

MATHEMATICS K-6: Alignment of Curriculum and Assessment

Curriculum Management Plan for a School Year

- Identify core curriculum standards ALL students must understand, know, and be able to do.

Curriculum Management Plan: Grade ____	
Teaching Chunk 1	Teaching Chunk 2
Teaching Chunk 3	Teaching Chunk 4
Weave in to other math topics or subject areas (morning calendar, science, social studies)	

- Clarify standards so that students, parents, and teachers all understand them in the same way.

Standard 1/Objective 1:	
ESSENTIAL QUESTIONS	
UNDERSTAND	KNOW & DO (Core Curriculum)
	KNOW and USE (Vocabulary)

- Create benchmark (common) assessment(s) for a “teaching chunk.”

Learning Targets for a Marking Period

- Clarify how it will look when students understand it, know it, & can do it.

Teaching chunk 1

Standard: IV Measurement Date: ____	
Learning Target(s): <i>How might we describe, estimate, and measure perimeter with customary and metric units? 3rd Standard IV Objective 1e</i>	
Above and Beyond	
4 Excellent: On target	
3 Very Good: On target (minor flaws)	
2 Developing	
1 More time & support needed	

- Pre-assess to determine appropriate starting place for whole class teaching and flexible grouping. The “Curriculum Management Plan for a School Year” is not necessarily the operational curriculum. It is a general starting place.

Sample pre-assessment task:

Scientists planned to fence a section of rain forest. The section was shaped like a rectangle, 30 feet long and 20 feet wide. A) Draw a picture that shows how the rectangle would look. Label your rectangle’s length and width. B) How many feet of fencing did the scientists need to go all the way around the rectangle? Write the answer and show how you found your answer.

Assessment of Student Progress in a Marking Period

- Use formative assessment tasks frequently
 - to collect evidence about student progress of learning targets to inform “next steps” in learning (not factored into report card grades).
 - to provide students with descriptive feedback they can use to see how to improve (not factored into report card grades). Formative assessments blend seamlessly into classroom instruction itself.
- Use summative assessment tasks occasionally to see how much learning has occurred at a point in time.

Standard: IV Measurement Date: ____	
Learning Target <i>Determine elapsed time</i>	
Instructional or Assessment Task Allen started his homework at 6:30 P.M. He finished 45 minutes later. How much time will Allen have to watch TV before his bedtime at 9:00 P.M. A) Draw hands on the clock to show what time Allen finished his homework. B) Show or explain how you got your answer. Assessment criteria available (4, 3, 2, 1)	

The only thing that separates assessment from instruction is the purpose for which the task is being used!

“Scores” on formative assessments and other practice work (e.g. homework) are used descriptively to inform teachers and students of what has been learned and the next steps in learning. Grades are based only on summative assessments.

- Report card grades reflect the most current body of achievement evidence available. Evidence can and should be gathered in various ways. Most recent evidence completely replaces out-of-date evidence when it is reasonable to do so.

Sample: Convert rubric ratings to grades

4 (A)	At least 50% 4’s and the rest 3’s
3 (B)	75% of ratings are 3’s or better, other 25% not lower than 2
2 (C)	40% of ratings are 2’s or better
1 (NI)	More than 50% are 2’s or 1’s

Stiggin’s 5 point scale adapted to 4 point scale (Carling)

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Curriculum Management Plan for School Year	Learning Targets for a Marking Period	Assessment of Student Progress in a Marking Period																						
<p><u>Tasks</u></p> <ol style="list-style-type: none"> 1) Decide what you want students to learn in a marking period. <table border="1" data-bbox="235 519 680 786"> <tr> <td colspan="2">Standard 1/Objective 1:</td> </tr> <tr> <td colspan="2">ESSENTIAL QUESTIONS</td> </tr> <tr> <td>UNDERSTAND</td> <td>KNOW & DO (Core Curriculum)</td> </tr> <tr> <td></td> <td>KNOW and USE (Vocabulary)</td> </tr> </table> <ol style="list-style-type: none"> 2) Create an ALIGNED benchmark (common) assessment. <p><i>Resources:</i></p> <ul style="list-style-type: none"> • <i>Granite’s benchmark assessments</i> • http://wesley.yuu.googlepages.com/mathlinks (released assessment items - great site!) • <i>Scott Foresman resource books</i> 	Standard 1/Objective 1:		ESSENTIAL QUESTIONS		UNDERSTAND	KNOW & DO (Core Curriculum)		KNOW and USE (Vocabulary)	<p><u>Tasks</u></p> <ol style="list-style-type: none"> 1) Create a rubric for at least one comprehensive learning target (<i>see “counting” ex.</i>) <p>Use “understandings” on grade-level content framework sheets to help you to clarify how the task should be performed</p> <table border="1" data-bbox="848 795 1276 1175"> <tr> <td>Standard: _____</td> <td>Date: _____</td> </tr> <tr> <td colspan="2">Learning Target(s):</td> </tr> <tr> <td>Above and Beyond</td> <td></td> </tr> <tr> <td>4 Excellent: On target</td> <td></td> </tr> <tr> <td>3 Very Good: On target (<i>minor flaws</i>)</td> <td></td> </tr> <tr> <td>2 Developing</td> <td></td> </tr> <tr> <td>1 More time & support needed</td> <td></td> </tr> </table> <ol style="list-style-type: none"> 2) Create aligned pre-assessment task or tasks. Administer and score, using rubric, to determine a starting point for teaching. 	Standard: _____	Date: _____	Learning Target(s):		Above and Beyond		4 Excellent: On target		3 Very Good: On target (<i>minor flaws</i>)		2 Developing		1 More time & support needed		<p><u>Tasks</u></p> <ol style="list-style-type: none"> 1) Gather various types of learning tasks. Anticipate various readiness, interests, and learning styles as you select tasks. 2) Revise tasks as needed so that verbs and content are tightly aligned with the learning target(s). 3) After marking period, file unused tasks in the “fluency and maintenance” folder/file for later student “fluency & maintenance” practice.
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The Mathematics Classroom K-6

CONTENT: Conceptual Understanding

Comprehend concepts, operations, and relations; know what symbols, diagrams, and procedures mean.

- Students develop conceptual understanding as they solve **CONTENT**-based problems (tasks): *How might we measure the perimeter of our classroom?*

Curriculum Content

STANDARD/Objectives	
ESSENTIAL QUESTIONS <small>Questions/tasks that help students come to own understandings</small>	
UNDERSTAND	KNOW & DO <small>(Core Curriculum)</small>
	KNOW and USE <small>(Vocabulary)</small>

- Students use “*procedural fluency*” and “*problem solving strategies*” as “tools” for learning, but teacher emphasis and feedback centers on **conceptual understanding**.
- Report card grades reflect the most current body of achievement evidence of **conceptual understanding** that is available.

Report Card:

- Number and Operations
- Patterns and Relations
- Geometry
- **Measurement**
(grade only what was directly taught & practiced)
- Data Analysis and Probability

Procedural Fluency

Carry out procedures flexibly, accurately, efficiently, and appropriately
(such as adding, subtracting, multiplying, and dividing numbers)

- Students use “*conceptual understanding*” as a tool for reaching **procedural fluency**. For example, an *understanding of the commutative property* of multiplication helps fluency - *if $5 \times 6 = 30$, then I know that $6 \times 5 = 30$.*
- Fluency and Maintenance**
Only AFTER conceptual understanding is reached, students practice for fluency and review for maintenance.

PROBLEM SOLVING:

Application of conceptual & procedural understanding

Formulate problems mathematically and devise strategies for representing and solving problems.

- Students develop and use **PROBLEM SOLVING strategies** to reach reasonable solutions to fuzzy problems.

Problem Types

Open-ended problems that lend themselves to multiple solution paths (process/situational) and **multiple step word problems**.

Problem Solving Strategies

- **Study**
What does the problem ask?
How will the answer look?
- **Explore**
How might the problem be solved?
- **Solve**
Solve & record the problem.
- **Check**
Does the answer make sense?
How might thinking be explained throughout?

- Students use “*conceptual understanding*” and “*procedural fluency*” as tools for solving problems, but emphasis and feedback centers on **problem solving strategies**.
- Report card grade reflects the most current body of achievement evidence of **student use of problem solving strategies** that is available.
 - Report Card: **Problem Solving**
(grade only what was directly taught and practiced)

Students use process skills to gain access to learning: Reasoning -- Communication -- Connections -- Representation