Common Core State Standards Mathematics

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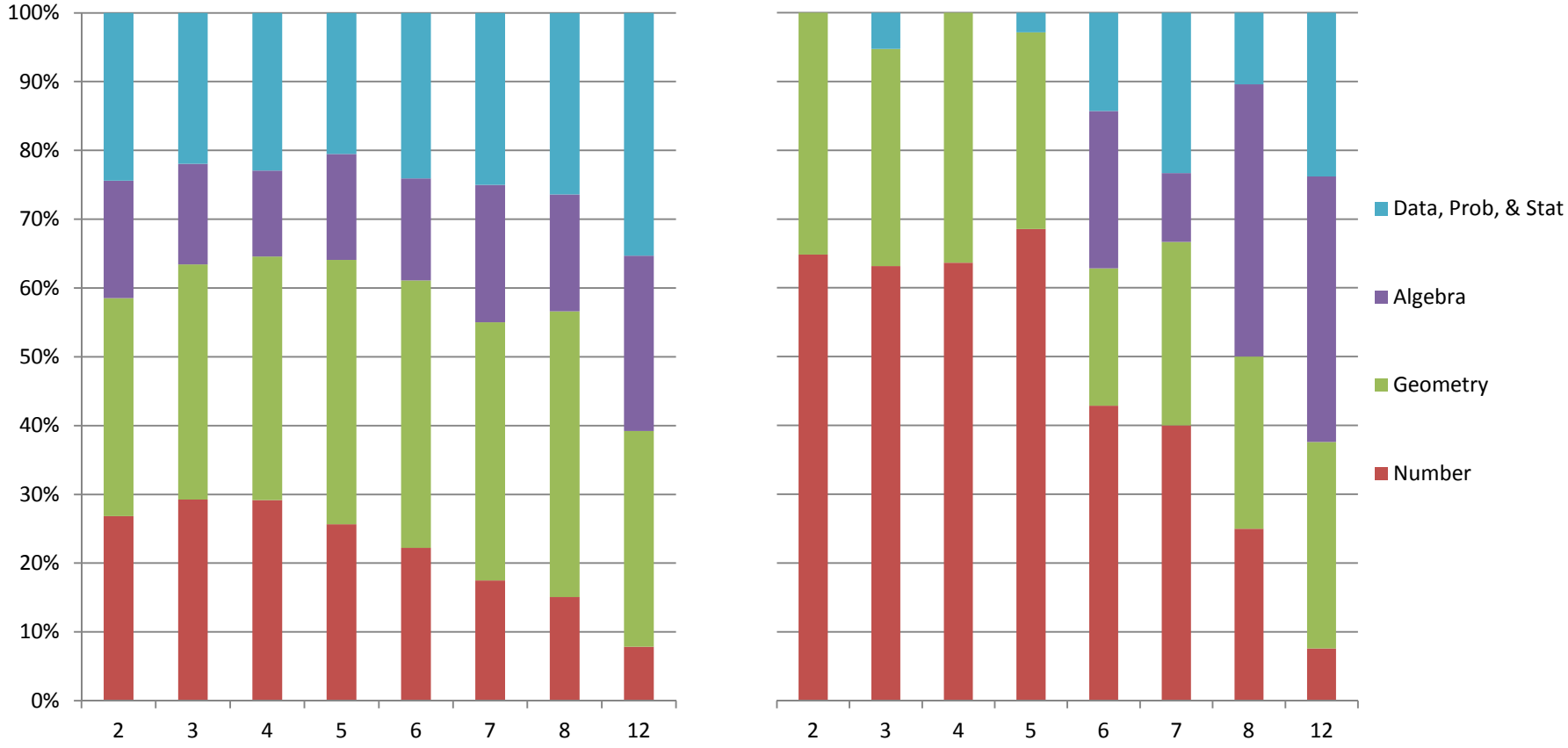
A Mile Wide

AN INCH DEEP

Common Core Standards for Mathematics

- The Council of Chief State School Officers and The National Governors Association Center for Best Practices
  - **Fewer, clearer, and higher**, to best drive effective policy and practice;
  - Aligned with **college and work expectations**, so that all students are prepared for success upon graduating from high school;
  - Inclusive of **rigorous** content and application of knowledge through high-order skills, so that all students are prepared for the 21st century;
  - **Internationally benchmarked**, so that all students are prepared for succeeding in our global economy and society; and
  - **Research** and evidence-based.



Former NJ Core Curriculum Content Standards

Common Core Standards

New Jersey adopted the Common Core Standards in August 2010

Common Core State Standards Mathematics

- Mathematical Practices
- Content Domains

Mathematical Practices

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.

1. Make sense of problems and persevere in solving them
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Reasoning and explaining

Modeling and using tools

Seeing structure and generalizing

Overarching habits of mind of a productive mathematical thinker.

Domain (Topics)

Ratios and Proportional Relationships **7.RP**

Analyze proportional relationships and use them to solve real world and mathematical problems.

1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.*
2. Recognize and represent proportional relationships between quantities.

a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.

b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

c. Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.*

d. Explain what a point *(x, y)* on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r)* where *r* is the unit rate.

Standard

Cluster

Domain (Categories)

Interpreting Categorical and Quantitative Data **S-ID**

Summarize, represent, and interpret data on a single count or measurement variable

1. Represent data with plots on the real number line (dot plots, histograms, and box plots).
2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
4. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

Standard

Cluster

Content Domains K-5

- Counting and Cardinality (K only)
- Operations and Algebraic Thinking
- Number and Operations in Base Ten
- Number and Operations – Fractions (3-5)
- Measurement and Data
- Geometry

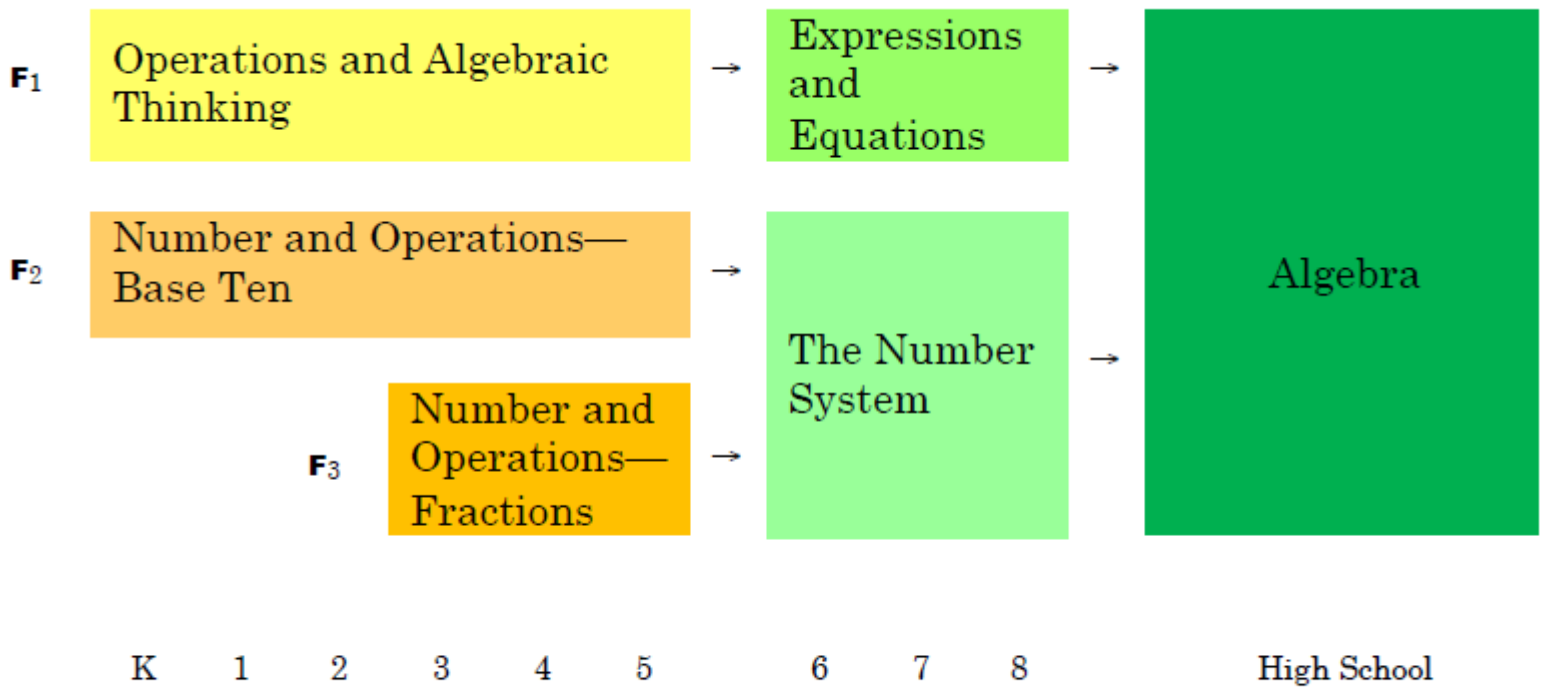
Content Domains 6-8

- Ratios and Proportional Relationships
- The Number System
- Expressions and Equations (Grade 6,7)
- Functions (Grade 8)
- Geometry
- Statistics and Probability

Counting & Cardinality						Ratios & Proportional Relationships		
Operations and Algebraic Thinking						The Number System		
Number and Operations in Base Ten						Expressions and Equations		
			Fractions					Functions
Measurement and Data								
Geometry						Geometry		
						Statistics and Probability		
K	1	2	3	4	5	6	7	8

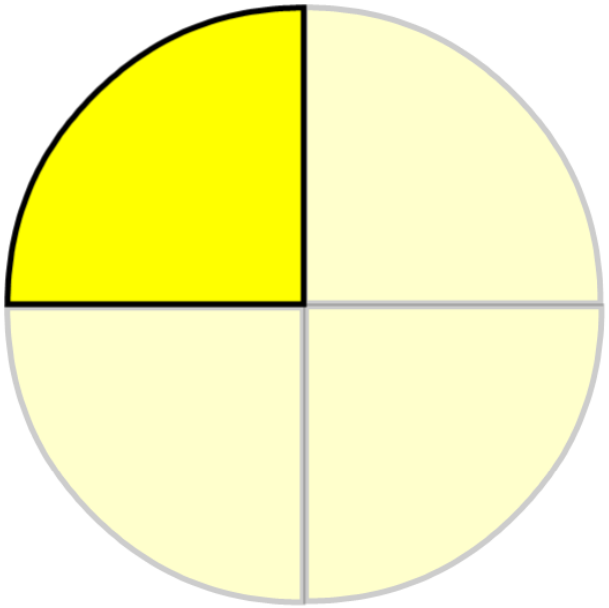
Content Domains High School

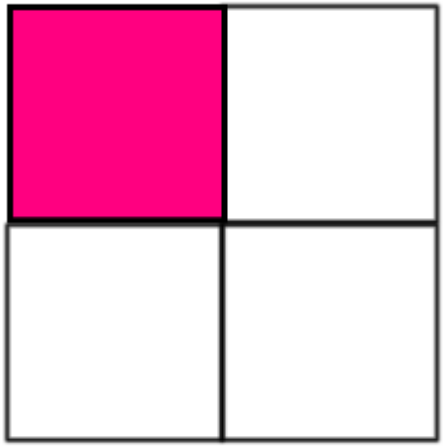
- Number and Quantity
- Algebra
- Functions
- Modeling
- Geometry
- Statistics and Probability

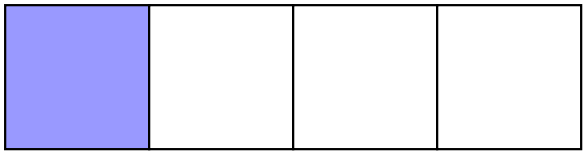

F1
Operations and Algebraic Thinking
Expressions and Equations
F2
Number and Operations—Base Ten
The Number System
Algebra
F3
Number and Operations—Fractions
K 1 2 3 4 5 6 7 8 High School

What is different?

- Less is more
- Changes in what we teach
- Changes in how we teach it



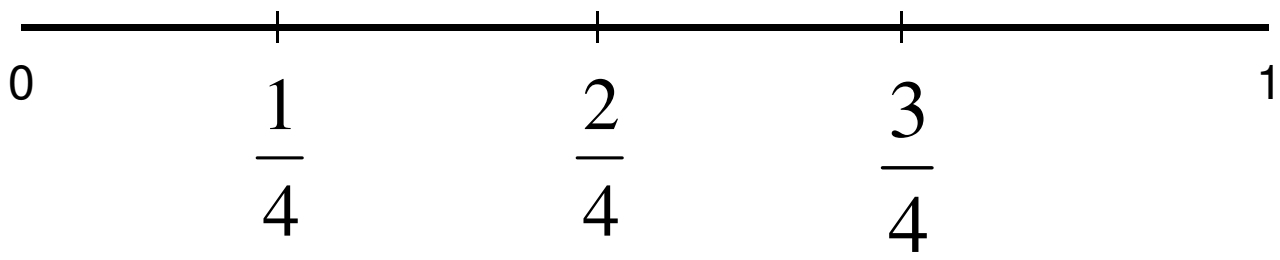




Number and Operations—Fractions Grade 3

Develop understanding of fractions as numbers.

1. Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.
2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.
a. Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.
b. Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.


0
1/4
2/4
3/4
1

Next Steps

Common Core Standards for Mathematics

2011-2012 Implementation K-2

2012-2013 Implementation 3-5, HS

2013-2014 Implementation 6-8

2012-2013 Short term changes to assessment?

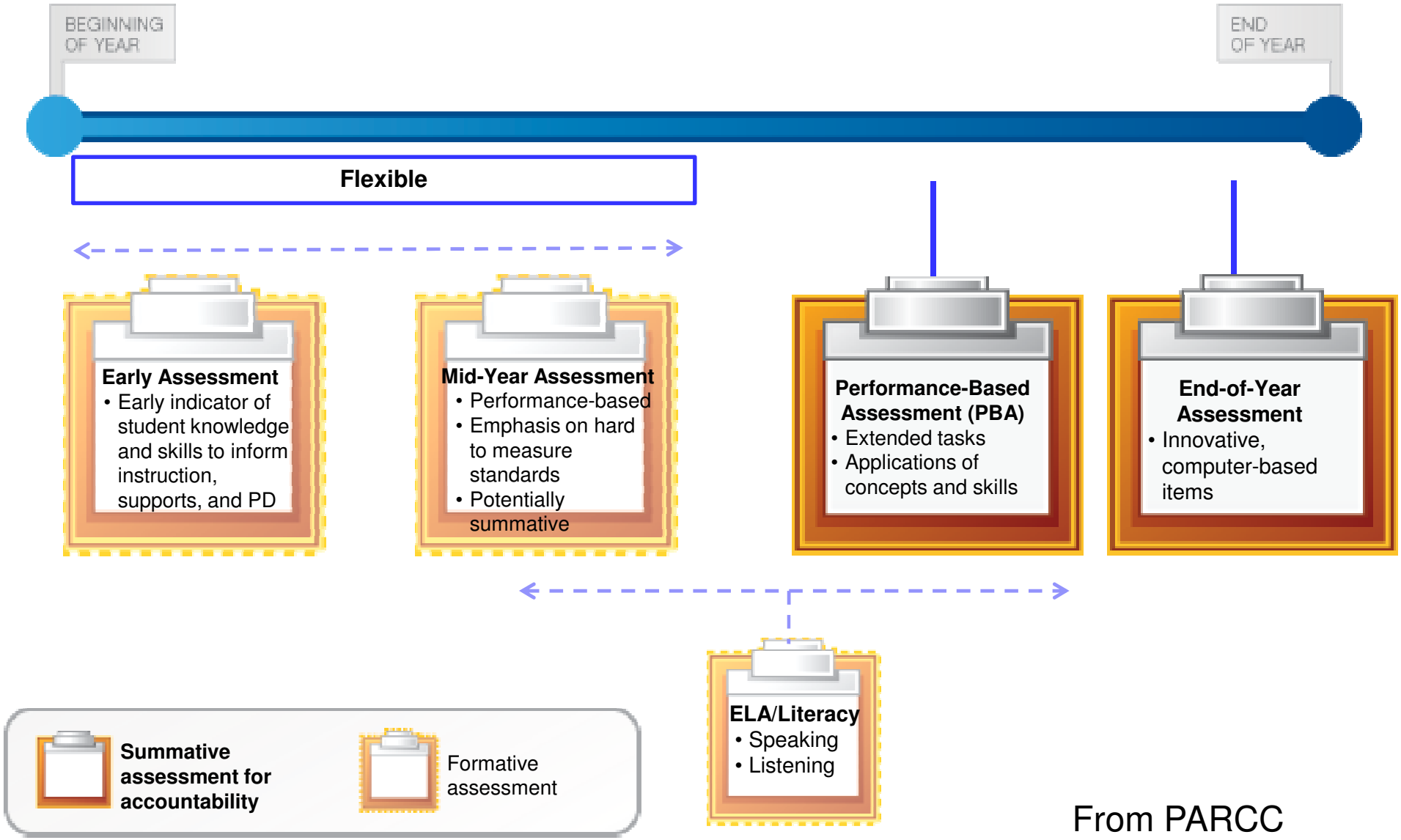
2013-2014 Moratorium on testing?

2014-2015 New assessments

The Partnership for Assessment of Readiness for College and Careers (PARCC)

PARCC Assessments

- To address these priority purposes, PARCC will develop an assessment system comprised of **four components**. Each component will computer-delivered and will leverage technology to incorporate innovations.
  - Two ***summative assessment components*** designed to
    - Make “college- and career-readiness” and “on-track” determinations
    - Measure the full range of standards and full performance continuum
    - Provide data for accountability uses, including measures of growth
  - Two ***formative assessment components*** designed to
    - Generate *timely* information for informing instruction, interventions, and professional development during the school year
    - In ELA/literacy, an additional *third* formative component will assess students’ speaking and listening skills



From PARCC Website