PARCC Math Evidence Tables for Algebra 1, Geometry & Algebra 2 Teachers

In Preparation for the PARCC Summative Assessments, Spring 2015

& the CCIA for APS in the Interim

NMPED
New Mexico Public Education Department

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PollEverywhere.Com

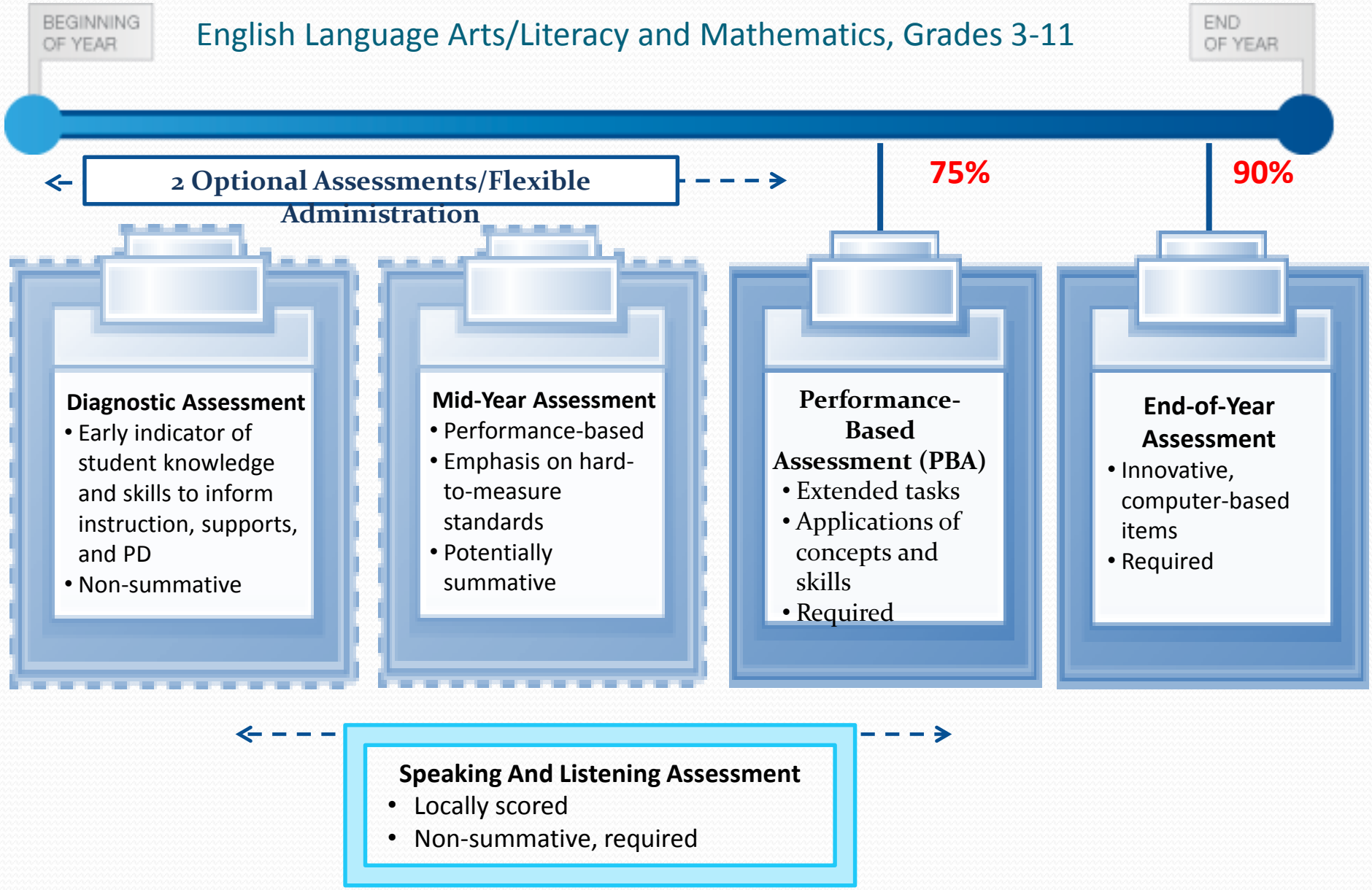
At this time, what is your greatest concern in teaching the CCSS?

Today's Learning Outcomes

- Basics of CCSS PARCC assessment design
- How to read the PARCC CCSS evidence tables
- Evidence Statements to clarify CCSS
- Connections to Unit 2 Scope and Sequence
- PLD's – interpreting in light of PBA's

Assessment Design

English Language Arts/Literacy and Mathematics, Grades 3-11



Evidence-Centered Design (ECD) and PARCC

Claims

Design begins with the inferences (**claims**) we want to make about students

Evidence

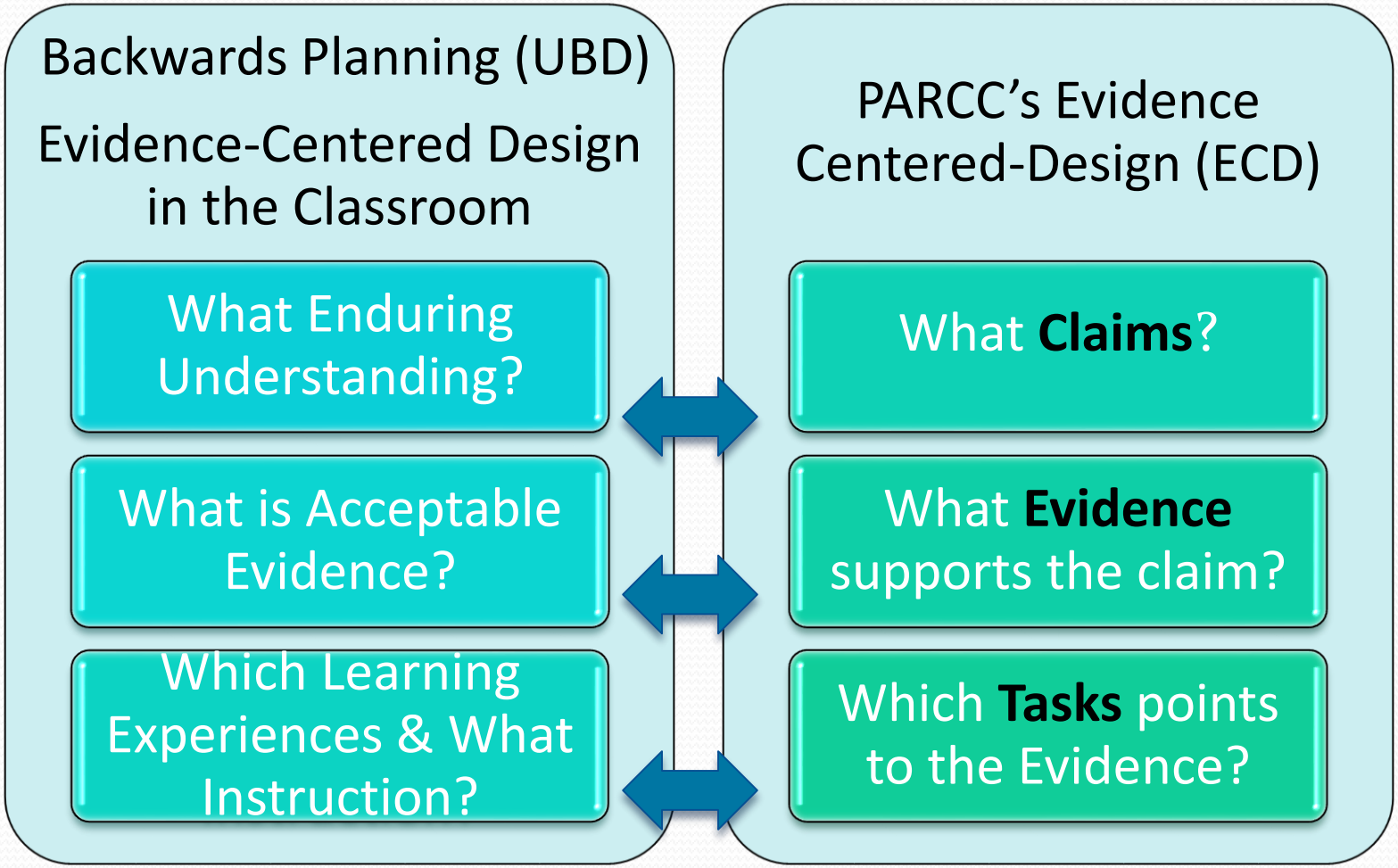
In order to support **claims**, we must gather **evidence**

Task Models

Tasks are designed to elicit specific **evidence** from students in support of **claims**

ECD is a deliberate and systematic approach to assessment development that will help to **establish the validity** of the assessments, **increase the comparability** of year-to year results, and **increase efficiencies/reduce costs**.

"Teaching to the Test" vs. A Test Worth Teaching To



Claims Driving Design: Mathematics

PARCC
Partnership for Assessment of Readiness for College and Careers

Master Claim: Students are on-track or ready for college and careers

Sub Claims

A Students **solve problems involving the major content** for their grade level with connections to practices
~37 pts (3-8), ~42 pts (HS)

B Students **solve problems involving the additional and supporting content** for their grade level with connections to practices
~14 pts (3-8), ~23 pts (HS)

C Students **express mathematical reasoning** by constructing mathematical arguments and critiques (SMP 3 & 6)
14 pts (3-8), 14 pts (HS) 4 pts (Alg II/Math 3 CCR)

D Students solve real world problems engaging particularly in the **modeling practice (SMP4)**
12 pts (3-8), 18 pts (HS) 6 pts (Alg II/Math 3 CCR)

E Student **demonstrate fluency** in areas set forth in the Standards for Content in grades 3-6
7-9 pts (3-6)

Total Exam Score Points:
82 (Grades 3-8), 97 or 107(HS)

Overview of Task Types

- The PARCC assessments for mathematics will involve three primary types of tasks: Type I, II, and III.
- Each task type is described on the basis of several factors, principally the purpose of the task in generating evidence for certain sub claims.

Source: Appendix D of the PARCC Task Development ITN on page 17

Overview of PARCC Mathematics Task Types

Task Type	Description of Task Type
I. Tasks assessing *concepts, skills and procedures*	• Balance of conceptual understanding, fluency, and application • Can involve any or all mathematical practice standards • Machine scorable including innovative, computer-based formats • Will appear on the End of Year and Performance Based Assessment components • Sub-claims A, B and E
II. Tasks assessing *expressing mathematical reasoning*	• Each task calls for written arguments / justifications, critique of reasoning, or precision in mathematical statements (MP.3, 6). • Can involve other mathematical practice standards • May include a mix of machine scored and hand scored responses • Included on the Performance Based Assessment component • Sub-claim C
III. Tasks assessing *modeling / applications*	• Each task calls for modeling/application in a real-world context or scenario (MP.4) • Can involve other mathematical practice standards • May include a mix of machine scored and hand scored responses • Included on the Performance Based Assessment component • Sub-claim D

Design of PARCC Math Summative Assessments

- Performance Based Assessment (PBA)
  - Type I items (Machine-scorable)
  - Type II items (Mathematical Reasoning/Hand-Scored – the PLD's will inform final scoring rubrics)
  - Type III items (Mathematical Modeling/Hand-Scored and/or Machine-scored – the PLD's will inform final scoring rubrics)
- End-of-Year Assessment (EOY)
  - Type I items **only** (All Machine-scorable)

Q: What is a Math Evidence Table and what purpose do they serve?

A: Evidence statements are the connectors between the claims and the tasks. They describe the knowledge and skills that an assessment item or task elicits from students.

Evidence Statement Tables: Types of Evidence Statements

Several types of evidence statements are being used to describe what a task should be assessing, including:

1. Those using **exact standards language**
2. Those transparently **derived from exact standards** language, e.g., by splitting a content standard
3. **Integrative evidence statements** that express plausible direct implications of the standards without going beyond the standards to create new requirements
4. **Sub-claim C & D evidence statements**, which put SMP #3, #4, and #6 as primary with connections to content

Log onto . . .

parcconline.org

Open tab at top:

The Parcc Assessment

Click on Left side:

Parcc Assessment Design

Then click on:

Assessment Blueprints and . . .

1. Open the two documents for one content area

2. Take 5 minutes to look through both of these documents for one content area

3. After 5 minutes of independent research, you will be directed to do a pair share of what you noticed for another 10 minutes

4. Then, we will look at these documents with respect to Unit 2 of our Units of Study for Alg 1, Geom & Alg 2

Looking at Unit 2: the CCSS's + Evidence Tables + SMP's + Calculator

Some Instructional Uses of the Evidence Tables

- To see ways to combine standards naturally when designing instructional tasks
- To determine and create instructional scaffolding (to think through which individual, simpler skills can be taught first to build to more complex skills)
- To develop rubrics and scoring tools for instructional tasks
- To see how the content and the mathematical practices go hand-in-hand and should not be thought of as separate standards
- To use as a tool to guide questions for classroom tests and assessments

PARCC Calculator Policy

Grades 3 – 5

- NO Calculators Allowed *

Grades 6 – 7

- Online four function calculator with square root
- Accessible for about 50% of the assessment

Grade 8

- Online scientific calculator
- Accessible for about 50% of the assessment

High School

- Online calculator with functionalities similar to that of a TI-84 graphing calculator
- Accessible for more than 80% of the assessment

For all grades:

- Assessments are to be divided into calculator and non- calculator sessions, provided that the other sessions of the assessment are locked.

NOTE: There is continuing discussion on whether to allow students to use a "real" vs "on-line" calculator in 2015

(*) For students who need accommodation, calculators will be allowed for even non-calculator portions of the assessment, excluding fluency

Reference Sheets for the Assessment

PARCC has approved the following reference sheets that students can use during testing. These reference sheets include the necessary formulas and reference information students need to assist them in answering certain mathematics questions

Assessment Reference Sheet

Grades 5

1 mile = 5,280 feet
1 mile = 1,760 yards

1 pound = 16 ounces
1 ton = 2,000 pounds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 liter = 1000 cubic centimeters

Right Rectangular Prism	$V = Bh$ or $V = lwh$

Grade 6

1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 5,280 feet
1 mile = 1,760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
1 pound = 0.454 kilograms
1 kilogram = 2.2 pounds
1 ton = 2,000 pounds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 3.785 liters
1 liter = 0.264 gallons
1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$
Right Rectangular Prism	$V = Bh$ or $V = lwh$

Grade 7

1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 5,280 feet
1 mile = 1,760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
1 pound = 0.454 kilograms
1 kilogram = 2.2 pounds
1 ton = 2,000 pounds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 3.785 liters
1 liter = 0.264 gallons
1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d$ or $C = 2\pi r$
General Prisms	$V = Bh$

Grade 8

1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 5,280 feet
1 mile = 1,760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
1 pound = 0.454 kilograms
1 kilogram = 2.2 pounds
1 ton = 2,000 pounds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 3.785 liters
1 liter = 0.264 gallons
1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d$ or $C = 2\pi r$
General Prisms	$V = Bh$
Cylinder	$V = \pi r^2 h$
Sphere	$V = \frac{4}{3}\pi r^3$
Cone	$V = \frac{1}{3}\pi r^2 h$
Pythagorean Theorem	$a^2 + b^2 = c^2$

High School Assessment Reference Sheet

1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 5,280 feet
1 mile = 1,760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
1 pound = 0.454 kilograms
1 kilogram = 2.2 pounds
1 ton = 2,000 pounds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 3.785 liters
1 liter = 0.264 gallons
1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d$ or $C = 2\pi r$
General Prisms	$V = Bh$
Cylinder	$V = \pi r^2 h$
Sphere	$V = \frac{4}{3}\pi r^3$
Cone	$V = \frac{1}{3}\pi r^2 h$
Pyramid	$V = \frac{1}{3}Bh$

Pythagorean Theorem	$a^2 + b^2 = c^2$
Quadratic Formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Arithmetic Sequence	$a_n = a_1 + (n-1)d$
Geometric Sequence	$a_n = a_1 r^{n-1}$
Geometric Series	$S_n = \frac{a_1 - a_1 r^n}{1 - r}$ where $r \neq 1$
Radians	$1\ radian = \frac{180}{\pi}\ degrees$
Degrees	$1\ degree = \frac{\pi}{180} radians$
Exponential Growth/Decay	$A = A_0\, e^{k(t-t_0)} + B_0$

CCSSM Exemplar Assessment Prototypes

PARCC
http://www.parcconline.org/samples/item-task-prototypes

Illustrative Mathematics (IM)
www.illustrativemathematics.org

Mathematics Assessment Resources Service (MARS)
http://map.mathshell.org/materials/lessons.php

New York City Dept of Education (NYC)
http://schools.nyc.gov/Academics/CommonCoreLibrary/CommonCoreClassroom/Mathematics/default.htm

Next Steps

- What do you still want to learn?
- What questions do you have?

✓Write these on post-it notes, and place on the parking lot as you leave

- Thank you for attending today!
- Ronda Davis; davis_r@aps.edu