ANALYZING ASSESSMENTS

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@EDUOPTIMUS1

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- Today's Outcomes:
  - Identify resources for determining the depth and rigor of standards.
  - Analyze questions to determine alignment with standards.
  - Analyze & provide strategies for feedback given to students.

- Success Criteria
  - Able to use the appropriate Rigor Matrix to determine difficulty versus complexity of assessment items.
  - Able to use the Analyzing Assessments and Assignments to critique assessments.
  - Able to infuse feedback, feed-forward, and academic language in assessment review.

- But the true test of an equitable education is whether students—regardless of their race, income, or where they live—are well prepared for life, college, and career. If we want opportunity for all students, our **teaching** has to be equitable, too—even in math.—Achievement Network

- **Think, Write, Pair, Share**
  - **What percentage of assignments are aligned to grade appropriate standards?**
  - **What percentage of assignments require students to only recall or apply basic skills or concepts?**
  - **Why?**

- The Need?
  - 1800 middle school assignments studied by Education Trust
  - According to study of middle grades study a little over 2/3 aligned or partially aligned to grade level standards..
  - About 90% of assignments were recalling a fact, performing a simple procedure, or applying basic knowledge to a skill or concept.
  - Assignments were more than twice as likely to focus on procedural skills and fluency (87 percent) compared with conceptual understanding (38 percent) or application of a mathematical concept (39 percent).
  - Only 36 percent required students to write anything besides an answer, and 95 percent of assignments showed no opportunity for discussion.

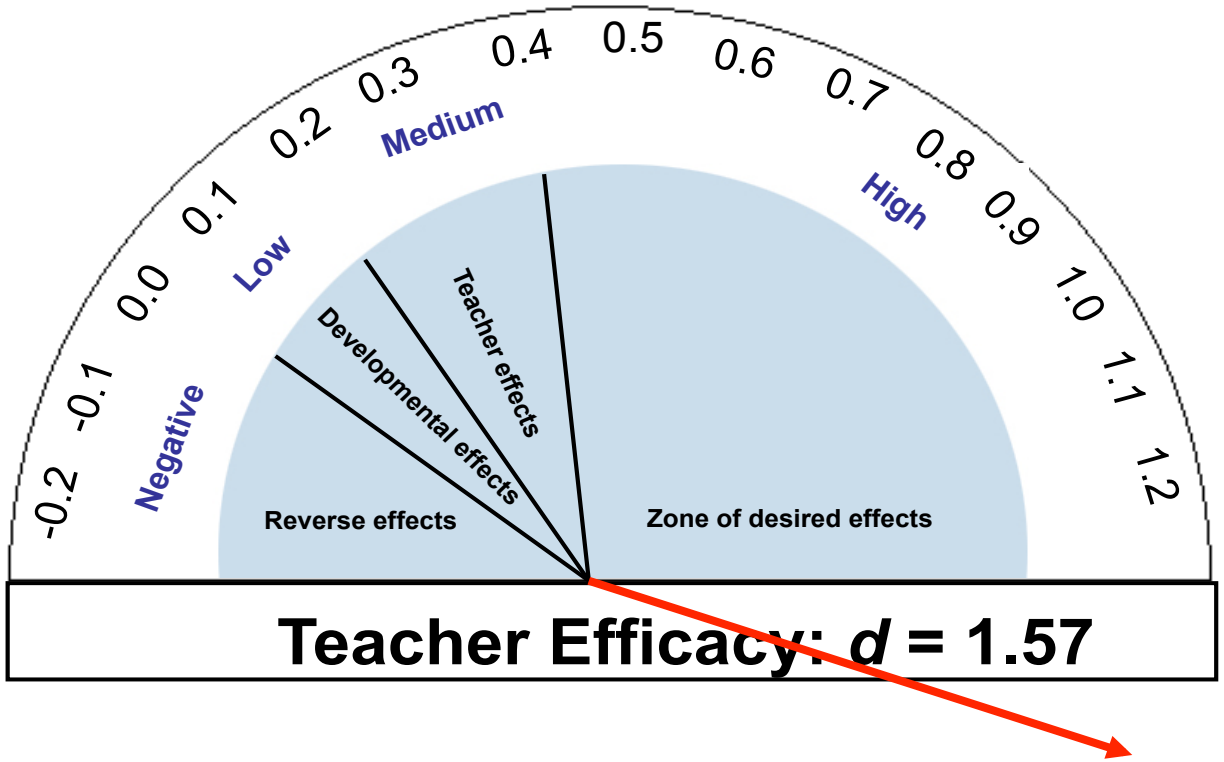
https://1k9gl1yevnfp2lpq1dhrqe17-wpengine.netdna-ssl.com/wp-content/uploads/2014/09/CheckingIn_MATH-ANALYSIS_FINAL_5.pdf

- **An assessment literate individual is one who understands how student assessment can enable them to better carry out their role in education, believes that assessment can improve teaching and learning, and puts into place activities and behaviors reflecting these beliefs (MAC, 2015).**

www.michiganassessmentconsortium.org/als/standards-for-teachers

WHAT DOES GOOD ASSESSMENT LOOK LIKE?

- It mirrors good instruction!
- Just like instructional materials, assessment materials include
  - Questions that are worth asking and require that students
    - read closely
    - think deeply, analyzing important mathematical ideas
    - use evidence/proofs to support their answers



Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses related to achievement*. New York: Routledge.

Analyzing Assessments and Assignments

Teacher:_____ Grade_____ Subject_____

1. Do the questions align with the stated standards? Yes/No If not, which standards are being assessed?

_____

_____

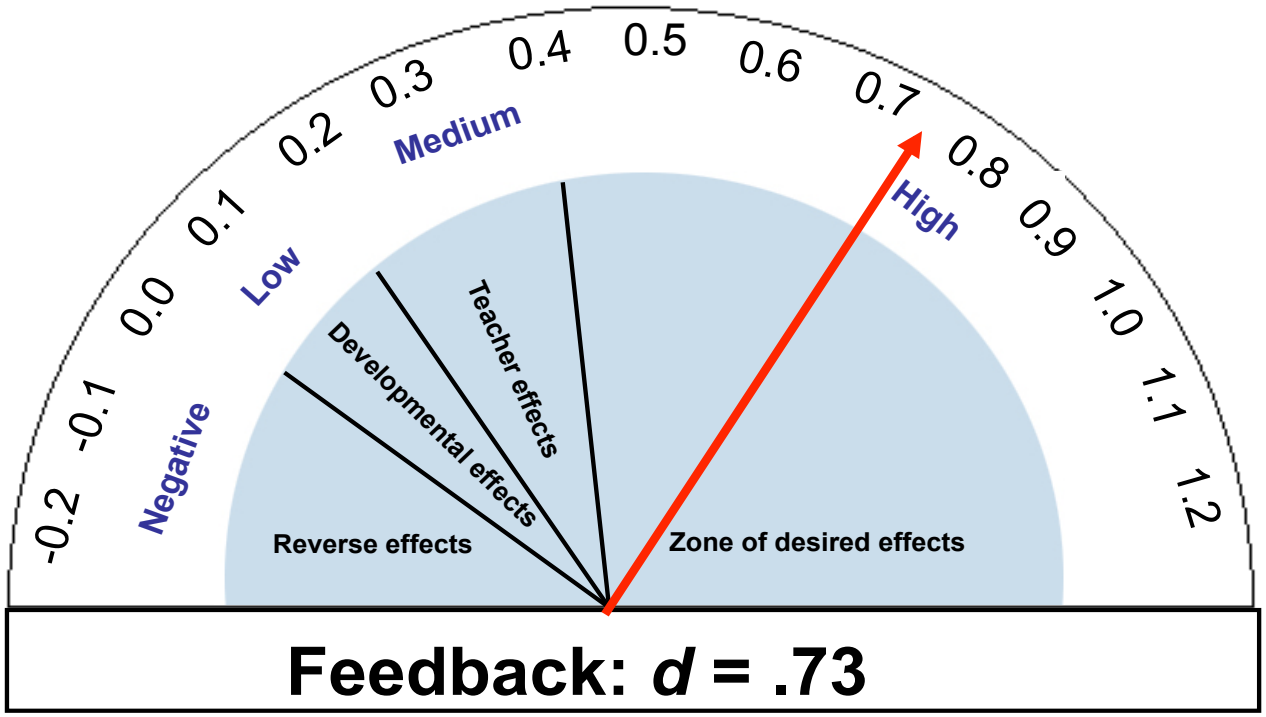
_____

2. How many of the items focus on the Major Work of the Grade? Out of how many?

_____

3. What mathematical vocabulary are included?

_____



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Feed back: providing students with information about their success and needs

Feed forward: using student performance for “next steps” instruction and feeding this into an instructional model

Fisher & Frey, 2009

Purpose:

- For students to get feedback while they are still mindful of the learning target
- For students to get feedback while there is still time for them to act on it

Examples of Good Feedback

- Returning a test or assignment the next day
- Giving immediate oral responses to questions of fact
- Giving immediate oral responses to student misconceptions

Examples of Bad Feedback

- Returning a test or assignment two weeks after it is completed
- Ignoring errors or misconceptions (thereby implying acceptance)
- Going over a test or assignment when the unit is over and there is no opportunity to show improvement

Purpose:

- For students to get enough feedback so that they understand what to do but not so much that the work has been done for them (differs case by case)
- For students to get feedback on "***teachable moment***" points but not an overwhelming number

Examples of Good Feedback

- Selecting two or three main points about a paper for comment
- Giving feedback on important learning targets
- Commenting on at least as many strengths as weaknesses

Examples of Bad Feedback

- Returning a student's paper with every error in mechanics edited
- Writing comments on a paper that are more voluminous than the paper itself
- Writing voluminous comments on poor-quality papers and almost nothing on good-quality papers
- Checks for wrong answers with no explanation.
- Stickers, smiley faces, and atta-boys.

Feedback is not enough

Feed forward

Where to next?

- In groups of 3-4:
- Read through the assessment
- Look at the feedback teachers have provided to students on the assessments (question 8). What feedback and feed-forward would you give the teachers?

THE STANDARDS REQUIRE A BALANCE OF:

- Conceptual understanding: Students must be able to access concepts from a number of perspectives so that they are able to see math as more than a set of mnemonics or discrete procedures.
- Procedural skill and fluency: Students are given opportunities to practice core functions such as single-digit multiplication so that they have access to more complex concepts and procedures.
- Application: Students use math flexibly for applications in problem-solving contexts. In content areas outside of math, particularly science, students are given the opportunity to use math to make meaning of and access content.

ACHIEVETHECORE.ORG

CCSS WHERE TO FOCUS GRADE 4 MATHEMATICS

MATH | 4 | F

MATHEMATICS | GRADE 4 | FOCUS

This document shows where students and teachers should spend the large majority of their time in order to meet the expectations of the Standards.

Not all content in a given grade is emphasized equally in the Standards. Some clusters require greater emphasis than others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics or the demands of college and career readiness. More time in these areas is also necessary for students to meet the Standards for Mathematical Practice.

To say that some things have greater emphasis is not to say that anything in the Standards can safely be neglected in instruction. Neglecting material will leave gaps in student skill and understanding and may leave students unprepared for the challenges of a later grade.

Students should spend the large majority[1] of their time on the major work of the grade (■). Supporting work (□) and, where appropriate, additional work (○) can engage students in the major work of the grade.[2, 3]

MAJOR, SUPPORTING, AND ADDITIONAL CLUSTERS FOR GRADE 4

Emphases are given at the cluster level. Refer to the Common Core State Standards for Mathematics for the specific standards that fall within each cluster.

Key: ■ Major Clusters □ Supporting Clusters ○ Additional Clusters

4.OA.A	■ Use the four operations with whole numbers to solve problems.
4.OA.B	□ Gain familiarity with factors and multiples.
4.OA.C	○ Generate and analyze patterns.
4.NBT.A	■ Generalize place value understanding for multi-digit whole numbers.
4.NBT.B	■ Use place value understanding and properties of operations to perform multi-digit arithmetic.
4.NF.A	■ Extend understanding of fraction equivalence and ordering.
4.NF.B	■ Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
4.NF.C	■ Understand decimal notation for fractions, and compare decimal fractions.
4.MD.A	□ Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

HIGHLIGHTS OF MAJOR WORK IN GRADES K–8

K–2	Addition and subtraction – concepts, skills, and problem solving; place value
3–5	Multiplication and division of whole numbers and fractions – concepts, skills, and problem solving
6	Ratios and proportional relationships; early expressions and equations
7	Ratios and proportional relationships; arithmetic of rational numbers
8	Linear algebra and linear functions

REQUIRED FLUENCIES FOR GRADE 4

- In groups of four or five:
  - With your group answer questions 1, 2, and 4 on the Analyzing Assessments and Assignments Handout. Be sure to give specific and actionable feedback.

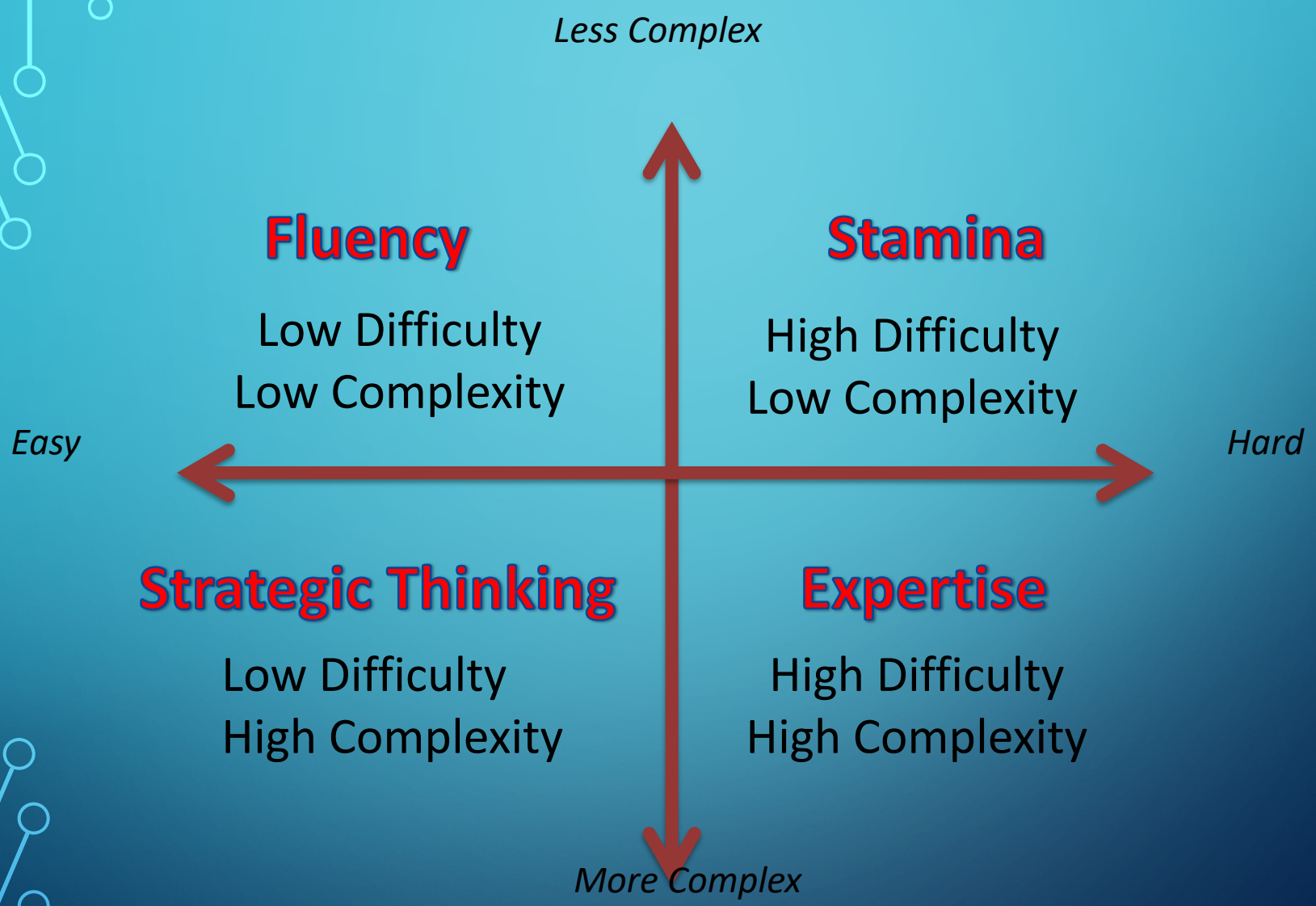
DIFFICULTY V. COMPLEXITY

DIFFICULTY

- A measure of **effort** required to complete a task.
- In assessment, a function of how many people can complete the task correctly.

COMPLEXITY

- A measure of the **thinking, action, or knowledge** that is needed to complete the task.
- In assessment, how many different ways can the task be accomplished.



Doug Fisher April 2016

TOOL 2

HESS COGNITIVE RIGOR MATRIX (MATH-SCIENCE CRM):

Applying Webb's Depth-of-Knowledge Levels to Bloom's Cognitive Process Dimensions

Revised Bloom's Taxonomy	Webb's DOK Level 1 Recall & Reproduction	Webb's DOK Level 2 Skills & Concepts	Webb's DOK Level 3 Strategic Thinking/Reasoning	Webb's DOK Level 4 Extended Thinking
Remember Retrieve knowledge from long-term memory, recognize, recall, locate, identify	o Recall, observe, & recognize facts, principles, properties o Recall/ identify conversions among representations or numbers (e.g., customary and metric measures)	Use these Hess CRM curricular examples with most mathematics or science assignments or assessments.		
Understand Construct meaning, clarify, paraphrase, represent, translate, illustrate, give examples, classify, categorize, summarize, generalize, infer a logical conclusion), predict, compare/contrast, match like ideas, explain, construct models	o Evaluate an expression o Locate points on a grid or number on number line o Solve a one-step problem o Represent math relationships in words, pictures, or symbols o Read, write, compare decimals in scientific notation	o Specify and explain relationships (e.g., non-examples/examples; cause-effect) o Make and record observations o Explain steps followed o Summarize results or concepts o Make basic inferences or logical predictions from data/observations o Use models /diagrams to represent or explain mathematical concepts o Make and explain estimates	o Use concepts to solve non-routine problems o Explain, generalize, or connect ideas using supporting evidence o Make and justify conjectures o Explain thinking/reasoning when more than one solution or approach is possible o Explain phenomena in terms of concepts	o Relate mathematical or scientific concepts to other content areas, other domains, or other concepts o Develop generalizations of the results obtained and the strategies used (from investigation or readings) and apply them to new problem situations
Apply Carry out or use a procedure in a given situation; carry out (apply to a familiar task), or use (apply) to an unfamiliar task	o Follow simple procedures (recipe-type directions) o Calculate, measure, apply a rule (e.g., rounding) o Apply algorithm or formula (e.g., area, perimeter) o Solve linear equations o Make conversions among representations or numbers, or within and between customary and metric measures	o Select a procedure according to criteria and perform it o Solve routine problem applying multiple concepts or decision points o Retrieve information from a table, graph, or figure and use it solve a problem requiring multiple steps o Translate between tables, graphs, words, and symbolic notations (e.g., graph data from a table) o Construct models given criteria	o Design investigation for a specific purpose or research question o Conduct a designed investigation o Use concepts to solve non-routine problems o Use & show reasoning, planning, and evidence o Translate between problem & symbolic notation when not a direct translation	o Select or devise approach among many alternatives to solve a problem o Conduct a project that specifies a problem, identifies solution paths, solves the problem, and reports results
Analyze Break into constituent parts, determine how parts relate, differentiate between relevant-irrelevant, distinguish, focus, select, organize, outline, find coherence, deconstruct	o Retrieve information from a table or graph to answer a question o Identify whether specific information is contained in graphic representations (e.g., table, graph, T-chart, diagram) o Identify a pattern/trend	o Categorize, classify materials, data, figures based on characteristics o Organize or order data o Compare/ contrast figures or data o Select appropriate graph and organize & display data o Interpret data from a simple graph o Extend a pattern	o Compare information within or across data sets or texts o Analyze and draw conclusions from data, citing evidence o Generalize a pattern o Interpret data from complex graph o Analyze similarities/differences between procedures or solutions	o Analyze multiple sources of evidence o Analyze complex/abstract themes o Gather, analyze, and evaluate information
Evaluate Make judgments based on criteria	"UG" – unsubstantiated generalizations = stating an opinion without		o Cite evidence and develop a logical argument for concepts or solutions	o Gather, analyze, & evaluate information to draw conclusions

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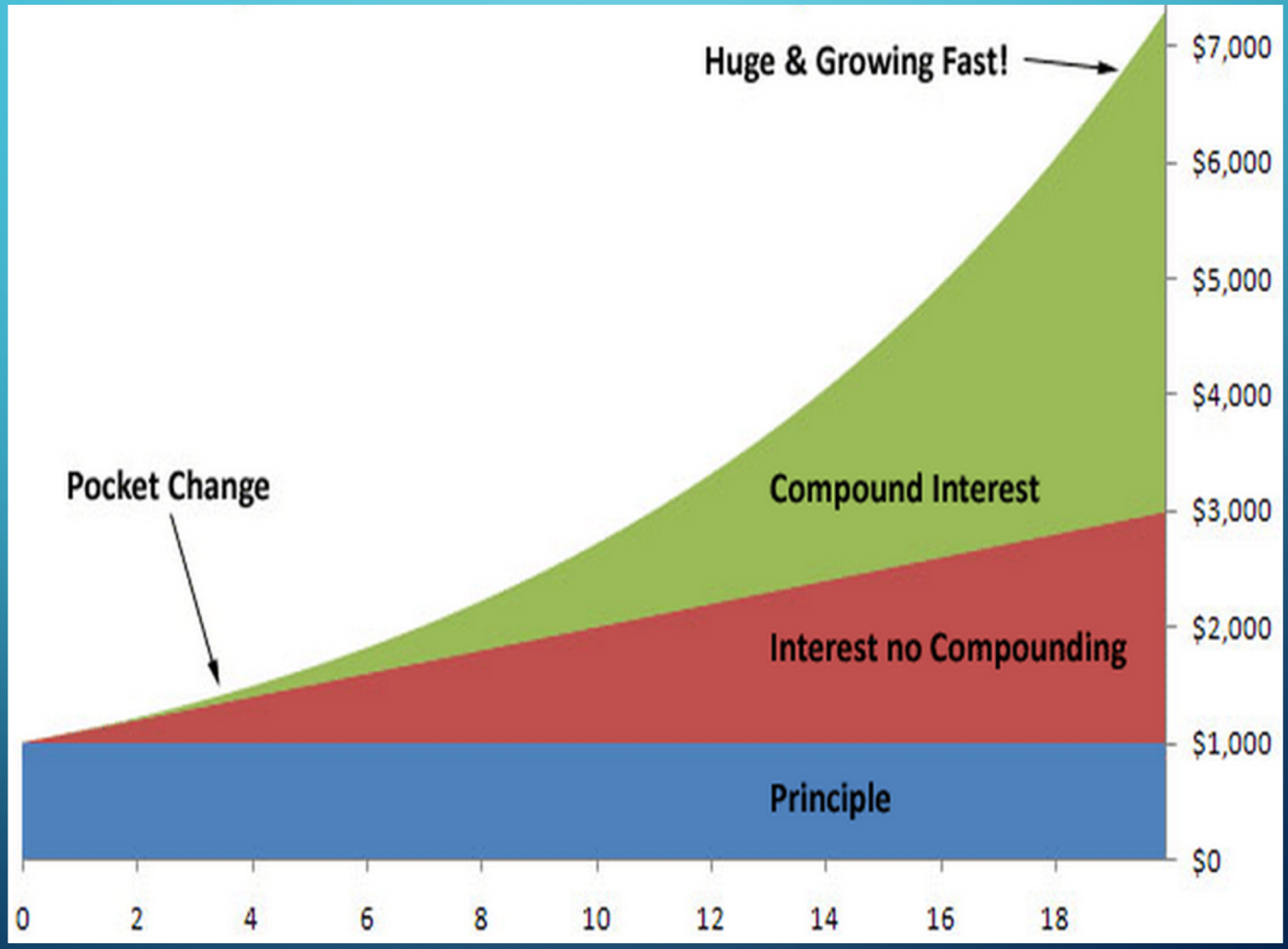
Evaluate Make judgments based on criteria	"UG" – unsubstantiated generalizations = stating an opinion without		o Cite evidence and develop a logical argument for concepts or solutions	o Gather, analyze, & evaluate information to draw conclusions

- In your small groups:
  - Analyze the assessment for questions 5, 6, and 7.
  - Remember to provide specific and actionable feedback!

HOW IMPORTANT ARE WORDS?

- Nearly a century of research (Whipple 1925, NAEP 2012)
- Feature of complex text that likely causes greatest difficulty (Nelson et al 2012)
- Vocabulary assessed in grade 1 predicts 30% of grade 11 comprehension (Cunningham & Stanovich 1997)

THE PROBLEM *COMPOUNDS*



THE MATHEW EFFECT: VOCABULARY DO MORE

- Reading of multiple texts in math including articles.
- Vocabulary instruction in context—Important in Math

THE MATHEW EFFECT: VOCABULARY DO LESS

- Random word lists
- Decontextualized vocabulary practice

MATHEMATICS VOCABULARY

- In your small groups, analyze for question 3. Include feedback and feed-forward analysis.

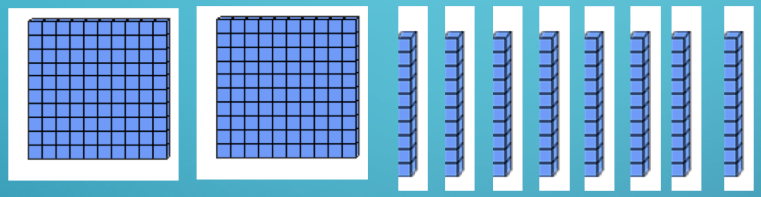
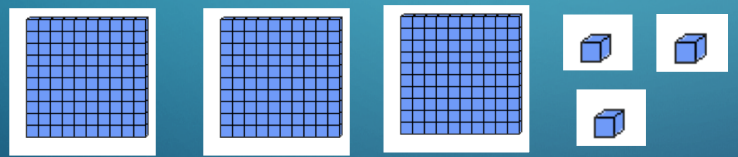
- So what about question 10?

THREE FACTS AND A FIB

- Ask students to write on an index card four statements about any content the class has just studied. Three of the statements (examples, equations, etc.) should be true and one should be false. Have students share their cards with each other to see if their fellow students can pick out the false statement.

  - Teaching Numeracy-Margie Pearse

4.NBT.A.2

- 30+500+7 > 355
- One thousand two hundred forty-three > 300+2+40+2000
- 277 < 
-  > 220

SO, WHAT DOES THIS PROCESS LOOK LIKE AT THE DISTRICT OR BUILDING LEVEL?

START WITH PRINCIPALS/ADMINISTRATIVE TEAMS

- Dear Teachers,
- As a part of the administrative team's learning we will be analyzing classroom assessments. To this end classroom assessments will need to be collected. Homework is not included in this part of the review. Over the next two weeks please collect assessments you give to your students. In addition to a copy of the master assessment with answers, please submit copies of one sample each from A, C, and F work or High, medium, and low work (for those not giving grades). Please make sure the student names are blacked out on the copies you send. Finally, please fill out and add the attached document to each of your assessments.
- Thank you

LOOK AT THE BIG PICTURE

				Criterion C.1											
				Focusing strongly on the content most needed for success in later mathematics											
Subject	Grade	Item Position	Point Value	Standard Alignment 1	Standard Alignment 2	Standard Alignment 3	Standard Alignment 4	Standard Alignment 5	Do you agree with CCSS 1 alignment?	Do you agree with CCSS 2 alignment?	Do you agree with CCSS 3 alignment?	Do you agree with CCSS 4 alignment?	Do you agree with CCSS 5 alignment?	If you answered "No" in cols O:K, write the CCSS IDs of up to 5 **ADDITIONAL** aligned standards. [USE THE FOLLOWING FORMAT: HS.CC-DOMAIN.CLUSTER.STANDARD (e.g., HS.N-A.SSE.A.1]	All aligned standards (inc to which you sa
Science/Ch	HS	4	18												
Science/Ch	HS	5	16												
Science/Ch	HS	6	12												
Science/Ch	HS	7	16												
English/Eng	HS	1	2	W1	W2	W3	W4	RI6	No	No	No	No	No	None	None
English/Eng	HS	2	2	W1	W2	W3	W4	RI6	No	No	No	No	No	None	None
English/Eng	HS	3	2	W1	W2	W3	W4	RI6	No	No	No	No	No	None	None
English/Eng	HS	4	2	W1	W2	W3	W4	RI6	No	No	No	No	No	None	None
English/Eng	HS	5	2	W1	W2	W3	W4	RI6	No	No	No	No	No	None	None
English/Eng	HS	6	2	W1	W2	W3	W4	RI6	No	No	No	No	No	None	None
English/Eng	HS	7	2	W1	W2	W3	W4	RI6	No	No	No	No	No	None	None
English/Eng	HS	8	2	W1	W2	W3	W4	RI6	No	No	No	No	No	RL.K.3	RL.K.3
English/Eng	HS	9	2	W1	W2	W3	W4	RI6	No	No	No	No	No	RL.K.3	RL.K.3
English/Eng	HS	10	2	W1	W2	W3	W4	RI6	No	No	No	No	No	RL.K.3	RL.K.3
English/Eng	HS	11	2	W1	W2	W3	W4	RI6	No	No	No	No	No	RL.K.3	RL.K.3
			2	W1	W2	W3	W4	RI6	No	No	No	No	No	RL.K.3	RL.K.3

CONNECT WITH ME AND CONTINUE THE CONVERSATION!

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