

**FROM COLLEGE AND CAREER READY STANDARDS
TO TEACHING AND LEARNING IN THE CLASSROOM:
A SERIES OF RESOURCES FOR TEACHERS**

WHAT'S LEARNED FIRST, WHAT'S LEARNED TOGETHER?

DEVELOPING A YEARLONG PLAN FROM THE K-8 COLLEGE AND CAREER READY STANDARDS FOR MATHEMATICAL CONTENT

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INTRODUCTION

This resource is part of a series produced by the Center for Standards and Assessment Implementation (CSAI) to assist teachers and those who support teachers to plan teaching and learning from College and Career Ready Standards (CCRS) for diverse learners. This resource uses the Common Core State Standards (CCSS; National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010) as an example of CCRS. The processes described in this resource are applicable to all States' CCRS, including the CCSS.

There are two sets of standards in the Mathematics CCSS.¹ The Content Standards “define what students should understand and be able to do in their study of mathematics” (CCSSM, p. 4). The Standards for Mathematical Practice “describe varieties of expertise that mathematics educators at all levels should seek to develop in their students” (CCSSM, p. 6).² Effective teaching and learning in mathematics will depend on a merger between the two sets of standards in daily instruction.

As Michael Shaughnessy, past president of the National Council of Teachers of Mathematics, noted, “It is not just a narrowing and deepening of content focus that the CCSSM calls for in K - 8, but also real change in how mathematics is taught and learned in the schools” (personal communication, May 18, 2014). This change in teaching and learning will come about when the mathematics content standards and the practice standards are merged.

This resource provides the first step for merging content and practice standards in daily instruction: it helps teachers organize and arrange content standards into a meaningful yearlong sequence of learning, while taking a big-picture view of where particular practice standards fit especially well into this plan.

The resource addresses two essential steps in the process of lesson planning from the CCRS:

- (1) Gaining a deep understanding of the mathematical content in clusters of standards and the connections between and among the clusters; and
- (2) Creating a yearlong roadmap that arranges and orders the content standards in preparation for instructional planning.

Two complementary CSAI resources, *Building Blocks, Learning Goals, and Success Criteria: Planning Instruction and Formative Assessment for K-8 Math Standards* and *Developing and Refining Lessons: Planning Learning and Formative Assessment for Math College and Career Ready Standards*, illustrate how content and practice standards are merged in daily instruction and how formative assessment can be effectively implemented to support student learning of both sets of standards.

¹ Henceforth in this document, “Mathematics CCSS” is abbreviated as CCSSM.

² If a State has adopted math CCRS other than the CCSSM and has not specifically identified math practice standards, practice standards have most likely been integrated into the content standards. Teachers in those States should identify and tease out the practice standards from the content standards.

GETTING THE LAY OF THE LAND

The CCRS describe what students should learn, but not how teachers should structure, order, and prioritize this learning. Starting with a set of grade-level math standards, teachers need to decide which topics (1) will take relatively more or less time to learn, (2) need to be learned before others, and (3) are best learned concurrently. To make these decisions, teachers should have a sense of the major work of the grade and the extent of the conceptual steps between this work and that of the previous grade. All of this analysis helps teachers “get the lay of the land,” which is an essential part of the process of developing a yearlong roadmap in preparation for instructional planning.

DEPTH AND SCOPE OF LEARNING: AN EXAMPLE FROM CCSSM

The organized hierarchy of the CCSSM (standards, nested within clusters, nested within domains)³ helps teachers see the number and nature of the mathematical topics their students will learn during the year. While this is useful information, it is not sufficient to create a long-term plan for instruction.

The CCSSM vary greatly in the depth and scope of learning they describe, including the depth of the ideas they address, the time they take students to learn, the number of prior standards they depend on, and their bearing on future standards. Simply dividing the number of instructional days by the number of grade-level standards, allocating the resulting number of days for each standard, and then teaching the standards in the order that they are listed is not the best way to think about yearlong planning. This approach does not take account of the underlying mathematics described in the standards and would not adequately address student learning.

This variability in depth and scope exists at the cluster and domain level as well. For example, a glance at the third grade standards below shows that student learning for the grade is described by 25 standards, from 5 domains:

Grade 3 CCSSM Content Standards	Clusters	Standards
Operations and Algebraic Thinking	4	9
Number and Operation in Base Ten	1	3
Number and Operations-Fractions	1	3
Measurement and Data	4	8
Geometry	1	2

The domains *Number and Operation in Base Ten* and *Number and Operations-Fractions* both contain a single cluster of three standards. Does this mean these domains describe the same depth and scope of learning? Does it mean that they should be allotted the same amount of instructional time?

The answer to these questions is “no” in both cases. Why? The cluster from the domain of *Number and Operation in Base Ten* describes a modest extension of students’ second-grade learning about place value and arithmetic. In contrast, the cluster from *Number and Operations-Fractions* asks students to achieve a deep, conceptual understanding of fractions, involving multiple representations and the notion of equivalence. The differences in depth and scope represented in these cluster domains mean that students will need different amounts of time to achieve the standards within the cluster. This is the case for the clusters at each grade level.

³ In high school, clusters are nested within conceptual categories, not domains. For a primer on the CCSSM hierarchical terminology, see the CSAI Resource, *Getting a Handle on the Standards* (csai-online.org/curriculumandinstruction).

A word of caution: the phrasing of a standard is not an indication of the depth and scope of learning it describes. Some concepts, procedures, or applications require substantial intellectual effort and time to master, yet can be stated in a short sentence (e.g., 7.NS.3⁴). Other standards describe comparatively less demanding learning but require a long explanation for the purpose of clarity (e.g., 7.SP.5⁵).

Given the unevenness in depth and scope of the CCSSM, teachers' planning will benefit from a deep knowledge of grade-level standards. Deep knowledge will assist teachers to prioritize and arrange standards into a meaningful yearlong plan. This resource provides teachers with process for developing that knowledge.

CONNECTIONS AMONG DOMAINS

The CCSSM are organized into domains, which are large groups of related standards. Mathematics teachers know that the content students need to learn is sequential, cumulative, and deeply interconnected, both within and across domains.

There are places in the CCSSM where learning is explicitly linked across domains. For example, area and multiplication, two of the major learning emphases in Grade 3 are situated in different domains, but an individual standard highlights the connection between the two: "Relate *area* to the operations of *multiplication* and addition" (3.MD.7). Some teachers might help their students develop a firm conceptual understanding of multiplication, and then introduce area as an application. Others might introduce unit squares and area first, and then ask students to generalize to the concept of multiplication. Still others may choose to teach the two topics concurrently. Teachers may make different instructional choices about how to best make use of these connections with their students, but the important thing is that they *do* make use of them.

Connections across domains have important implications for yearlong planning. It is critical that teachers locate, understand, and carefully plan around these connections. When they do so, they are better able to support students in making the deep and important connections that exist in the underlying conceptual logic of the standards.

CONNECTIONS BETWEEN CONTENT AND PRACTICE STANDARDS

The Standards for Mathematical Practice from the CCSS describe expertise that students in all grades should be developing as part of their mathematical education. The processes and proficiencies outlined in the practice standards describe not only what to do with mathematics ("solve problems," "reason," "use appropriate tools," etc.) but *how* to do it ("with perseverance," "abstractly and quantitatively," "strategically," etc.).

As teachers progress from a yearlong plan to specific learning goals for individual lessons, this idea of how to approach mathematics becomes increasingly critical. In this resource, which represents the beginning of the planning process, teachers begin to merge the content and practice standards by making note of connections that exist between them.⁶

⁴ "Solve real-world and mathematical problems involving the four operations with rational numbers."

⁵ "Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event."

⁶ Two additional resources, *Building Blocks*, *Learning Goals*, and *Success Criteria: Planning Instruction and Formative Assessment for K-8 Math Standards* and *Developing and Refining Lessons: Planning Learning and Formative Assessment for College and Career Ready Standards*, build on this work and culminate in lesson plans for daily instruction that merges the content and practice standards.

Standards for Mathematical Practice from the CCSS
(1) Make sense of problems and persevere in solving them.
(2) Reason abstractly and quantitatively.
(3) Construct viable arguments and critique the reasoning of others.
(4) Model with mathematics.
(5) Use appropriate tools strategically.
(6) Attend to precision.
(7) Look for and make use of structure.
(8) Look for and express regularity in repeated reasoning.

Because each practice standard is widely applicable, the learning of a given content standard often draws on several, sometimes all, of the practice standards. For certain content standards, however, an essential connection exists with a particular practice standard. For example, students in Grade 3 “interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each” (3.OA.1). This ability to toggle between physical referents and symbols is central to the second math practice standard (MP.2), which requires students to “reason abstractly and quantitatively.” Therefore, a close connection exists between 3.OA.1 and MP.2.

Finding the essential connections that exist between particular content and practice standards (a process described in more detail later in this resource) is a first step towards merging the two types of standards at the level of daily instruction.

ARRANGING AND SEQUENCING STANDARDS FOR INSTRUCTION: TWO TOOLS

Two tools are presented in the following sections, (1) the CCRS Gazette and (2) the Yearlong Plan. These tools help teachers arrange their grade-level standards into instructionally meaningful chunks and sequence these chunks in a way that will make sense for students and best support them in a deep and integrated learning of the standards. The tools were designed to be used in concert: the conceptual and organizational work involved in completing the Gazette will facilitate the creation of the Yearlong Plan.

WHY THE GAZETTE AND YEARLONG PLAN?

Teachers may ask, “Why do I need to re-arrange and re-sequence my grade-level standards? They are already arranged and sequenced in the CCSSM document.” The authors of the CCSSM note that the type of work involved in filling out the CCRS Gazette and the Yearlong Plan is essential because a sequence for instruction and learning is not explicit in the standards:

Just because topic A appears before topic B in the standards for a given grade, it does not necessarily mean that topic A must be taught before topic B. A teacher might prefer to teach topic B before topic A, or might choose to highlight connections by teaching topic A and topic B at the same time (CCSSM, p. 5).

Bill McCallum (one of the lead authors of the CCSSM) also notes that “progression documents offer more guidance about sequencing, but even they don’t get at how domains might be intertwined.” He concludes that this work of curriculum design “takes time if done well” (McCallum, 2012). The two processes presented in this resource support teachers in this challenging but essential task.

COOPERATION, COLLEAGUES, AND OUTSIDE RESOURCES

Standards provide a common set of stated reference points for teacher use, and acquire meaning through use over time. This is because standards, written as verbal descriptors, require interpretation and application within a community of practice (Klenowski & Wyatt-Smith, 2014, p. 77).

Teachers are **strongly encouraged** to work with their grade-level peers or other content experts when using the tools in this resource. The more expertise and perspectives brought to the table, the richer the process of analyzing and arranging the standards will be, and the more teachers will be able to talk through tricky conceptual questions that may arise. Additionally, throughout this process, teachers should reference any of the following resources they find helpful (further descriptions are provided in the “Additional Resources” section):

- **CCSS-Defined Critical Areas for Instruction.** In the introduction to every set of grade-level standards in the CCSSM document, a few paragraphs describe the critical areas of learning for the grade.
- **Mathematics Progressions from the Institute for Mathematics and Education: University of Arizona.** These narrative documents are organized by domain and describe the progression of

a topic across a number of grade levels for the CCSSM, informed by both research of children's cognitive development and the logical structure of mathematics.

- **Model Content Frameworks from the Partnership for Assessment of Readiness for College and Career (PARCC).** These frameworks present an analysis of the CCSSM grade-level standards, which are sorted into major, additional, and supporting clusters.
- **Scope and Sequence Charts from the Silicon Valley Mathematics Initiative.** The CCSSM for each grade have been clustered into instructional modules that are presented in a yearlong sequence.
- **Mathematics Modules from the New York Department of Education.** The CCSSM for each grade have been clustered into instructional modules that are presented in a yearlong sequence.

The purpose of this resource used in collaboration with colleagues is to enable teachers to develop a clear and deep understanding of the standards and the connections between and among them so that they can be best arranged in a yearlong plan for instruction for students. What teachers decide (in terms of arranging and sequencing standards for instruction) may not be identical to the work others have done in this regard; it will be important to use external resources (see above) as points of reference to verify the mathematical soundness of their decisions.

EXISTING SCOPE AND SEQUENCE GUIDES

Many districts have provided their teachers with scope and sequence guides for the standards. Even if this is the case, it is recommended that teachers engage in the processes outlined below so that they understand why the district has chosen to sequence the standards for instruction in the particular arrangement. Doing so will help teachers more deeply understand the standards and assist them with instructional planning in terms of making connections between and among the standards as appropriate.

As a result of this process, teachers may also decide to make some changes in the arrangement because they think it will be advantageous to their particular group of students in their particular context. The degree to which teachers are able to do this will, of course, depend on the flexibility the district provides teachers to make adjustments to district plans.

THE CCRS GAZETTE

HOW TO FILL OUT THE CCRS GAZETTE

This section provides a step-by-step guide for teachers to fill out the CCRS Gazette. Examples appear in some steps, and a completed Gazette for Grade 3 is found on page 15. A completed Gazette for Grade 7 appears in the “Tools and Exemplars” section of this resource, on page 26. While Grade 3 and Grade 7 are illustrated as exemplars, the process below is applicable to all grades.

The **Front Page** and **Page Two** of the Gazette (illustrated in the figure below) contain **Headlines**, which are brief descriptions of the work of the grade. Listed beneath each Headline are a few **Storylines**, which elaborate the key ingredients of each Headline. At the bottom of the **Page Two**, the **Ticker Tape** contains the skills and fluencies that will be addressed on an ongoing basis throughout the year. The **Gossip Page** identifies the key relationships and opportunities for connections between standards.

The diagram illustrates the layout of the CCRS Gazette, showing the Front Page and Page Two. The Front Page includes a header with fields for NAME, GRADE, and ACADEMIC YEAR, followed by the title "CCRS Gazette" and the subtitle "ANALYZING AND ORGANIZING COLLEGE AND CAREER READY STANDARDS IN INSTRUCTIONALLY MEANINGFUL WAYS". The main section is "The Major Work of the Grade", which includes instructions for writing Front Page Headlines and Storylines. Below this are three columns of lined paper for writing. A central box labeled "Headlines" and "Storylines" connects the two pages. Page Two includes a section for "Page Two Headlines", "TICKER TAPE STANDARDS", and a "Remember!" note. The "Remember!" note states: "Every grade-level standard should be accounted for somewhere on the Front Page and Page Two, either as part of a Storyline or as a Ticker Tape standard."

Step 1 Coding Individual Standards

Materials needed:

- ✓ grade-level Content Standards
- ✓ math Practice Standards

The Gazette helps teachers analyze their grade-level standards as a *collection of standards*. Prior to this analysis, it will be helpful to “zoom in” and study the standards at the *individual level*. A coding process for studying individual standards is presented in previous resource⁷ and is reproduced in the “Tools and Exemplars” section of this resource.

⁷ See the CSAI Resource, *Getting a Handle on the Standards* (csai-online.org/curriculumandinstruction).

This coding process helps teachers:

- classify different types of standards (i.e., Conceptual Understanding, Procedural Fluency, or Application), and
- identify Content Standards that provide a good context for the application of a particular Practice Standard.

As teachers move through the subsequent steps of this process and more carefully analyze their grade-level standards, they may discover additional content-practice connections; these should be coded as well.

Step 2 Reflecting on Grade-Level Standards

Materials needed:

- ✓ coded grade-level standards from Step One
- ✓ previous grade-level Content Standards

Unlike the above process of coding the individual standards, in which there is relatively little room for interpretation, Step Two allows teachers to make personal sense of the standards and connect them with their knowledge of content, teaching, and their own students. Teachers might find it useful to circle words or phrases that seem important, make little sketches to summarize the key idea in a standard or cluster, draw arrows between standards, or write notes on the margins of the standards document. The following table lists some possible types of reflections teachers might make.

Types of Reflections	Examples
Summary or paraphrasing	<ul style="list-style-type: none">• "Okay, this is basically, <i>toggling between multiplication and division</i>."• "This is mainly about using the <i>number line</i>."
Reaction to a standard	<ul style="list-style-type: none">• "This standard depends on a lot of others."• "A lot of other standards depend on this one."
Reflection on the standard in relation to students	<ul style="list-style-type: none">• "They're going to need a lot of practice with this."• "The vocabulary might be tricky for them here."• "They'll pick this up pretty quickly."
Connection to the previous or next grade	<ul style="list-style-type: none">• "Is this the first time they're seeing this?"• "This isn't so different from what they had to do last year."• "This is going to be really important next year."
Connection between standards	<ul style="list-style-type: none">• "How does this fit with the other standards in this cluster?"• "Will they be able to do <i>this</i> standard without mastering <i>that</i> standard?"• "I think <i>this</i> standard is an application of <i>that</i> standard."

Step 3 Creating Front Page Headlines - Describing the Major Work of the Grade

Materials needed:

- ✓ coded grade-level standards (with notes) from Step Two
- ✓ blank CCRS Gazette template

Here, teachers identify the *major work of the grade*, which will be recorded in the Gazette as Front Page Headlines. (In Step Four, teachers record the remaining work of the grade as Page Two Headlines.) This step is critical because the major work of the grade may be expressed in a single standard, a cluster of standards, or an entire domain.

The purpose of a Headline is not to capture the intricacies of the major work it describes, but rather to create an organizing category that makes sense and will be useful for the teachers doing this work. Headlines should be expressed in the teachers' own words, not excerpted verbatim from the standards document. Headlines should be as short as possible. Sometimes a single word is enough, especially when the Headline refers to students' first exposure to a new concept. For example, students are asked for the first time in Grade 3 to "develop an understanding of fractions as numbers," so a headline might be "Fractions." Teachers write each Front Page Headline in one of the spaces provided in the Gazette.

Some questions to help guide teachers in determining which standards are Front Page Headlines are:

- Relative to everything my students will learn this year, what is **most important**?
- Where is the **hard work** (the "heavy lifting") in this set of grade-level standards?
- What is **central** and should be prioritized?
- Is this mathematical concept a **large** conceptual/procedural step from what students learned last year?⁸

Step 4 Creating Page Two Headlines - Describing the Remaining Work of the Grade

Materials needed:

- ✓ coded grade-level standards (with notes) from Step Two
- ✓ CCRS Gazette template from Step Three

In Step Three, teachers identified and summarized the major work of the grade and wrote these Front Page Headlines on the Gazette. They now do the same thing with the remaining work of the grade, and these Headlines will be recorded on Page Two of the Gazette.

To identify the remaining work of the grade, teachers might find it useful to ask:

- Considering everything my students will learn this year, what is **relatively minor**?
- What will be quick for my students to learn, or **less complex**?

⁸ For example, in Grade 7 of the CCSSM, students add, subtract, multiply, and divide signed numbers. This is a large conceptual and procedural step from their understanding of signed numbers in Grade 6, which only entailed notions of magnitude and order, and for this reason, the Grade 7 Headline describing this work belongs on the Front Page.

- What is **less connected** and seems more like a **detail** than a central concept?
- Is this mathematical concept a **small** conceptual/procedural step from what students learned last year?⁹

Step 5 Creating Storylines - The Conceptual Ingredients of Headlines

Materials needed:

- ✓ coded grade-level standards (with notes) from Step Two
- ✓ Gazette template from Step Four

Much like the work that teachers did in Steps Two and Three to create Headlines, creating Storylines requires an original, concise synthesis of a collection of standards.

Teachers select a Headline and ask:

- From an instructional perspective, what are the distinct components underpinning this Headline?
- How can I best split this Headline into manageable portions for my students?
- What are the few instructional “chunks” that will most sensibly support student learning of this Headline?
- From an instructional perspective, what parts of this Headline hang together?

Based on answers to these questions, teachers formulate and record (using the boxes beneath the Headline in the Gazette - see the Grade 3 Gazette example on page 15) a few Storylines that capture the main instructional components of the Headline. Next to the Storylines, teachers also indicate:

- the content standard(s) addressed in the Storyline (using the CCRS math codes)
- any math practice standards that teachers linked with the above content standard(s) from their coding in Step One

For example, under the third grade Headline, “Fractions,” a teacher might list the following Storylines:¹⁰

- What is a fraction? (3.NF.1); MP 2, 4
- Fractions on a number line (3.NF.2); MP 5
- Equivalent fractions (3.NF.3)

Each of these Storylines describes a cohesive, instructional “chunk,” and taken together, they account for everything third grade students need to learn about “Fractions.”

⁹ For example, in both Grade 6 and Grade 7 CCSSM, students use various geometric models to solve mathematical and real-world problems. The work in Grade 7 is not identical to the work in Grade 6, but the differences are relatively minor. For this reason, Grade 7 Headline describing this work belongs on Page Two.

¹⁰ Remember that during the coding process (from Step One), different teachers may link different content and practice standards. The practice standards listed in this example should not be considered definitive.

Note that some Storylines might roughly correspond to cluster headings (as in the above example), but because of the non-uniform granularity of the CCSSM, *Storylines may also correspond to individual standards or several clusters of standards*. Remember that Storylines should express the *instructional* logic inherent in the standards.

Step Five and Step Six can be undertaken concurrently: as teachers examine individual standards to create Storylines, they may also flag certain standards as Ticker Tape Standards, described in more detail below.

Step 6 Recording Ticker Tape Standards - Embedded Practice

Materials needed:

- ✓ coded grade-level standards (with notes) from Step Two
- ✓ CCRS Gazette template from Step Five

Some standards describe procedural fluencies that students acquire over time and through consistent practice. Much like “Ticker Tape” news (the information presented in a constant stream at the bottom of a newscast), these standards are often addressed on an on-going basis throughout the year, allowing students to develop precision and accuracy. Likely, the standards coded as “Procedural Fluency” standards in Step One are Ticker Tape standards.

In the Ticker Tape field on the bottom of the Page Two, record content standards of this type (or summarize them, if they are lengthy), the associated Headlines, and any practice standards that were linked to these content standards during the coding of Step One.

Important Note: After completing Step Six every content standard should be represented somewhere on the Front Page or Page Two, either as part of a Storyline or as a Ticker Tape standard.

Step 7 Filling in the Gossip Page - Making Note of Connections

Materials needed:

- ✓ coded grade-level standards (with notes) from Step Two
- ✓ CCRS Gazette template from Step Six

The Gossip Page is about finding conceptual connections across Headlines. Here, teachers address the questions, “What conceptual relationships exist across Headlines?” and “What do I want my students to understand about these relationships?”

At this point in the process of filling out the Gazette, teachers have likely identified several important inter-Headline connections. They may have made annotations for these connections in Step Two or they may have noticed them during the analysis of Steps Three through Six.

As mentioned earlier, in Grade 3, there is a useful and important connection for students to make between multiplication and area, concepts that have been organized under two different Headlines. Teachers can make note of

this connection on the Gossip Page. In the **Who** column, they list the Headlines and CCRS math codes for the specific standards involved (“Area (3.MD.7)” and “Multiplication (3.OA.1)”), and in the **What** column, they briefly describe the connection: “Students begin to think about and compute area of rectangles by counting ‘square units.’ This is similar to their array-based understanding of multiplication.” See the completed Grade 3 Gazette on page 15 for more examples of these connections.

Noting Gossip Page connections will help teachers with all levels of instructional planning, from creating individual lessons to designing yearlong plans. In some cases, these connections have immediately obvious implications for planning:

- Standard X should be taught before standard Y
- Standard X and standard Y should be taught concurrently

In these cases, teachers should underline the relevant keyword, as above, when describing the connection in the **What** Column (the Grade 7 Gazette in the “Tools and Exemplars” section contains examples of these keywords).

THE UTILITY OF THE CCRS GAZETTE

Filling out the Gazette is a valuable process because it enables teachers to synthesize and summarize a large set of standards into a relatively few lines of text. The Gazette is a helpful tool for teachers when thinking about the essential learning that occurs in the grade. Detailed standards documents allow teachers to attend to the fine-grained details of the standards, the Gazette provides a way to think in broad brush strokes.

As illustrated in the graphic below, by creating Headlines and Storylines, a teacher translates the collection of Grade 7 CCSSM standards on the left into the essential learning described on the right.

The Number System
7.NS

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
 - a. Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.
 - b. Understand $p + q$ as the number located a distance $|q|$ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
 - c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
 - d. Apply properties of operations as strategies to add and subtract rational numbers.
2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
 - a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
 - b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.
 - c. Apply properties of operations as strategies to multiply and divide rational numbers.
 - d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
3. Solve real-world and mathematical problems involving the four operations with rational numbers.¹

Headline

Operations with Rational Numbers

Storylines

Adding and subtracting signed rational numbers on a number line (7.NS.1); MP 7

Multiplying and dividing signed rational numbers (7.NS.2)

EXAMPLE OF GRADE 3 CCRS GAZETTE

To illustrate what a completed Gazette template might look like, an example from Grade 3 is included here. Remember that many of the steps of the process described above are subjective; they involve interpretation, synthesis, creativity, and original work on the part of teachers. For this reason, the following should not be regarded as "the correct Grade 3 Gazette," but rather "one possible Grade 3 Gazette." A blank CCRS Gazette template is found in the "Templates" section of this resource, and a completed example for Grade 7 is included in the "Tools and Exemplars" section.

NAME: <u>Ms. Green</u>	GRADE: <u>3</u>	ACADEMIC YEAR: <u>2014 - 2015</u>
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CCRS Gazette

ANALYZING AND ORGANIZING COLLEGE AND CAREER READY STANDARDS IN INSTRUCTIONALLY MEANINGFUL WAYS.

The Major Work of the Grade

INSTRUCTIONS:
 Write Front Page Headlines (brief descriptions of the work of the grade) in the grey boxes and associated Storylines (the conceptual ingredients of Headlines) beneath them. Along with each Storyline, list the CCRS math code for the content and practice standard(s) involved (e.g., 3.OA.1 or MP.2). It may be helpful to

consult the previous grade's standards to determine the size of the conceptual or procedural step that students are being asked to make in achieving the current grade's standards.

Remember, Headlines and Storylines are not about capturing the intricacies of the standards. Instead, they are about coming up with an organizing category, a sort of short-

hand, that summarizes the 'gist' of student learning. Headlines and Storylines should be short and expressed in teachers' own words.

Where is the hard work, the heavy lifting, in this set of grade-level standards?

Multiplication & Division	Fractions	Area
multiplication as arrays; division as equal groups (3.OA.1, 2, 4); MP 2, 4, 7, 8	What is a fraction? (3.NF.1); MP 2, 4	What is area? unit squares (3.MD.5-6); MP 1, 4
connection between multiplication & division (3.OA.4-6); MP 7, 8	Fractions on a number line (3.NF.2); MP 5	Relating area to multiplication and addition (3.MD.7); MP 2, 3, 4

Page Two Headlines

THE REMAINING WORK OF THE GRADE

INSTRUCTIONS:

Write Headlines and Storylines using the same format from the Front Page. On Page Two, instead of recording the major work of the grade, describe the remaining work of the grade. Be sure to account for any learning that was not mentioned on the Front Page.

Perimeter

Solving problems with perimeter (3.MD.8); MP 1

TICKER TAPE STANDARDS

INSTRUCTIONS: Ticker Tape standards describe procedural fluencies that students acquire over time. These standards will be addressed on an on-going basis throughout the year to allow students ample opportunities for practice.

Place Value & Rounding

Fluently adding and subtracting within 1000 (3.NBT.2); MP 5

Time & Liquid Volume

Telling time to the nearest minute (3.MD.1)

Measuring liquid volume & mass (3.MD.2)

Graphs & Measurement

Drawing and using bar graphs to solve 1- & 2-step problems (3.MD.3); MP 1, 4, 5

Remember!

Every grade-level standard should be accounted for somewhere on the Front Page and Page Two, either as part of a Storyline or as a Ticker Tape standard.

Multiplication & Division

Solve word problems with multiplication and division (3.OA.3); MP 4

Place Value & Rounding

Rounding to the nearest 10 or 100 (3.NBT.1); MP 6

Multiplying 1-digit numbers by multiples of 10 (range of 10-90) (3.NBT.3); MP 7, 8

Shapes

Partitioning shapes into equal parts as expressed by fractions (3.G.2); MP 2, 3

Categories and attributes of shapes (3.G.1)

Multiplication & Division

Solving 2-step word problems using 4 operations (3.OA.8); MP 4

Multiplication & Division

Fluently multiplying and dividing (3.OA.7); MP 6

Headlines

Storylines

Gossip

CONCEPTUAL CONNECTIONS ACROSS HEADLINES. The Gossip Page is about relationships that exist *across* Headlines. Sometimes these are stated explicitly in the standards, but when they are not, teachers use their content knowledge and teaching experience to identify and make note of such conceptual connections. In the “Who” column, list the Headlines and CCRS math codes for the specific standards involved in the connection. In the “What” column, briefly describe the connection.

	<i>Who</i>	<i>What</i>
1	Area (3.MD.7) multiplication (3.OA.1)	Students begin to think about and compute area of rectangles by counting “square units.” This is similar to their array-based understanding of multiplication.
2	Area (3.MD.5-6) Fractions (3.NF.1,3) Shapes (3.G.2)	As students think of total area as a collection of equal unit areas, they can connect this with their understanding of fractions as “a whole partitioned into b equal parts.”
3	Measurement (3.MD.4) Fractions (3.NF.2)	As students partition a length into halves, quarters, etc., they can connect this process to fractions of the form $1/b$.
4	Area (3.MD.5-6) Perimeter (3.MD.8)	Students compute and compare the area and perimeters of rectangles.

THE YEARLONG PLAN

With the information from the CCRS Gazette, teachers can now use the process presented in this section to organize their grade-level standards into a thoughtful sequence of learning for the year. The steps below guide teachers through decisions about how to arrange the Storylines identified in the Gazette over the course of an instructional year.

An example Yearlong Plan for Grade 3 is found on page 22, and the “Tools and Exemplars” section contains an example from Grade 7. A blank Yearlong Plan for teachers to fill out is found in the “Templates” section.

STEPS FOR CREATING THE YEARLONG PLAN

Step 1 Transferring Storylines to Colored Post-It Notes

Materials needed:

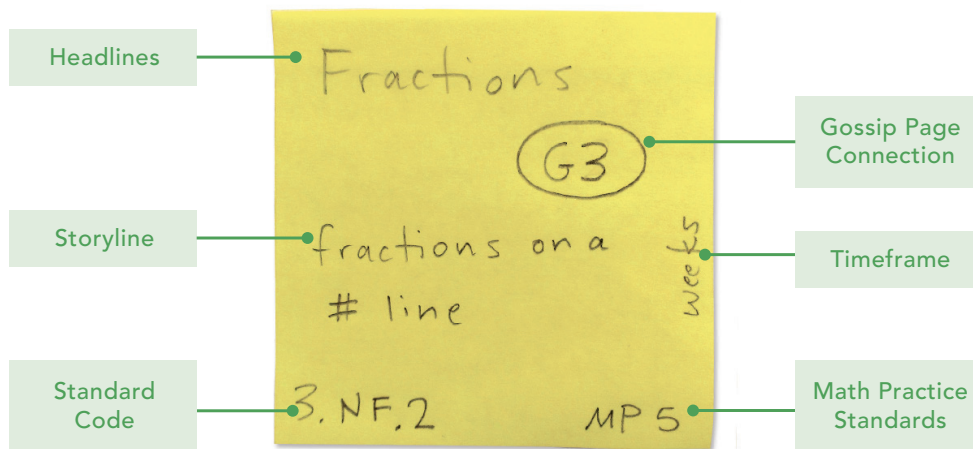
- ✓ completed Gazette template
- ✓ about a dozen post-it notes (3 different colors)

The Yearlong Plan is created by sequencing Storylines from the Gazette. This process is made easier if teachers are able to physically manipulate them (move them around, arrange and re-arrange them, etc.). Teachers choose post-it notes of one color for Front Page Storylines, another color for Page Two Storylines, and a third color for Ticker Tape Standards. On each post-it, teachers record:

- a Storyline (or Ticker Tape standard)
- the associated Headline
- the CCRS math code(s)
- Gossip Page connections (if any of the standards addressed in the Storyline are involved in a Gossip Page connection, this is indicated on the post-it with “G” and the number from the Gossip Page denoting this connection)
- (for Storylines only) a rough estimate of the amount of instructional time (*months, weeks, or days*) needed to address the Storyline, which will inform yearlong planning¹¹

For example, the Grade 3 Gazette presented in the previous section contained the Headline, “Fractions,” with an associated Storyline, “Fractions on a number line.” This Storyline addressed CCSSM 3.NF.2, which was involved in the third Gossip Page connection. An approximate timeframe of *weeks* was allotted for this Storyline. The following illustration shows one example of how this information can be transcribed on a single post-it, and the subsequent illustration shows what the collection of post-its for an entire Grade 3 Gazette might look like.

¹¹ The purpose of the timeframes (days, weeks, months) is to indicate the scope of the learning that is entailed for each Storyline so that teachers can get a sense of how to manage the year and monitor their time allocations as the year progresses. Exact numbers of days, weeks, or months are not specified because depending on a particular class of students, some of the Storylines might take more or less time. For example, in Grade 3 the learning required to fully understand how to draw and use bar graphs (3.MD.3) might take some students one week, but for others it may take two weeks or more.



Step 2 Sequencing Front Page Storylines

Materials needed:

- ✓ completed Gazette template
- ✓ colored Storyline post-it notes from Step One

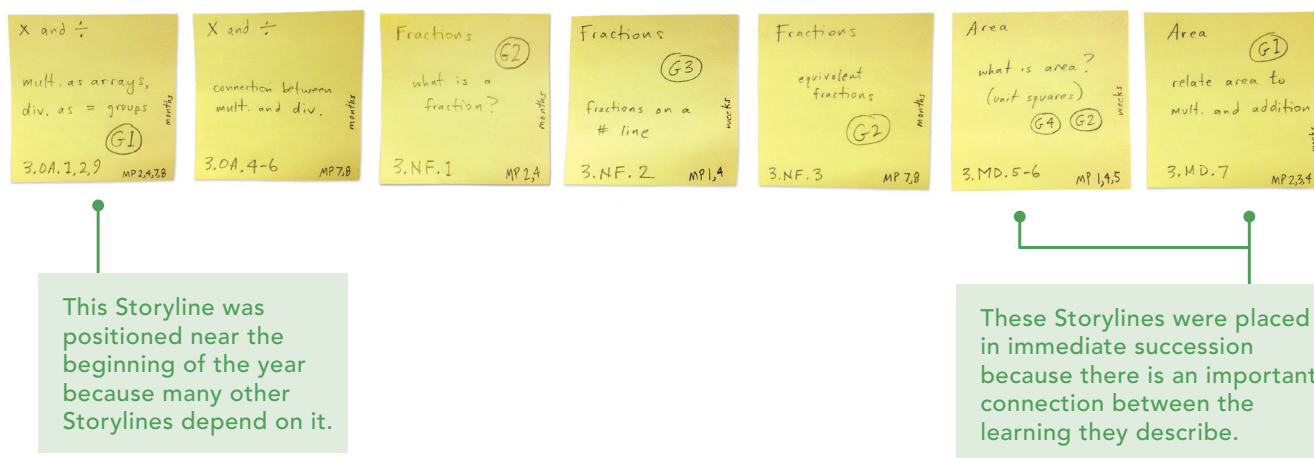
Now teachers actually begin to lay out their Yearlong Plan by lining up Storylines to show the order of student learning for the academic year.

When creating a Yearlong Plan, it is important for teachers to refer to the Gossip Page of the Gazette because it is here that they have recorded the connections that exist between standards. Here are some questions to guide the sequencing of Front Page Storylines:

- Should one Storyline be learned before another?
- Should two Storylines be learned in immediate succession?
- Do students need to “take a break” between particularly demanding Storylines?
- If one Storyline focuses primarily on Conceptual Understanding (or Application or Procedural Fluency), should the next Storyline focus on a different type of learning?
- Can one Storyline serve to preview another?
- Does the learning of one Storyline involve circling back to a previous Storyline?
- Should a Storyline be addressed early in the year so that students will have time to acquire fluency over the course of the year?
- Should a Storyline be addressed early in the year because another Storyline depends on it?
- Should a Storyline be addressed later in the year because it involves a synthesis of prior Storylines?

Some teachers may find it helpful to begin by laying out those Front Page Storylines that have the most Gossip Page connections. Others may lay out the post-its conceptually (e.g., in Grade 3, students should learn multiplication and division sequentially, before learning about area). Still others may prefer to lay out the Storylines that take months to teach first, and then insert the Storylines that take weeks or days into the timeline. The approach that teachers take to sequencing the Front Page Storylines may vary; what is important is that the end result reflects a conceptual and instructional logic for the year.

The following illustration shows what a sequencing of Front Page Storyline post-its might look like after a third grade teacher has completed Step Two:



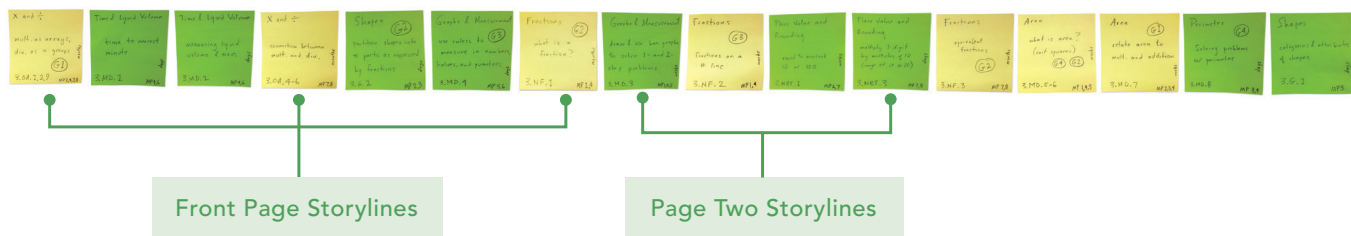
Step 3 Sequencing Page Two Storylines

Materials needed:

- ✓ completed Gazette template
- ✓ colored Storyline post-it notes from Step One

Teachers now situate their Page Two Storylines *within the sequence* of Front Page Storylines from Step Two. Taking care to preserve their ordering, teachers spread out the Front Page Storylines to make space, and then “slot in” the Page Two Storylines, based on the above set of questions and any Gossip Page connections.

The following illustration shows what a sequencing of Front Page and Page Two Storyline post-its might look like after a teacher has completed Step Three.



Step 4 Mapping Out the Year

Materials needed:

- ✓ completed Gazette template
- ✓ sequenced Storyline post-it notes from Step Three
- ✓ blank Yearlong Plan template

Teachers transfer the sequence of Storylines created in Steps Two and Three into the Yearlong Plan template. The first Storyline of the academic year (including CCRS math code, Gossip Page connections, and approximate timeframe) is entered at the top of the template and the related Storylines are entered in the subsequent boxes. Front Page Headlines should be highlighted to emphasize their priority.

Step 5 Entering Ticker Tape Standards

Materials needed:

- ✓ completed Gazette template
- ✓ Yearlong Plan template from Step Four

In the final field of the Yearlong Plan template, teachers record Ticker Tape standards (reflecting those skills and fluencies that students will practice continually throughout the year). They retrieve this information from the information written on the post-it notes from Step One.

EXAMPLE OF GRADE 3 YEARLONG PLAN

To illustrate what a completed Yearlong Plan might look like, an example from Grade 3 CCSSM is included here. The highlighted rows are the Front Page Storylines. A blank Yearlong Plan for teachers to fill out is found in the "Templates" section. Remember that Yearlong Plans will vary between teachers, and that this example is just one of the many ways in which the Storylines can be sequenced. A completed Yearlong Plan example from Grade 7 is included in the "Tools and Exemplars" section.

YEARLONG PLAN

Name: M.S. Green Grade: 3
 Subject: math Year: 2014 - 2015

Headline Storyline	CCRS Code	Timeframe	Math Practices	Gossip Page
MULT & DIV - multiplication as arrays; division as equal groups	3.OA.1, 2, 4	months	2, 4, 7, 8	61
TIME & LIQUID VOLUME - Telling time to the nearest minute	3.MD.1	days		
TIME & LIQUID VOLUME - measuring liquid volume & mass	3.MD.2	days		
MULT & DIV - connection between multiplication & division	3.OA.4-6	months	7, 8	
SHAPES - partitioning shapes into equal parts as expressed by fractions	3.G.2	days	2, 3	62
GRAPHS & MEASUREMENT - using rulers to measure in units, 's and 's	3.MD.4	days	5, 6	63
FRACTIONS - What is a fraction?	3.NF.1	months	2, 4	62
GRAPHS & MEASUREMENT - Drawing and using bar graphs to solve 1- & 2-step problems	3.MD.3	weeks	1, 4, 5	
FRACTIONS - Fractions on a number line	3.NF.2	weeks	5	63
PLACE VALUE & ROUNDING - Rounding to the nearest 10 or 100	3.NBT.1	weeks	6	
PLACE VALUE & ROUNDING - multiplying 1-digit numbers by multiples of 10 (range of 10-90)	3.NBT.3	days		
FRACTIONS - Equivalent fractions	3.NF.3	months		62
AREA - What is area? Unit squares	3.MD.5-6	weeks	1, 4	62, 64
AREA - Relating area to multiplication and addition	3.MD.7	weeks	2, 3, 4	61
PERIMETER - Solving problems with perimeter	3.MD.8	days		64
SHAPES - categories and attributes of shapes	3.G.1	days		

Start of the school year

End of the School Year

Ticker Tape Standards	CCRS Code	Math Practices	Gossip Page
MULT & DIV ∩ Solving 2-step word problems using 4 operations	3.OA.8	4	
PLACE VALUE & ROUNDING ∩ Fluently adding and subtracting within 1000	3.NBT.2	5	
MULT & DIV ∩ Solve word problems with multiplication and division	3.OA.3	4	
MULT & DIV ∩ Fluently multiplying and dividing	3.OA.7	6	

TOOLS AND EXEMPLARS

GUIDE

Analyzing the Mathematical Content Standards by Type

This process (excerpted the CSAI Resource, *Getting a Handle on the Standards* - csai-online.org/curriculumandinstruction) helps teachers code their grade-level standards by type (conceptual understanding, procedural fluency, or application) and identify connections between content and practice standards.

COMPLETED EXAMPLES

The CCRS Gazette and the Yearlong Plan are flexible tools that individual teachers will fill out differently. The examples included here illustrate how a teacher might fill out each tool for Grade 7 CCSSM. Note that the highlighted rows in the Yearlong Plan are the Front Page Storylines.

ANALYZING THE MATHEMATICAL CONTENT STANDARDS BY TYPE

The Mathematics CCRS include a variety of types of content standards. They address conceptual understandings, procedural skills and fluency, and applications of concepts and skills. While the Standards for Mathematical Practice apply broadly to **all** the math content standards, sometimes a math practice standard is particularly well aligned to a content standard.

For this task, teachers study their grade-level or course standards domain-by-domain and code each standard for Conceptual Understanding, Procedural Fluency, or Application. Additionally, if a standard lends itself naturally to a particular math practice, teachers code that content standard accordingly.

The goal of this task is not to “correctly code the standards,” and there may be legitimate disagreement about the coding of certain standards. This task is designed to facilitate an in-depth understanding of grade-level standards, a necessary first step in creating a year-long plan as well as daily lesson goals.

See the following text box for a description of the categories and corresponding codes for different types of standards.

C	Conceptual Understanding. These standards call for comprehension of mathematical ideas, operations, and relations. While conceptual understanding underpins all the standards, many standards of this type focus explicitly on understanding, identifying, describing, explaining, interpreting, and connecting key mathematical concepts and principles.
P	Procedural Fluency. These standards call for skill in carrying out procedures flexibly, accurately, efficiently, and appropriately. Procedures can be basic computations (e.g., multiplying or measuring) or more complex processes involving a series of steps (e.g., graphing or factoring polynomials) that produce an anticipated result.
A	Application. These standards call for the ability to formulate, represent, and solve mathematical problems. Application standards may include procedural fluency, but they often go beyond procedural fluency by asking students to solve word problems or refer to real-world scenarios.
MP1 - MP8 (from the Mathematics CCSS)*	Math Practice. While every standard should receive at least one of the above three codes (C, A, or P), some standards should also be coded with an associated math practice. Code any content standard that aligns exceptionally well with or refers explicitly to a math practice standard with one of the eight mathematical practices.

* If a State has adopted math CCRS other than the CCSSM and has not specifically identified math practice standards, practice standards have most likely been integrated into the content standards. Teachers in those States should identify and note what practice standards have been incorporated with the content standards.

Follow the step-by-step directions below to complete this task.

1. With a partner (or in a triad), work through the Math Content Standards one domain at a time for a particular grade level or course of your choice.
2. For each domain, first read silently the standards that comprise the domain.
3. Individually code each standard according to the categories listed above. A standard may have more than one code. Record your individual codes next to the number (or letter) of the standard in the left hand margin.
4. As a pair (or triad), review the standards in the domain and discuss your individual codes. Try to reach consensus on the coding that best characterizes each standard in the domain. Record your group consensus next to your individual code(s). If a pair cannot reach consensus simply record a split code (e.g., C/P).

(Note: Pairs might prefer to read, discuss, and code each standard together. Reading and coding individually first is designed to provide individuals with the think-time prior to discussions, which may not be the preference of the pair.)

5. Repeat the process for the next domain in your grade level or course standards.

CCRS Gazette

ANALYZING AND ORGANIZING COLLEGE AND CAREER READY STANDARDS IN INSTRUCTIONALLY MEANINGFUL WAYS.

The Major Work of the Grade

INSTRUCTIONS:

Write Front Page Headlines (brief descriptions of the work of the grade) in the grey boxes and associated Storylines (the conceptual ingredients of Headlines) beneath them. Along with each Storyline, list the CCRS math code for the content and practice standard(s) involved (e.g., 3.OA.1 or MP.2). It may be helpful to

consult the previous grade's standards to determine the size of the conceptual or procedural step that students are being asked to make in achieving the current grade's standards.

Remember, Headlines and Storylines are not about capturing the intricacies of the standards. Instead, they are about coming up with an organizing category, a sort of short-

hand, that summarizes the 'gist' of student learning. Headlines and Storylines should be short and expressed in teachers' own words.

Where is the hard work, the heavy lifting, in this set of grade-level standards?

Operations & Rational Numbers

Adding and subtracting signed rational numbers on a number line (7.NS.1); MP 7

Multiplying and dividing signed rational numbers (7.NS.2)

Proportions

Recognize and represent proportional relationships, including unit rate (7.RP.1-2); MP 2

Solving multistep ratio and percent problems (7.RP.3); MP 1

Statistics

Random sampling to draw inferences (7.SP.1-4); MP 3

Using Algebra to Solve Problems

Equivalent expressions (7.EE.1-2); MP 1

Solving problems with expressions and equations (7.EE.4); MP 1, 4

Page Two Headlines

THE REMAINING WORK OF THE GRADE

INSTRUCTIONS:

Write Headlines and Storylines using the same format from the Front Page. On Page Two, instead of recording the major work of the grade, describe the remaining work of the grade. Be sure to account for any learning that was not mentioned on the Front Page.

Probability

Understand, develop, use, and evaluate probability models. (7.SP.5-8); MP 8

Using Geometry to Solve Problems

Using and constructing scale drawings to solve problems (7.G.1-2, 6); MP 5; Slicing 3D figures into 2D figures (7.G.3);

Area and circumference of a circle (7.G.4); Writing and solving equations with angles and geometric figures (7.G.5, 6); MP 7

TICKER TAPE STANDARDS

INSTRUCTIONS: Ticker Tape standards describe procedural fluencies that students acquire over time. These standards will be addressed on an on-going basis throughout the year to allow students ample opportunities for practice.

Remember!

Every grade-level standard should be accounted for somewhere on the Front Page and Page Two, either as part of a Storyline or as a Ticker Tape standard.

Operations with Rational Numbers

Solving real world problems using 4 operations with rational numbers (7.NS.3)

Using Algebra to Solve Problems

Computing with any form of signed rational numbers to solve real-life problems (7.EE.3)

Gossip

CONCEPTUAL CONNECTIONS ACROSS HEADLINES. The Gossip Page is about relationships that exist *across* Headlines. Sometimes these are stated explicitly in the standards, but when they are not, teachers use their content knowledge and teaching experience to identify and make note of such conceptual connections. In the “Who” column, list the Headlines and CCRS math codes for the specific standards involved in the connection. In the “What” column, briefly describe the connection.

	<i>Who</i>	<i>What</i>
1	Using Geometry to Solve Problems (7.G.5); Using Algebra to Solve Problems (7.EE.4); Proportions (7.RP.2c)	In standards from all three domains, students write and solve equations with unknown variables. It may be a good idea to teach the storylines associated with 7.EE.4 and 7.RP.2c <u>concurrently</u> .
2	Operations with Rational Numbers (7.NS.1-2) Using Algebra to Solve Problems (7.EE.3) Proportions (7.RP.3)	Since students will need fluency in the four basic operations, with whole numbers, fractions, and decimals in order to solve problems with proportions & rational numbers, this fluency (7.NS.1-2) should be established <u>before</u> they are asked to use it to solve problems (7.EE.3; 7.RP.3).
3	Proportions (7.RP.2) Using Geometry to Solve Problems (7.G.1)	Students use proportional reasoning in order to solve problems involving scale drawings.
4	Proportions (7.RP.2) Probability (7.SP.6)	Students use proportional reasoning as they connect long-run relative frequency and probability.

Gossip continued . . .

TWO POSSIBLE TYPES OF CONCEPTUAL CONNECTIONS. When filling in the "What" column, two questions to keep in mind are, "Should standard X be taught before standard Y?" and "Should standard X and standard Y be taught concurrently?" Be sure to underline the words before and concurrently if they feature in your description.

	<i>Who</i>	<i>What</i>
5	Proportions (7.RP.1)	The use of "complex fractions" appears in both these
	operations with Rational Numbers (7.NS.3)	standards.
6	operations with Rational Numbers (7.NS.3)	Students need fluency in word problems involving the 4
	Using Algebra to Solve Problems (7.EE.4a)	operations (7.NS.3) <u>before</u> using algebra to solve these
		types of problems (7.EE.4a).
7	operations with Rational Numbers (7.NS.1-2)	Students need to be fluent in manipulating signed rational
	Using Algebra to Solve Problems (7.EE.1, 3, 4)	numbers (7.NS.1-2) <u>before</u> using them in expression and
		equations (7.EE.1, 3, 4).
8		

Grade 7 - Yearlong Plan

Name: Ms. Gray Grade: 7
 Subject: math Year: 2014 - 2015

Headline Storyline	CCRS Code	Timeframe	Math Practice*	Gossip Page
Operations with Rational Numbers Adding & subtracting signed rational numbers on a number line	7.NS.1	Weeks	7	62, 67
Operations with Rational Numbers Multiplying & dividing signed rational numbers	7.NS.2	Weeks		61, 62
Using Algebra to Solve Problems Equivalent expressions	7.EE.1-2	Months	1	67
Using Algebra to Solve Problems Solving problems with expressions and equations	7.EE.4	Months	1, 4	61, 66, 67
Using Geometry to Solve Problems Writing and solving equations with angles and geometric figures	7.G.5-6	Weeks	Weeks	61
Proportions Recognize and represent proportional relationships, including unit rate	7.RP.1-2	Months	2	61, 63, 64, 65
Proportions - Solving multistep ratio and percent problems	7.RP.3	Weeks	1	62
Using Geometry to Solve Problems Using and constructing scale drawings to solve problems	7.G.1-2, 6	Weeks	5	63
Probability Understand, develop, use, and evaluate probability models.	7.SP.5-8	Weeks	8	64
Statistics Random sampling to draw inferences	7.SP.1-4	Weeks	3	
Using Geometry to Solve Problems Slicing 3D figures into 2D figures	7.G.3, 6	Days		
Using Geometry to Solve Problems Area and circumference of a circle	7.G.4	Days		

Start of the school year

End of the School Year

Ticker Tape Standards	CCRS Code	Math Practices	Gossip Page
Operations with Rational Numbers - Solving real world problems using 4 operations with rational numbers	7.NS.3		65, 66
Using Algebra to Solve Problems - Computing with any form of signed rational numbers to solve real-life problems	7.EE.3		62, 67

* If a "Math Practices" cell is empty, this does not mean the practice standards will not be part of student learning for this Storyline. It simply means that when the associated content standards were coded, there was not a particular practice standard that stood out from the others and seemed more closely connected to content.

ADDITIONAL RESOURCES

The following resources contain a variety of information that supports math teachers in organizing and arranging the math CCRS, specifically the CCSSM, into a yearlong plan of instruction.

CCSSM MAPPER: CURTIS CENTER AT THE UNIVERSITY OF CALIFORNIA LOS ANGELES

http://www.curtiscenter.math.ucla.edu/MapApp/prg_map.html

This interactive web application allows teachers to view a map of grade-level standards that visually represents the prerequisite relationships between and among standards. Teachers can search their standards relative to math practices or domains.

MATHEMATICS PROGRESSIONS FROM THE INSTITUTE FOR MATHEMATICS AND EDUCATION: UNIVERSITY OF ARIZONA

<http://ime.math.arizona.edu/progressions/>

The Institute for Mathematics and Education supports local, national, and international projects in mathematics education that focus on both mathematics and students, which can be applied to current needs, build on existing knowledge, and are grounded in the work of educators. The Institute is currently involved in

- organizing and writing progression documents for the K–12 Common Core State Standards in Mathematics; these progressions can be found on the Institute’s website ; and
 - elaborating and interpreting the math practice standards for grades K-5 and 6-8; these documents can be accessed through Bill McCallum’s blog (see “Tools for the Common Core Standards” below).
-

MODEL CONTENT FRAMEWORKS FROM THE PARTNERSHIP FOR ASSESSMENT OF READINESS FOR COLLEGE AND CAREER (PARCC)

<http://www.parcconline.org/mcf/mathematics/parcc-model-content-frameworks-browser>

PARCC developed individual, grade-level content frameworks for the CCSSM for grades 3 through 8 and six high school courses. These frameworks were designed to inform the development of assessments and support the implementation of the CCSSM. Each framework includes examples of key advances from the prior grade; fluency expectations; opportunities for connections among standards, clusters, or domains; opportunities for connecting content and practice standards; opportunities for in-depth focus; and content emphases by cluster.

MATHEMATICS MODULES FROM THE NEW YORK DEPARTMENT OF EDUCATION

<http://www.engageny.org/mathematics>

The New York State Department of Education has developed Mathematics modules for grades K-12 that are available to educators on their website. These modules focus on reasoning, practice, and reflection, and set high expectations for mastery. The modules include topic overviews, daily lesson plans, extensive problem sets, guiding questions, and examples of proficient student work.

TOOLS FOR THE COMMON CORE STANDARDS

<http://commoncoretools.me/>

Bill McCallum, one of the lead authors of the Common Core State Standards for Mathematics, manages this blog cooperatively with co-authors from the Illustrative Mathematics Project and the Institute for Mathematics and Education. The blog presents updates and reports on projects that support the implementation of the CCSSM.

AMERICAN EDUCATOR: IS IT TRUE THAT SOME PEOPLE JUST CAN'T DO MATH?

<http://www.aft.org/pdfs/americaneducator/winter2009/willingham.pdf>

This article, written by Daniel T. Willingham, a cognitive psychologist at the University of Virginia, discusses the science behind how students engage with mathematical content. In particular, the article discusses the connections among conceptual understanding, application, and procedural fluency.

SCOPE AND SEQUENCE CHARTS FROM THE SILICON VALLEY MATHEMATICS INITIATIVE

<http://www.svmimac.org/>

The Silicon Valley Mathematics Initiative is a comprehensive effort to improve mathematics instruction and student learning. The Initiative is based on high performance expectations, ongoing professional development, examining student work, and improved math instruction. It includes a formative and summative performance assessment system, pedagogical content coaching, and leadership training and networks, as well as scope and sequence charts for the CCSSM.

REFERENCES AND BACKGROUND READING

Honig, B. (2014, January 29). *Coherent and sequenced curriculum key to implementing Common Core standards*. [Web log entry]. Retrieved from http://edsources.org/2014/coherent-and-sequenced-curriculum-key-to-implementing-common-core-standards/56704#.U2O_-K1dV_K

Institute for Mathematics and Education, University of Arizona. (2014). *Progression documents for the Common Core Math Standards*. Retrieved from <http://ime.math.arizona.edu/progressions/>

Klenowski, V. & Wyatt-Smith, C. (2014). *Assessment for education: Standards, judgment, and moderation*. Thousand Oaks, CA: SAGE Publications.

McCallum, B. (2012, July 2). *The structure is the standards*. [Web log entry]. Retrieved from <http://commoncoretools.me/2012/02/16/the-structure-is-the-standards/>

National Council of Teachers of Mathematics. (2014). *Principles to actions: Ensuring mathematical success for all*. Reston, VA: Author.

National Governors Association Center for Best Practices, Council of Chief State School Officers. (2010). *Common Core State Standards for Mathematics*. National Governors Association Center for Best Practices, Council of Chief State School Officers, Washington D.C.

National Research Council. (2001). *Adding It Up: Helping children learn mathematics*. J. Kilpatrick, J. Swafford, and B. Findell (Eds.), Mathematics Learning Study Committee, Center for Education, Division of Behavioral and Social Science and Education. Washington, DC: National Academy.

Wiggins, G. (2014, April 23). *Conceptual understanding in mathematics*. [Web log entry]. Retrieved from <http://grantwiggins.wordpress.com/2014/04/23/conceptual-understanding-in-mathematics/>

Zimba, J. (2011). *Examples of structure in the Common Core State Standards' Standards for Mathematical Content*. Retrieved from http://commoncoretools.me/wp-content/uploads/2011/07/ccsatlas_2011_07_06_0956_p1p2.pdf

TEMPLATES

The following templates are provided for teachers to print and fill in as they organize and arrange their grade-level CCRS.

CCRS GAZETTE TEMPLATE

This tool is used to organize teachers' analysis of grade-level math CCRS in an instructionally meaningful way.

YEARLONG TEMPLATE

This tool is designed to be used in tandem with the Gazette and helps teachers arrange the CCRS in math into a yearlong sequence of learning.

CCRS Gazette

ANALYZING AND ORGANIZING COLLEGE AND CAREER READY STANDARDS IN INSTRUCTIONALLY MEANINGFUL WAYS.

The Major Work of the Grade

INSTRUCTIONS:

Write Front Page Headlines (brief descriptions of the work of the grade) in the grey boxes and associated Storylines (the conceptual ingredients of Headlines) beneath them. Along with each Storyline, list the CCRS math code for the content and practice standard(s) involved (e.g., 3.OA.1 or MP.2). It may be helpful to

consult the previous grade's standards to determine the size of the conceptual or procedural step that students are being asked to make in achieving the current grade's standards.

Remember, Headlines and Storylines are not about capturing the intricacies of the standards. Instead, they are about coming up with an organizing category, a sort of short-

hand, that summarizes the 'gist' of student learning. Headlines and Storylines should be short and expressed in teachers' own words.

Where is the hard work, the heavy lifting, in this set of grade-level standards?

Page Two Headlines

THE REMAINING WORK OF THE GRADE

INSTRUCTIONS:

Write Headlines and Storylines using the same format from the Front Page. On Page Two, instead of recording the major work of the grade, describe the remaining work of the grade. Be sure to account for any learning that was not mentioned on the Front Page.

TICKER TAPE STANDARDS

INSTRUCTIONS: Ticker Tape standards describe procedural fluencies that students acquire over time. These standards will be addressed on an on-going basis throughout the year to allow students ample opportunities for practice.

Remember!

Every grade-level standard should be accounted for somewhere on the Front Page and Page Two, either as part of a Storyline or as a Ticker Tape standard.

Gossip

CONCEPTUAL CONNECTIONS ACROSS HEADLINES. The Gossip Page is about relationships that exist *across* Headlines. Sometimes these are stated explicitly in the standards, but when they are not, teachers use their content knowledge and teaching experience to identify and make note of such conceptual connections. In the “Who” column, list the Headlines and CCRS math codes for the specific standards involved in the connection. In the “What” column, briefly describe the connection.

	<i>Who</i>	<i>What</i>
1		
2		
3		
4		

Gossip continued . . .

TWO POSSIBLE TYPES OF CONCEPTUAL CONNECTIONS. When filling in the "What" column, two questions to keep in mind are, "Should standard X be taught before standard Y?" and "Should standard X and standard Y be taught concurrently?" Be sure to underline the words before and concurrently if they feature in your description.

	<i>Who</i>	<i>What</i>
5		
6		
7		
8		

Yearlong Plan

Name: _____ Grade: _____

Subject: _____ Year: _____

Headline Storyline	CCRS Code	Timeframe	Math Practice*	Gossip Page

Start of the
school year

End of the
School Year

Ticker Tape Standards	CCRS Code	Math Practices	Gossip Page

* If a "Math Practices" cell is empty, this does not mean the practice standards will not be part of student learning for this Storyline. It simply means that when the associated content standards were coded, there was not a particular practice standard that stood out from the others and seemed more closely connected to content.