplying, and dividing whole numbers and positive decimals.
<u>0</u>	The student response contains insufficient evidence of an understanding of the Number Sense and Operations concepts involved in accurately adding, subtracting, multiplying, and dividing whole numbers and positive decimals to merit any points.

NAME: _____

DATE: _____

UNIT PROJECT: Mr. Riley's Farm

- *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.*

Mr. Riley grows four different crops on his 300-acre farm. Each acre has the same number of plants. The circle graph below shows what percent of the total number of acres is planted in each crop.

Crops Planted on Mr. Riley's Farm



- a. What percent of Mr. Riley's farm is planted in beans? Show or explain your work.
- b. How many acres of wheat are planted in Mr. Riley's farm? Show or explain your work.
- c. Mr. Riley thinks that if he plants wheat in all of the acres that are beans, more than half his farm would be wheat. Is he correct? Why or why not? Show or explain your work.

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Student Work: Question #17 - Score Point 4

a.) 20% of Mr. Riley's farm is planted in beans because $25\% + 35\% + 20\% = 80\%$
 $100\% - 80\% = 20\%$ so 20% is left for beans.

b.) 75 acres of wheat are planted in Mr. Riley's farm because I divided 300 acres by 4 because 25% $\frac{1}{4}$. When I divided, I got 75 so 75 acres are planted in wheat.

c.) No, Mr. Riley is not correct because 25% which is wheat + 20% which is beans = 45% and 50% is half. Wheat would be less than half by 5%.

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Student Work: Question #17 - Score Point 3

A) 20% of Mr. Riley's farm is bean.
This is so because if you add all of the percents, it should add up to 100%. Beans is the only one missing, so if you add all the other percents up and subtract it from 100%, you will find the percent of the beans. In this case it is 20%.

B.) 75 acres of land have wheat on them. This is so because 25% is another word for $\frac{1}{4}$. $\frac{1}{4}$ of 300 is $300/4$. The answer to this is 75 acres.

C.) Mr. Riley is not correct. If he plants wheat on all of the acres of bean plants, he will only have 40% which is not quite half.

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Student Work: Question #17 - Score Point 2

(a) 20% of Mr. Riley's farm is planted in beans.

(b) 25% of Mr. Riley's farm acres is wheat.

(c) No, he is not correct. 25% plus 20% only equals 45%. Mr. Riley would need 50% for half of his farm to be wheat.

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Student Work: Question #17 - Score Point 1

a. 20%

b. 100 acers of weat are planted.

c. No because there will still be more corn and cotton.

Appendix 2 Vocabulary

Investigation 1:

- *repeating decimal, terminating decimal, power of ten, difference, dividend, divisor, factor, mean, product, quotient, sum*

Investigation 2:

- *powers of ten*

Investigation 3:

- *divisor, dividend, quotient*

Investigation 4:

- *repeating decimal, terminating decimal*

Investigation 5:

- *(reinforce previous vocabulary)*

Appendix 3 Journal Entries

Investigation 1:

Investigation 1.1:

How would you describe your estimation strategy for adding and subtracting decimals?

Investigation 1.2:

How does place value interpretation of decimals help you make sense of adding and subtracting decimals?
Use an example to help show your thinking.

Investigation 1.3:

How would you explain to someone how to use fractions to add and subtract decimals?

Investigation 1.4:

Describe an algorithm for adding and subtracting two decimal numbers.

Investigation 2:

Investigation 2.1

Describe whether or not the product will be less than the factors or greater than the factors when you multiply decimals

Investigation 2.2

Describe how fraction multiplication helps us think about decimal multiplication.

Investigation 2.3

Find two factors whose product is 0.060. Give a second pair of factors whose product is the same and show all of your work.

Investigation 2.4

What happens to the value of a digit as you move one place to the right?

Investigation 3

Investigation 3.1

How did you decide what operation to use? Give an example to explain your thinking.

Investigation 3.2

Write the following as an equivalent division problem with a whole number dividend and divisor and find the quotient. Describe your strategy for finding the equivalent division problem.

Investigation 3.3

How does the fact family help solve for a missing factor, divisor or dividend?

Give an example to show your thinking.

Investigation 3.4

What kinds of denominators of fractions in the lowest terms seem to give terminating or repeating decimal forms?

Investigation 4

Investigation 4.1

Hot dogs at a carnival cost \$0.99 each plus 7% tax.

What is the total cost for one hot dog?

Show all of your work and explain your thinking.

Investigation 4.2

Marilyn carries a tip calculator card with her. It lists the amounts for 15% and 20% tips on whole dollar values up to \$100. Her daughter notices a pattern. She says “for each dollar the cost increases, the tips in the 15% column increases \$0.15.” Explain why this pattern occurs for 15% tip values

Investigation 4.3

Lisa finds a hat that is already marked down. The price tag shows that the original price was \$36. The marked-down price is \$27. What percent has the hat been marked down? Explain your strategy.

Investigation 5

Investigation 5.1

How do you find the fraction of the cost the coupon represents?

Investigation 5.2

A music store reported 15 sales for every 100 people who visited the store last year. What percent of the visitors bought something?

Investigation 5.3

Describe how to make a circle graph. Use an example to explain your strategy.

Appendix 4 Reflections

MMR1

Do you need to line up the decimal points when adding or subtracting decimals? Give examples to explain your thinking.

MMR2

Describe an algorithm for multiplying any two decimal numbers. Use an example to show why your algorithm works.

MMR3

Re-read your 4 journal entries for this investigation. Summarize what you learned and highlight the big ideas for this investigation. How have your ideas changed about dividing with decimals? What questions do you still have?

MMR4

How can you find the percent one number is of another?

For example, what percent of 35 is 7?

MMR5

Suppose you have a fixed amount of money to spend and you have to pay a percent of it for tax. How do you find the amount you can spend so that you will have enough for the purchase and for the tax? Use an example to explain your strategy

Appendix 5 On Demand Tasks

CMP2: Bits and Pieces III

On-Demand Tasks

Additional Practice & Skills Workbook

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.

After Inv. 1

Additional Practice and Skills Workbook pg.80, #4

After Inv. 2

Additional Practice and Skills Workbook pg.85, #7

After Inv. 3

2006 MCAS question #8

After Inv. 4

2006 MCAS question # 26

After Inv. 5

2006 MCAS question #35

HPS Mathematics Scoring Rubric

Score	Description
<u>4</u>	The response shows a <u>comprehensive</u> understanding of the mathematical concept(s) and/or procedures embodied in the task(s). It indicates that the student has <u>completed the task(s)</u> correctly, using mathematically sound procedures. It contains <u>clear, complete explanations</u> and/or <u>adequate work required</u> .
<u>3</u>	The response shows a <u>general</u> understanding of the mathematical concept(s) and/or procedures embodied in the task(s). It indicates that the student has <u>completed the task(s)</u> , using mathematically sound procedures. It contains <u>complete explanations</u> and/or <u>adequate work required</u> .
<u>2</u>	The response shows a <u>basic</u> understanding of the mathematical concept(s) and/or procedures embodied in the task(s). It addresses <u>most aspects of the task(s)</u> , using mathematically sound procedures. It may contain a correct solution but provides <u>incomplete procedures, reasoning and/or explanations</u> . It may reflect <u>some misunderstandings</u> of the underlying mathematical concepts and/or procedures.
<u>1</u>	The response shows a <u>minimal</u> understanding of the mathematical concepts and/or procedures embodied in the task(s). It addresses <u>some elements of the task(s)</u> correctly but reaches an <u>inadequate solution and/or provides reasoning that is faulty or incomplete</u> . It exhibits <u>multiple flaws related to a misunderstanding of important aspects</u> of the task(s), misuse of mathematical procedures, or faulty mathematical reasoning. It reflects a <u>lack of essential understanding</u> of the underlying mathematical concepts. It may contain a correct numerical answer but <u>the required work is not provided</u> .
<u>0</u>	The response is <u>completely incorrect, irrelevant, or incoherent</u> , or contains a correct response arrived at using an <u>obviously incorrect procedure</u> .

NAME: _____

DATE: _____

Investigation 1

- *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.*

4. For each list, identify the greatest value. Explain.

a. 35.7, 35.07, 35.007

b. 608.9, 609.8, 690.8

c. 75.0605, 75.6050, 75.6500

NAME: _____

DATE: _____

Investigation 2

- *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.*

7. Compute each product. What patterns do you notice?

a. 5.5×9.9

b. 5.5×9.99

c. 5.5×9.999

d. 5.5×9.9999

NAME: _____

DATE: _____

Investigation 3

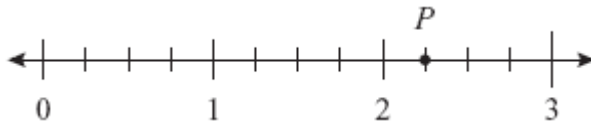
2006, Mathematics - Grade 6

Question 8: Multiple-Choice

Reporting Category: Number Sense and Operations

Standard(s): 6.N.6

Which of the following best represents the location of point P on the number line below?



- A. 2.5
- B. 2.33
- C. 2.25
- D. 2.1

NAME: _____

DATE: _____

Investigation 4

2006, Mathematics - Grade 6

Question 26: Multiple-Choice

Reporting Category: Number Sense and Operations

Standard(s): 6.N.5

Muriel has 20 flowers in her garden. Exactly 16 of the flowers are tulips. What percent of the flowers in Muriel's garden are tulips?

- A. 4%
- B. 16%
- C. 40%
- D. 80%

NAME: _____

DATE: _____

Investigation 5

2006, Mathematics - Grade 6

Question 35: Multiple-Choice

Reporting Category: Number Sense and Operations

Standard(s): 6.N.7

Johanna separated 36 index cards by color into four groups, as follows:

- 6 of the index cards were blue.
- 25% of the index cards were green.
- $\frac{1}{3}$ of the index cards were yellow.
- $\frac{1}{4}$ of the index cards were pink.

Which color group contained the greatest number of cards?

- A. blue
- B. green
- C. yellow
- D. pink

NOTES