



Holyoke Public Schools Mathematics Curriculum Map Grade 2

Parts of a Whole, Parts of a Group

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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

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

Parts of a Whole, Parts of a Group

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 finding halves, thirds, and fourths of a whole and a set of objects.

What is a fraction?

What is a mixed number?

What is a half?

What is a third?

What is a fourth?

What does the top number (numerator) tell us in a fraction?

What does the bottom (denominator) tell us in a fraction?

Classroom Routines

Classroom Routines:

Quick Images- Sessions 1.1, 2.1, 2.4

What Time Is It? - Sessions 1.3, 2.3, 2.6

Today's Number- Sessions 1.2, 2.2, 2.5

How Many Pockets? - Sessions 1.4

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:

- Identify $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$ of a region
- Find $\frac{1}{2}$ of a set of objects
- Recognize that a fraction divides the whole into equal parts

Math Content Standards:

(2.N.3) Identify and represent common fractions ($\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$) as parts of wholes, parts of groups, and numbers on the number line.

Performance Standards:

M1d Describes and compares quantities by using concrete and real world models of simple fractions

UNIT: Parts of a Whole, Parts of a Group

End-of-Unit Project

GRADE: 2

End-of-Unit Project (P)

Student work should be placed in portfolio (P).

The project is the culminating assessment which will allow students to apply what they learned in the unit.

It is written in MCAS form to give students the experience of answering an open-response question.

End-of-Unit Assessment: Unit 7 M24, M25 from Resource Binder, “Resources Masters and Transparencies”

UNIT: PARTS OF A WHOLE, PARTS OF A GROUP

Investigation 1 (1.1 – 1.4)

DAYS: 5

GRADE: 2

<p>Evidence of Learning Artifacts</p> <p>Journal and Reflection questions should be posted and referred to at the beginning of the appropriate <i>Investigation</i>.</p> <p>Journal and Reflection entries need to be done in class as part of the closure and assessment</p>	<p><i>Vocabulary</i> – one-half, fraction, equal, half, one and one half, two and a half</p> <p><i>Work Time</i> – Student Sheets 1-20</p> <p><i>Journal Entries</i> – *Maximum 5 minutes</p> <p>Inv. 1.1 Use pictures, number and/or words to describe what a half is?</p> <p>Inv. 1.4 What strategy would you use to find half of 18. Explain your thinking in pictures/numbers and/or words.</p> <p><i>Reflection</i> – What is the same and what is different between one-half of a sandwich and one-half of a bunch of balloons?</p>
<p>Accountable Talk</p> <p>To promote learning, explore solutions, and justify reasoning, conversations between students and students or students and teacher must be accountable – accountable to the learning community, to the mathematics discipline, and to rigorous thinking.</p>	<p><i>As a result of this Investigation, students should be able to talk and manipulate the vocabulary of the Investigation in response to this type of question:</i></p> <p><i>What is a fraction?</i> <i>What is a mixed number?</i> <i>What is a half?</i> <i>What is a third?</i> <i>What is a fourth?</i> <i>What does the top number(numerator) tell us in a fraction?</i> <i>What does the bottom (denominator) tell us in a fraction?</i></p> <p><i>These are some recommended questions that you might use. Others can be found at the beginning of the map and on the probing question sheet in the district mathematics guide.</i></p>

UNIT: PARTS OF A WHOLE, PARTS OF A GROUP

Investigation 2 (2.1 – 2.6)

DAYS: 7

GRADE: 2

<p>Evidence of Learning Artifacts</p> <p>Journal and Reflection questions should be posted and referred to at the beginning of the appropriate <i>Investigation</i>.</p> <p>Journal and Reflection entries need to be done in class as part of the closure and assessment</p>	<p><i>Vocabulary</i> – fraction, one-fourth, one-quarter, fourths, one-third, thirds, two-thirds</p> <p><i>Work Time</i> – Student Sheets 21-37</p> <p><i>Journal Entries</i> – *Maximum 5 minutes</p> <p>Inv. 2.1 Name two observations you have made about the relationship between halves and fourths.</p> <p>Inv. 2.3 Name two observations you have made about the relationship between thirds and fourths.</p> <p>Inv. 2.5 Explain a strategy you used when you solved fraction story problems.</p> <p><i>Reflection</i> – There are 12 sandwiches. How many sandwiches would represent $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$ of the sandwiches? Explain your thinking using pictures, numbers and/or words.</p>
<p>Accountable Talk</p> <p>To promote learning, explore solutions, and justify reasoning, conversations between students and students or students and teacher must be accountable – accountable to the learning community, to the mathematics discipline, and to rigorous thinking.</p>	<p><i>As a result of this Investigation, students should be able to talk and manipulate the vocabulary of the Investigation in response to this type of question:</i></p> <p><i>What is a fraction?</i> <i>What is a mixed number?</i> <i>What is a half?</i> <i>What is a third?</i> <i>What is a fourth?</i> <i>What does the top number(numerator) tell us in a fraction?</i> <i>What does the bottom (denominator) tell us in a fraction?</i></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>

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 halves, thirds, and fourths of a whole and a set of objects. It is written in MCAS form to give students the experience of answering an open-response question.

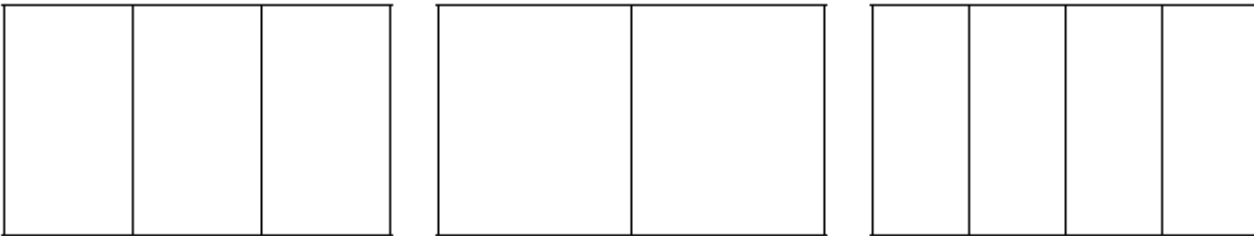
NAME: _____

DATE: _____

End-of-Unit Project

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

Problem 1: Identifying Fractions



1. Color $\frac{1}{2}$ of a rectangle yellow.
2. Color $\frac{1}{3}$ of a rectangle blue.
3. Color $\frac{1}{4}$ of a rectangle red.

Problem 2: Finding One Half

Linda and Ebony's friend gave them 16 pens.

4. Can each girl get half? _____
5. How many pens does Linda get? _____
6. How many pens does Ebony get? _____

Problem 3: Is it one third?



Franco and Jake are thinking about the flag shown above.

Jake thinks that this flag **is** divided into thirds because it has 3 parts.

Franco thinks that this flag **is not** divided into thirds because the 3 parts are not equal.

Do you agree with Jake or Franco? Why?
(Continue your answer on the back if you need more space.)

On-Demand Assessments

(To be filed in portfolio)

Parts of a Whole, Parts of a Group 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: PARTS OF A WHOLE, PARTS OF A GROUP

On-Demand Assessments

GRADE: 2

<p>On-Demand Assessments (P)</p> <p><u>Parts of a Whole, Parts of a Group Investigations</u></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><u>Inv. 1:</u> (no On-Demand)</p> <p><u>Inv. 2:</u> Resource Binder: Session 2.1, M4*</p> <p>*Please refer to the section in the Teacher's Unit Guide entitled, "Professional Development" for examples of student work for each assessment.</p> <p><u>*Assessment Checklist should be kept with tracking sheet.</u></p>
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Assessment Checklist: Fractions as Equal Parts

M4

Unit 7

Sessions 1.2, 1.3, 1.4, 2.1

Student	Finds $\frac{1}{2}$ of a Whole <ul style="list-style-type: none"> Divides a shape into equal parts Identifies $\frac{1}{2}$ of a rectangle or block 	Finds $\frac{1}{2}$ of a Set <ul style="list-style-type: none"> Divides a set of objects into 2 equal sets Identifies unequal situations 	Identifies parts using fractions <ul style="list-style-type: none"> Labels parts of a divided shape using fractions

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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