# Aligned to what?

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# The ultimate validity test…

"If a school is identified under NCLB for low performance in mathematics, the response by the school should be to strengthen the mathematics instruction based upon a solid set of grade level expectations."

Tim Kurtz, NH Assessment Director

# A Short History

- 1990 – 2000: States developed standards;
- Assessments developed to the standards;
- A range of accountability systems put in place;
- National organizations reviewed standards – Fordham, AFT, Achieve, CBE, and others for the paper quality;
- National organizations developed and applied protocols for evaluating the quality of the alignment of between standards and assessments - Webb(1997), Achieve, WestEd, others.
- NCLB requires grade level assessments, grade level expectations, tight alignment between them, and school level accountability systems.

# Findings

- Standards developed in first round of varying quality;
- For the most part alignment between assessments and standards are weak;
- Fear about narrowing the curriculum abounds – to item types, to over specified content;
- Plea to prioritize, focus on the "Big Ideas" (Popham and others)
- Plea to align systems - "Large scale assessments should be substantially consistent with high quality classroom assessments though procedurally separate." Shepard 2000.
- Few states have seen increases in student learning on large-scale assessments – either assessments are not sensitive to the changes occurring, or there isn't any change.

# Logical Response

- Use findings from alignment studies for development;
- Use learnings about the quality of standards and concerns of researchers in the development of grade level expectations.

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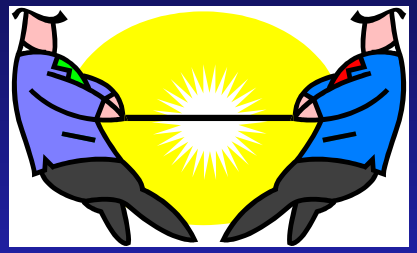
There is a ***tension*** between the need to accomplish alignment in large-scale assessment and constraints or barriers to accomplishing the tight alignment that is desired…



- Time constraints of testing;
- Cost efficiency;
- Embedded field trials;
- Year to year equating; and
- Others

# Logical Response

- Use findings and protocols from alignment studies for development;
- Use learnings about the quality of standards and concerns of researchers in the development of grade level expectations..

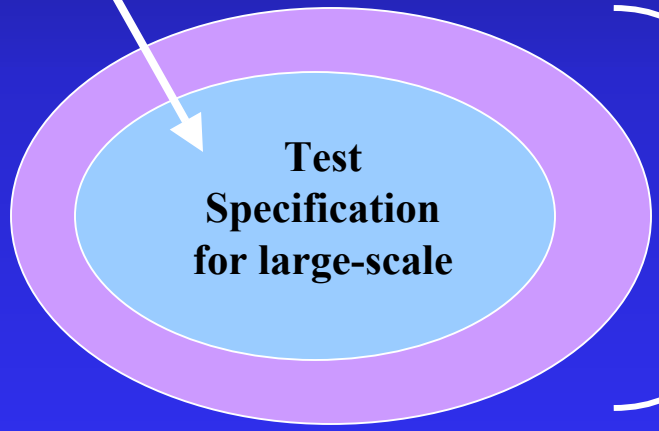
# At the foundation of any assessment or accountability system based on student performance is the framework of concepts and skills upon which the they are to be built.

- Relate to a state's standards;
- Promote coherent curriculum and instruction;
- Differentiate concepts and skills between adjacent grades;
- Be at a reasonable grain size;
- Communicate how content and process interacts; and
- Serve multiple audiences: educators in the field; the public; and test developers.

| 3 | 4 | 5 |
|---|---|---|
| M–G&M–3–1 **Uses properties or attributes of angles** (number of angles) **or sides** (number of sides or length of sides) or composition or decomposition of shapes **to identify, describe, or distinguish among** triangles, squares, rectangles, rhombi, trapezoids, hexagons, or circles. | M–G&M–4–1 **Uses properties or attributes of angles** (number of angles) **or sides** (number of sides, length of sides, parallelism, or perpendicularity) **to identify, describe, or distinguish among** triangles, squares, rectangles, rhombi, trapezoids, hexagons, or octagons; or classify angles relative to 90º. | M–G&M–5–1 **Uses properties or attributes of angles** (right, acute, or obtuse) **or sides** (number of congruent sides, parallelism, or perpendicularity) **to identify, describe, classify, or distinguish among** different types of triangles (right, acute, equilateral, or obtuse) or quadrilaterals (rectangles, squares, rhombi, trapezoids, or parallelograms). |
| | | |
| | M–G&M–4–3 **Uses properties or attributes** (shape of bases or number of lateral faces) **to identify, compare, or describe three-dimensional shapes** (rectangular prisms, triangular prisms, cylinders, or spheres). | M–G&M–5–3 **Uses properties or attributes** (shape of bases, number of lateral faces, or number of bases) **to identify, compare, or describe three-dimensional shapes** (rectangular prisms, triangular prisms, cylinders, spheres, pyramids, or cones). |
| | | M–G&M–5–4 **Demonstrates conceptual understanding of congruency** by matching congruent figures using reflections, translations, or rotations (flips, slides, or turns), or as the result of combining or subdividing shapes. Describes relationships using models or explanations. |
| | M–G&M–4–5 **Demonstrates conceptual understanding of similarity** by applying scales on maps, or applying characteristics of similar figures (same shape but different proportional size) to identify similar figures, or to solve problems involving similar figures. Describes relationships using models or[sc] explanations. | M–G&M–5–5 **Demonstrates conceptual understanding of similarity** by applying dilations (magnifying or shrinking) or describing the effects on the properties of the size and shape of polygons, or by solving related problems. Describes effects using models or[sc] explanations. |
| M–G&M–3–6 **Demonstrates conceptual understanding of perimeter of** polygons, and **the area of** rectangles on grids using a variety of models or manipulatives. Expresses all measures using appropriate units. | M–G&M–4–6 **Demonstrates conceptual understanding of perimeter of** polygons, and **the area of** rectangles, polygons or irregular shapes on grids using a variety of models or manipulatives. Expresses all measures using appropriate units. | M–G&M–5–6 **Demonstrates conceptual understanding of perimeter** of polygons, **and the area of** rectangles or right triangles, the area of polygons or irregular shapes on grids, and **volume of rectangular prisms** (cubes) using a variety of models, manipulatives, or formulas. Expresses all measures using appropriate units. |

# Two Types of Grade Level Expectations

- Test Specification for the large scale assessment
- Specification for local curriculum and assessment.



# Some Characteristics of Two Types

## Test Specification

- Must be assessable in an on-demand large-scale setting;
- Should be a prioritized set.

## Local Curriculum and Assessment

- Can include concepts and skills not easily assessable in an on-demand setting;
- Can include foundational skills as they develop across grades.

# Examples – large scale assessable or not

## Test Specification

- **M–DSP–3–1 Interprets a given representation (**line plots, bar graphs, tally charts, or tables) to answer questions related to the data, to analyze the data to formulate conclusions, or to make predictions**.** (NEC Draft GLE)

## Local Curriculum and Assessment

- **GLE #M26: In response to a teacher or student generated question or hypothesis,** collects appropriate data, organizes the data, displays/represents the data and makes observations about the data to draw conclusions about the questions or hypothesis being tested. (Local) (Vermont Draft GLE)

# Examples – large scale assessable or not

## Test Specification

- **NEGLE-R5: Demonstrate initial understanding of author's craft used in literary texts by…**

….Identifying use of literary devices as appropriate to genre: rhyme schemes, alliteration, simile, dialogue, imagery, metaphors, flashback, repetition, personification, or hyperbole. (Draft NEC GLE)

## Local Curriculum and Assessment

- **Monitors comprehension strategies while reading u**sing prior knowledge, predicting, determining importance of information, taking notes . (Vermont Draft GLE)

# Examples – Developing skills and concepts

## Test Specification

Grade 6 ---

- **GLE #M1: Demonstrates conceptual understanding of** addition, subtraction, and multiplication of integers, and use of powers using models, diagrams, or explanations. (Draft VT GLE)

## Local Curriculum and Assessment

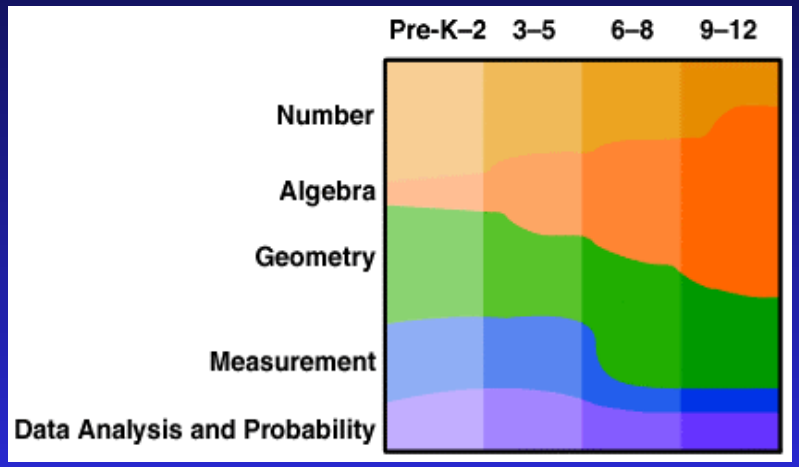
**Grade 5 -**

- **GLE #M1: Demonstrates conceptual understanding of whole number operations** – addition, subtraction, multiplication, division (State), and raising to powers (Local) using models, diagrams, or explanations. (Draft VT GLE)

# Getting to the prioritized set of GLEs for test specification

- Distribution of Emphasis; and
- Forced Choices (Petit, 2003)

# Distribution of Emphasis




- The concepts and skills to be assessed must be doable within the test space available given the Distribution of Emphasis.

This leads to making tough choices, but not arbitrary choices…

# Assumptions

- Rarely are content teams that develop GLEs the same group that then has to make sampling decisions in the development of the large-scale assessment;
- Often, if not always, content teams include more content than can be reasonably learned or assessed;
- If content teams developing the GLEs understood the sampling decisions that would be made later and were given strategies to prioritize – they would.

# Questions to Guide Prioritization

- Is the concept or skill part of a big idea in the discipline? (E.g., proportionality)
- Is the success on the concept or skill in a given grade essential for success in mathematics in subsequent grades?
- Should the concept or skill be assessed at an earlier grade because success at that earlier grade is important for success at the given grade?
- Is the concept or skill assessed adequately at an earlier grade?
- Should the concept or skill be assessed at a later grade for state assessment purposes?
- Is the concept or skill subsumed in other GLEs at that grade level? (E.g., Is the skill of applying the conventions of order of operations subsumed in the use of formulas, and when solving multistep linear equations at grade 8?)
- Is the concept or skill better assessed in the classroom? (e.g., Mentally adds and subtracts…)

# Forced Choices – "The Real World"

- You are a member of a fictional state GLE development team;
- The team has determined the Distribution of Emphasis to be applied to test development;
- From that – it has been determined that 10 items are available to assess the Number and Operation strand at grade 8;
- Your job – indicate which concepts and skills will be assessed by distributing the 10 items;
  - - Each concept and skill that you select must be assessed every year;
  - - You may decide to have more than 1 item to assess some concepts and skills;
  - - You must justify your choice by indicating the Guiding Question # that you used to make your choice.

# Sample

| | # of Items | Guiding Question # | |
|---|---|---|---|
| **Students should be able to demonstrate understanding of:** | | | |
| Exponents | 0 | 3,6 | - Applied at grade 8 when finding area and volume, and when applying the Pythagorean Theorem.<br>--Subsumed by other content strands –geometry and algebra.<br>- understanding should be assessed at an earlier grade. |
| …. | | | |
| …. | | | |

# Questions for Discussion

- How can grade level expectations serve multiple audiences and still support good instruction, curriculum, and assessment, without narrowing the curriculum, or placing an unreasonable burden on the large-scale assessment?

- What is the balance between applying alignment protocols for assessment development and over specification?