

Differentiate Up!

A Guide to Plan and Organize Differentiation

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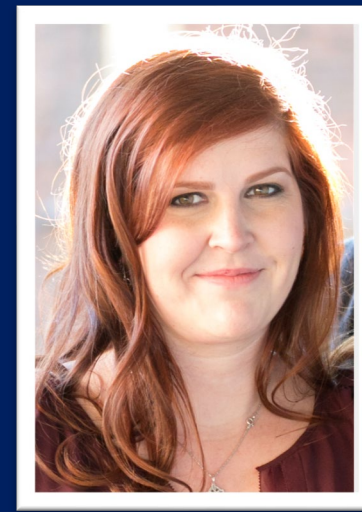
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www.projectbumpup.education.uconn.edu

Funded by Jacob K. Javits Gifted and Talented Students Education Program, U.S. Department of Education PR/Award # S206A190028



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Project BUMP UP

Funded by Jacob K. Javits Gifted and Talented Students Education Program,
U.S. Department of Education PR/Award # S206A190028

- Classroom teachers and gifted specialists
- Co-planning and co-teaching
- Differentiate for mathematically advanced learners in heterogeneous 4th and 5th grade classrooms

Resources abound!

Project BUMP UP Web Page – Differentiation Resources tab

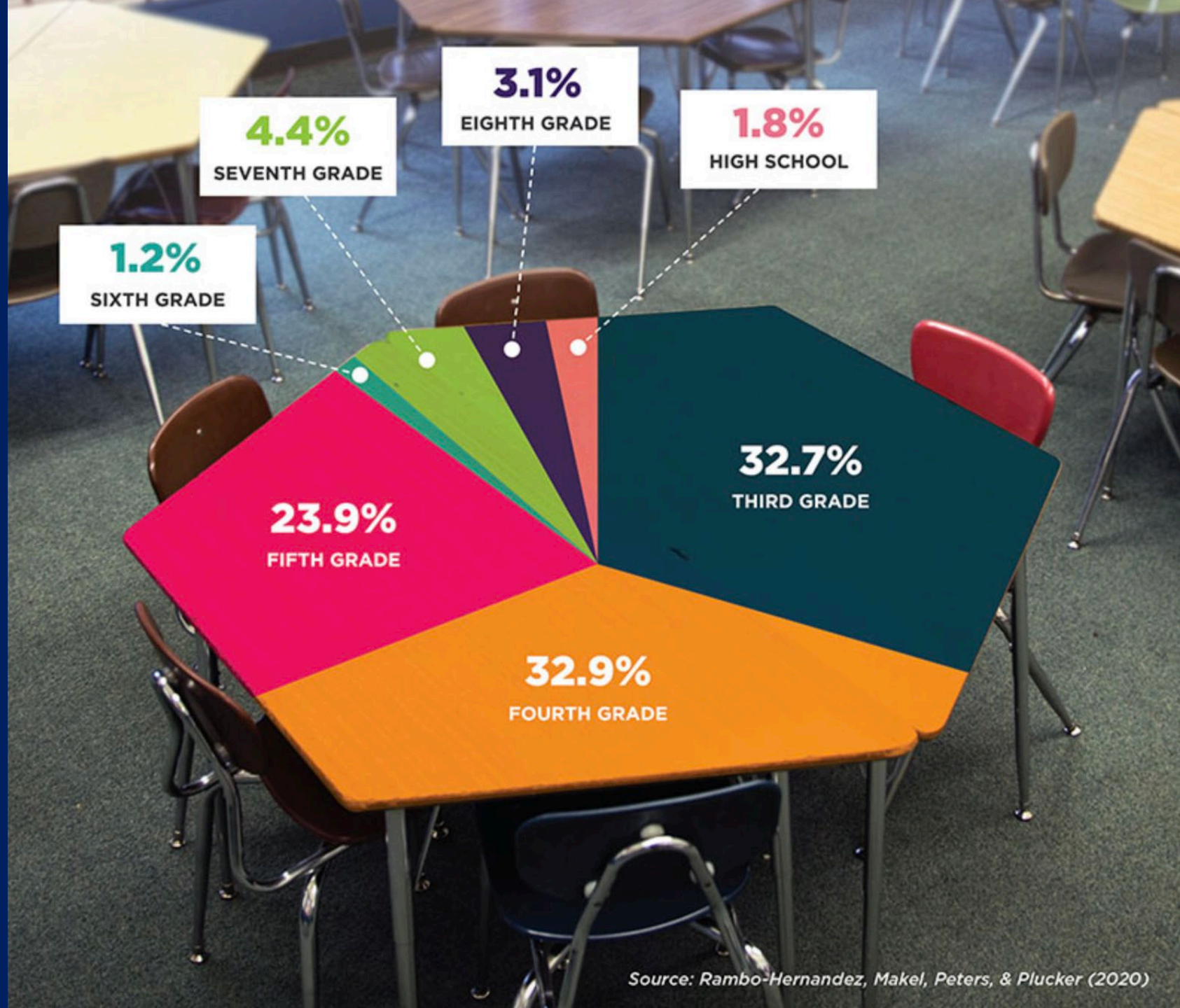
<https://projectbumpup.education.uconn.edu>



A screenshot of the Project BUMP UP website's navigation menu. The site is titled "Project BUMP UP" and is funded by the Jacob K. Javits Gifted and Talented Students Education Program. The navigation menu includes links for Home, Rationales for the Project, Theory of Change, Advisory Board, Blog, Contact Information, Collaborative Teaching Models, Pacing Guide Differentiation Log, BUMPing UP: A 3-Step Method to Increase Cognitive Complexity for Advanced Learners, Confratute Resources, 2023-24 BUMP UP Teachers' Materials, Differentiation Resources (circled in red), and 2-Day Professional Learning 2023. Below the navigation menu, there is a logo for "Project Bump Up" featuring the words "Bump" in blue and "Up" in purple, with a black arrow pointing upwards and mathematical symbols (+, Σ, √x) next to it. The tagline reads "Building Up Mathematics Proficiency Utilizing Push-in". To the right of the logo is a photograph of a young child in a maroon shirt writing in a notebook with a yellow pencil.



Typical Fifth-Grade Classroom



Why differentiate?

Math

—Gr. 3–5 student growth in math (Long et al., 2019).

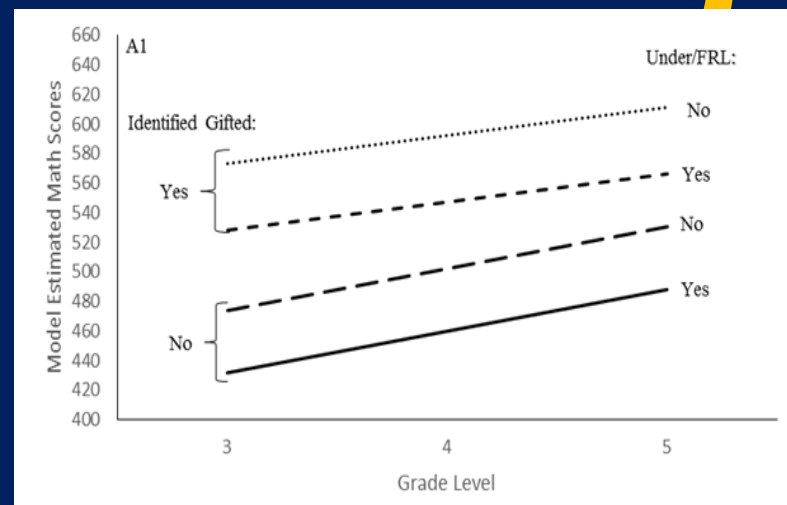
—Up to 7 grade levels (Pedersen et al., 2023; Peters et al., 2017)

ELA

—Up to 9 grade levels (Firmender et al., 2012)

Standards do not eliminate the need for accelerative options (Assouline et al., 2015).

Skills, motivation, and perseverance to reach math potential (NCTM, 2000; Wilkins et al., 2016).





Overview

- Project BUMP UP A.D.O.P.T
Differentiation Planning Guide
- Math Example
- Student Data— Curriculum Compacting
- Differentiating through
 - Alternative standards
 - Supplemental sources
 - Tiering for cognitive complexity
 - Increasing Depth of Knowledge

A middle-aged man with short, light-colored hair is speaking directly to the camera. He is wearing a dark suit jacket over a light blue button-down shirt. The background is a blurred hallway with wooden paneling and a door.

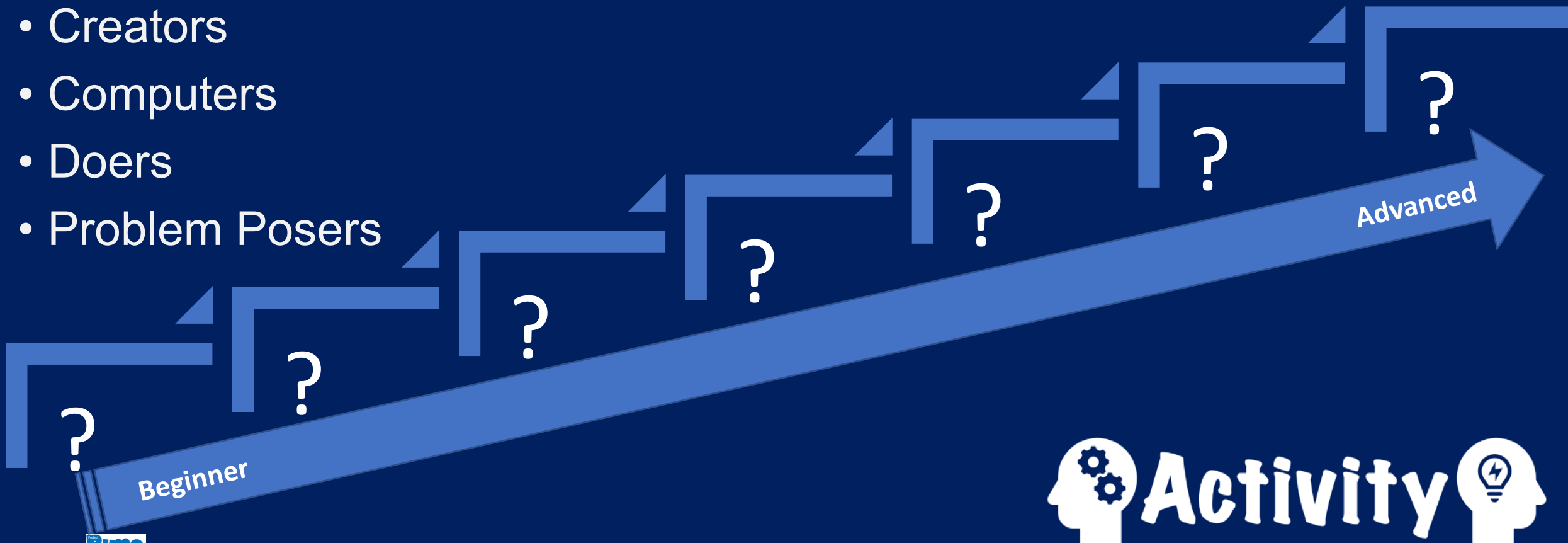
Del Siegle

Director of National Center for
Research on Gifted Education

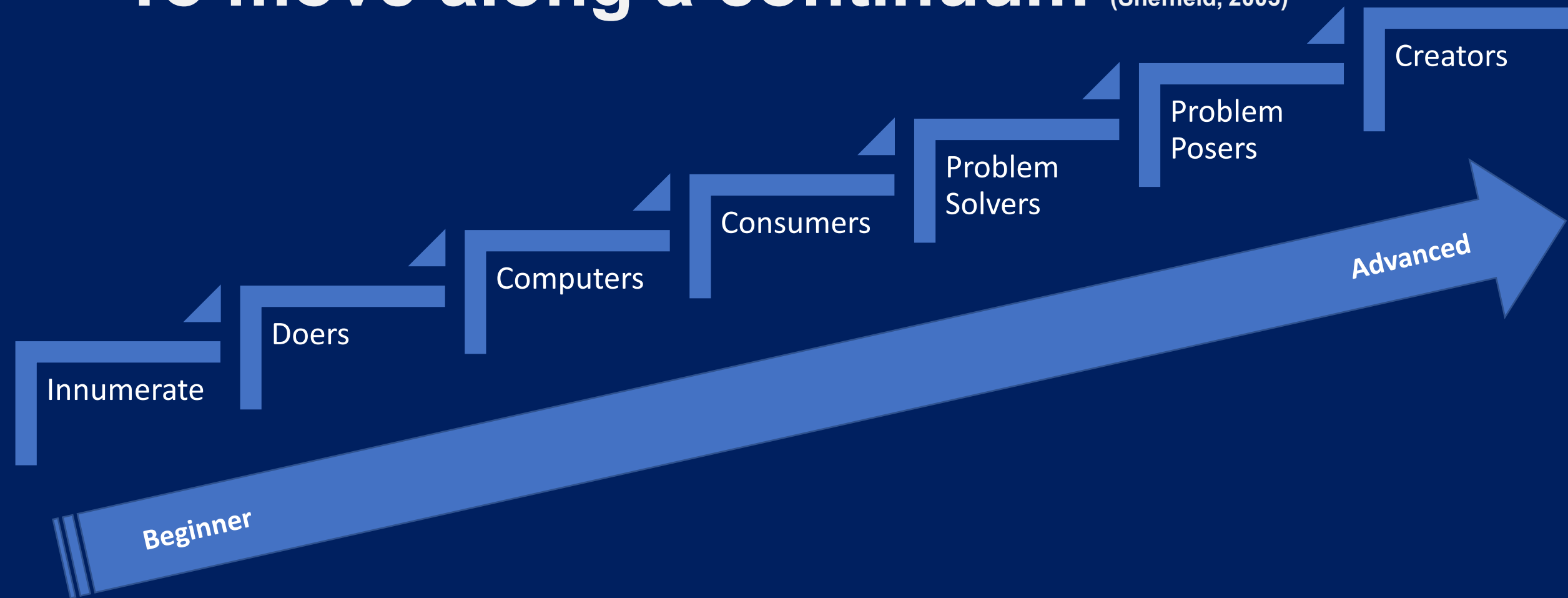
all doers work very well
with respect to shoes or clothing.

Where would you place these math learners along this continuum?

- Problem Solvers
- Consumers
- Innumerate
- Creators
- Computers
- Doers
- Problem Posers



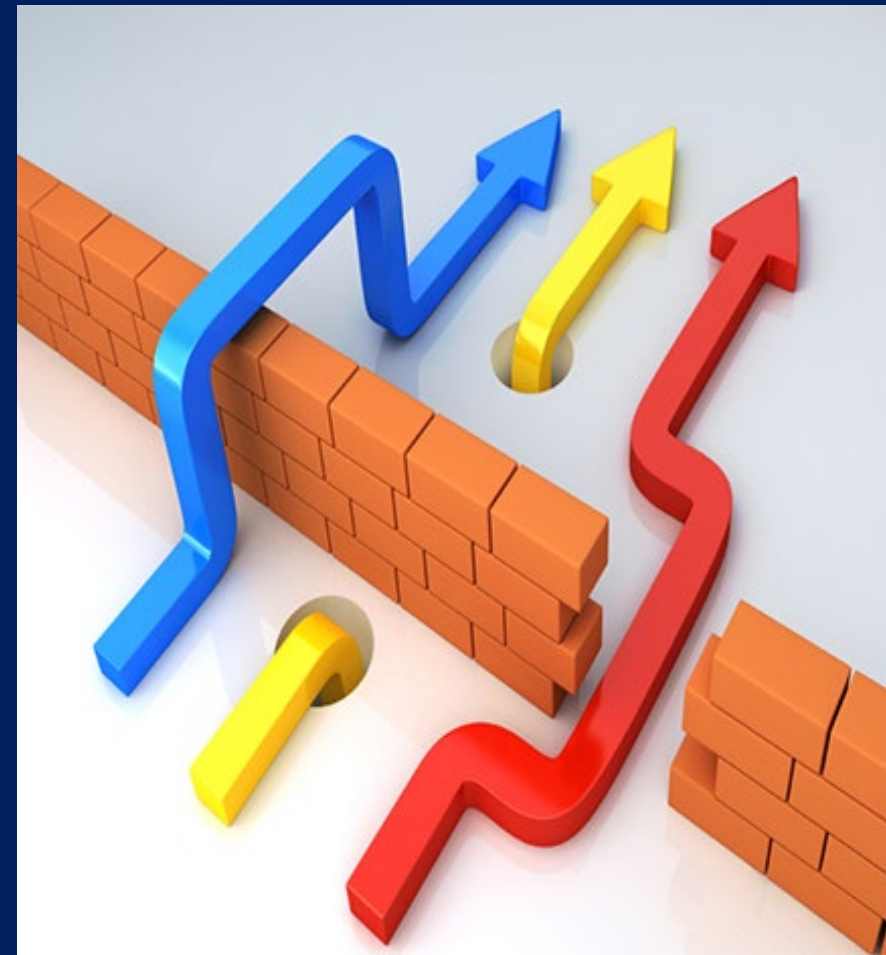
Goals of math instruction: To move along a continuum (Sheffield, 2003)



Six Principles of Differentiation

- Moderated level of challenge
- Students differ in skills and knowledge
- Interest fuels motivation, engagement
- The right to explore areas of interest
- Multifaceted learning profiles
- Safety, support, and value foster learning

–Tomlinson & Jarvis, 2009



A Classroom Range of Mathematical Ability

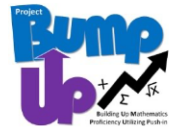


DIFFERENTIATION IS NOT...

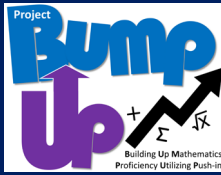


Project BUMP UP A.D.O.P.T. Differentiation Log

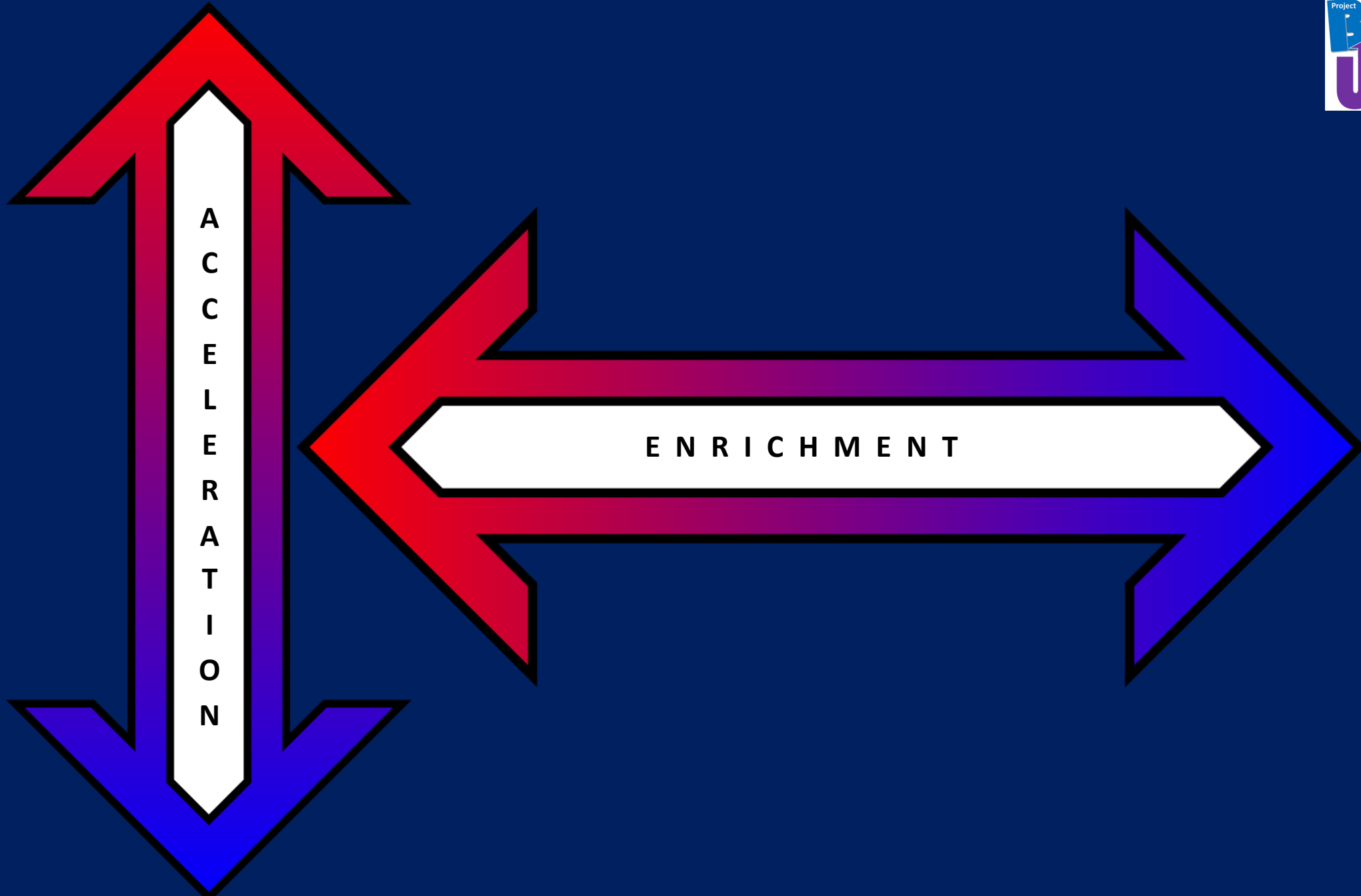


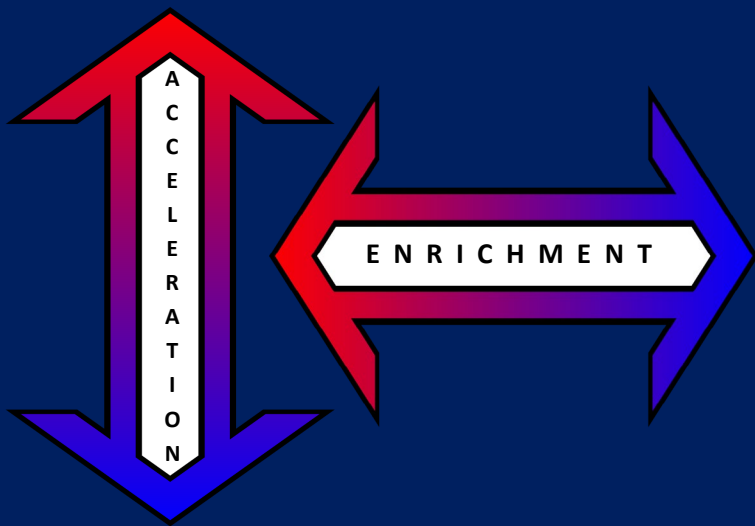


Advanced Differentiation Options Planning Tool



Lesson or Unit _____	Date(s) _____	
Standard(s): 		
Advanced Differentiation Options		
Differentiation of Current Curriculum	Supplemental Source	Alternative Standard
Differentiation option from the textbook p. ____ # ____ DOK Level 3 ____ or 4 ____ and/or DOK Differentiated math up to Level 3 ____ or 4 ____ Brief description of differentiated activity:	Topic: _____ Source: _____ DOK Level 3 ____ or 4 ____ Brief description of differentiated activity:	Grade ____ Standard _____ DOK Level 3 ____ or 4 ____ Brief description of differentiated activity:
Notes:		



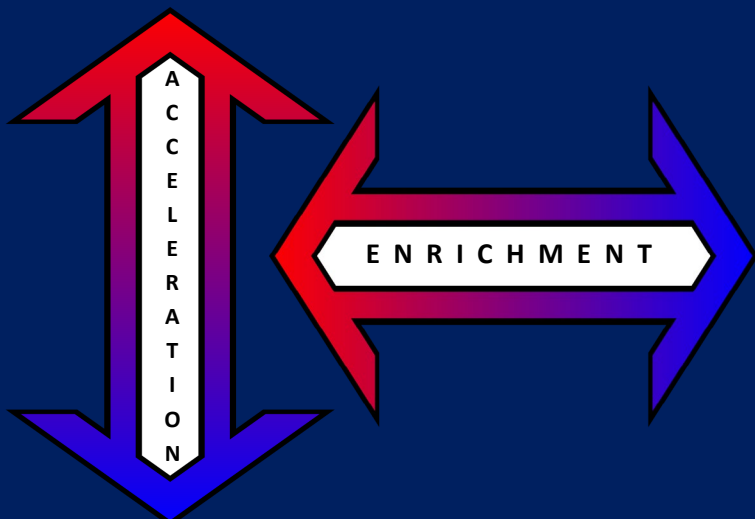


Selecting Standards



- Higher Standards or Those You Do Not Normally Reach





Advanced Resources Units

Grade	K-1	2	3	4	5	6
Thinking Like A Mathematician			x			
Concept-Based Units						
Splash	x					
Spatial Reasoning		x	x	x		
Polygons Galore!			x	x	x	
Beyond Base Ten			x	x	x	x
Moving Through Dimensions						6-8
Math Curriculum for Gifted Students			x	x	x	x

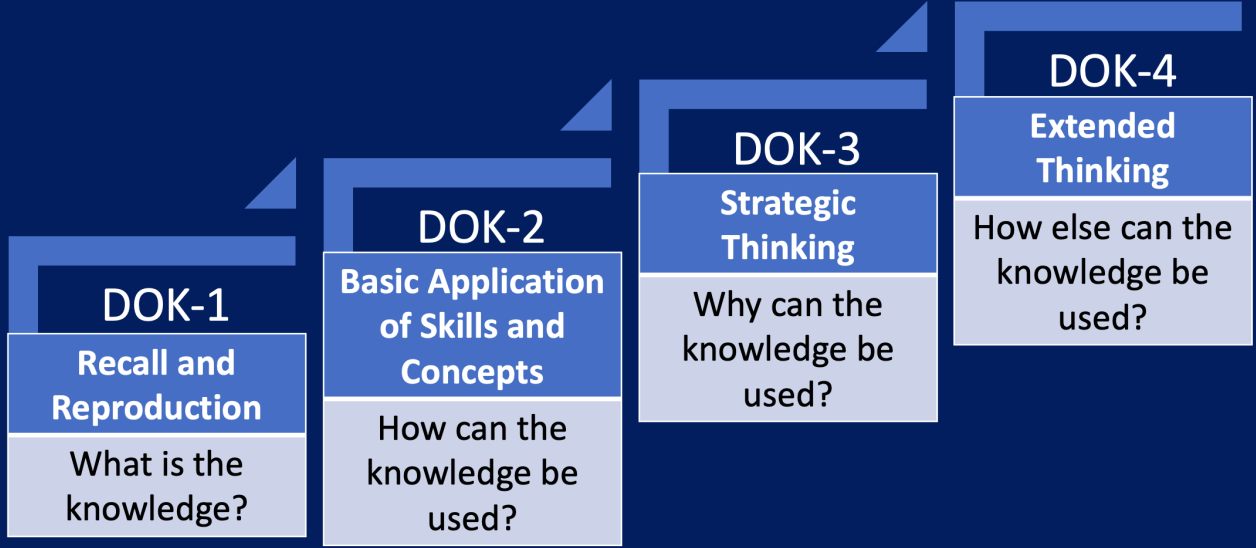
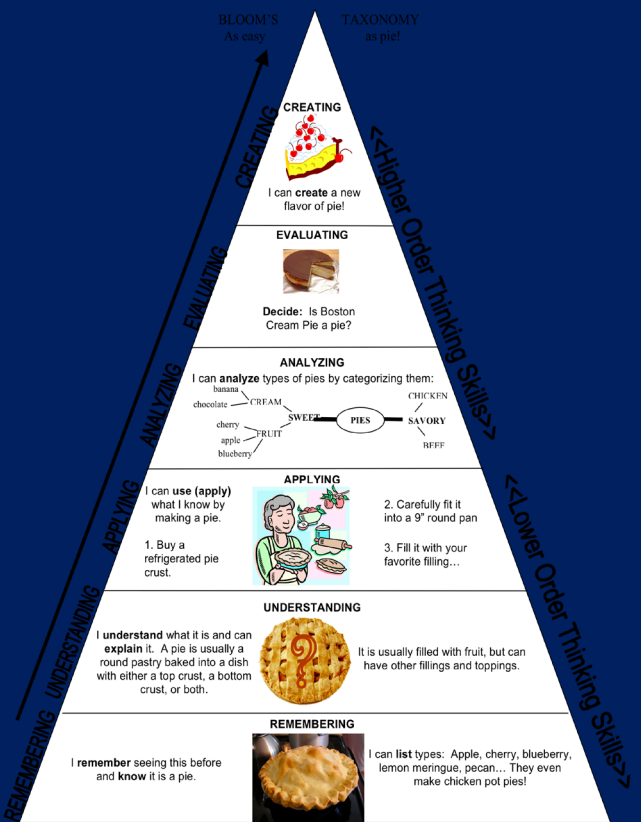
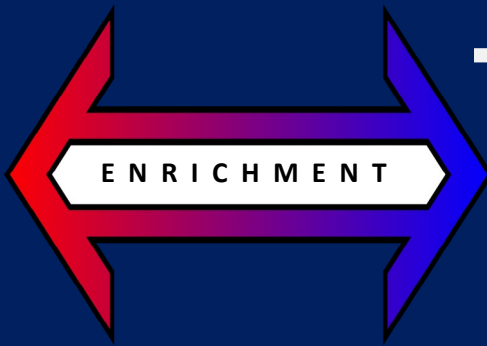
<https://education.wm.edu/centers/cfge/curriculum/mathematics/materials/index.php>

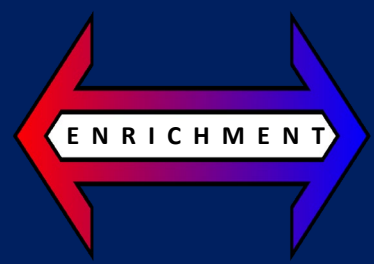


Open-ended, Real-world, Problem and Project-based Learning



Tiering for Cognitive Complexity





Steps for Leveling-up DOK

1. Analyze

- What is being asked of the students?
- What is the **DOK** level?

2. Determine

- **Where** do we see a similar concept in future standards?
- Where can we provide **less scaffolding**?
- What **other questions** can we ask about this problem?

3. Construct

- **Select** from the standards and/or additional questions created.
- **Rewrite** the problem to remove scaffolding and insert updated elements.

4. Re-Evaluate

Now that you have leveled-up the question, re-evaluate what students are being asked to do at the new DOK level.

Student Data

Curriculum Compacting



STUDENT A

Instructor:	Carpenter	Total Possible:	21	Student Score:	13.0 - 61.9%
Exam Name:	Physical 1 pre generic	Highest Score:	21 - 100.0%	Class Average:	17.1 - 81.3%
Exam Date:	Monday, May 9, 2016	Lowest Score:	6 - 28.6%	Weighted Proficiency Level:	>= 80%

Standard	Description	Correct	Total	Proficiency
SC.7.P.11. Energy Transfer and Transformations - A. Waves involve a transfer of energy without a transfer of matter. B. Water and sound waves transfer energy through a material. C. Light waves can travel through a vacuum and through matter. D. The Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.				
SC.7.P.11.1.	Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.	3	5	60.0%
SC.7.P.11.2.	Investigate and describe the transformation of energy from one form to another.	6	8	75.0%
SC.7.P.11.3.	Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.	1	3	33.3%
SC.7.P.11.4.	Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.	3	5	60.0%
Overall Proficiency		13	21	61.9%
Proficiency Level		13	21	61.9%

STUDENT B

Instructor:	Carpenter	Total Possible:	21	Student Score:	19.0 - 90.5%
Exam Name:	Physical 1 pre generic	Highest Score:	21 - 100.0%	Class Average:	17.1 - 81.3%
Exam Date:	Monday, May 9, 2016	Lowest Score:	6 - 28.6%	Weighted Proficiency Level:	>= 80%

Standard	Description	Correct	Total	Proficiency
SC.7.P.11. Energy Transfer and Transformations - A. Waves involve a transfer of energy without a transfer of matter. B. Water and sound waves transfer energy through a material. C. Light waves can travel through a vacuum and through matter. D. The Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.				
SC.7.P.11.1.	Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.	5	5	100.0%
SC.7.P.11.2.	Investigate and describe the transformation of energy from one form to another.	7	8	87.5%
SC.7.P.11.3.	Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.	3	3	100.0%
SC.7.P.11.4.	Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.	4	5	80.0%
Overall Proficiency		19	21	90.5%
Proficiency Level		19	21	90.5%



MEETING THE NEEDS OF EVERY STUDENT?

Elementary and middle school teachers could eliminate between 40%-70% of the regular curriculum for 10%-15% of students in mixed ability classes

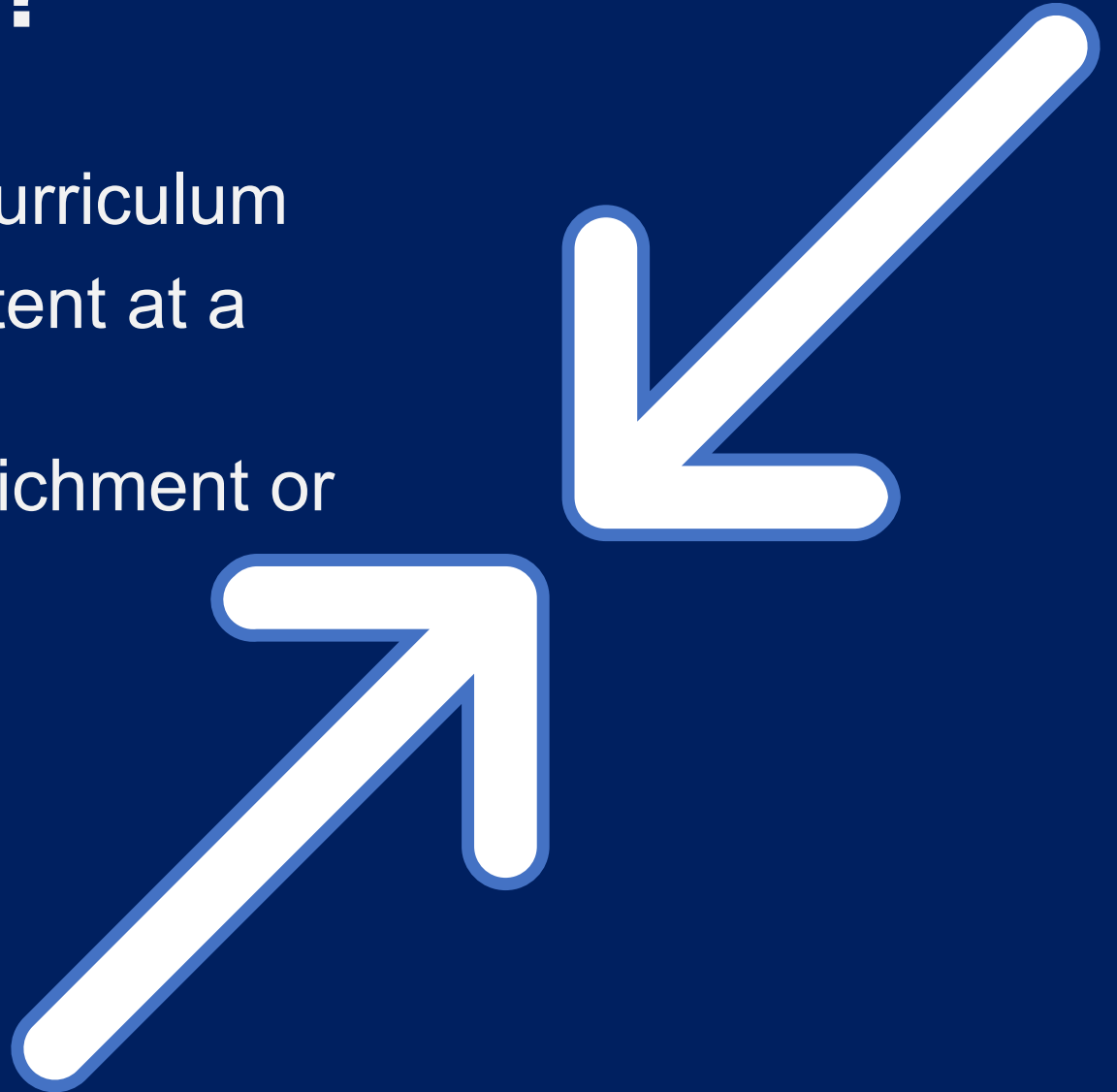
Reis et al. (1998)



What is compacting?

- Streamlines/eliminates regular curriculum
- Students who can complete content at a faster pace
- Time can be used to provide enrichment or acceleration

Reis et al., 2016





In the Classroom

- **Class goals**
 - Mastery of benchmark
 - Differentiated learning according to student level
- **Meeting students' needs**
 - Pre-assess to guide instruction
 - Students who show mastery will compact out
 - Compacted students receive grades based on their demonstrated mastery and alternative work.

Name it

- What is in the unit?
- Deconstruct the standard(s)



Prove it

- Measure mastery* of content and skills

**Mastery does not mean they know everything*

1

2

3

Prove It Examples

- Pre-test (version of the post-test)
- Open-ended large concept question
- Pre-unit challenge lesson
- Verbal questioning
- Probes
- Asking students to perform a skill
- Answer the essential question(s)

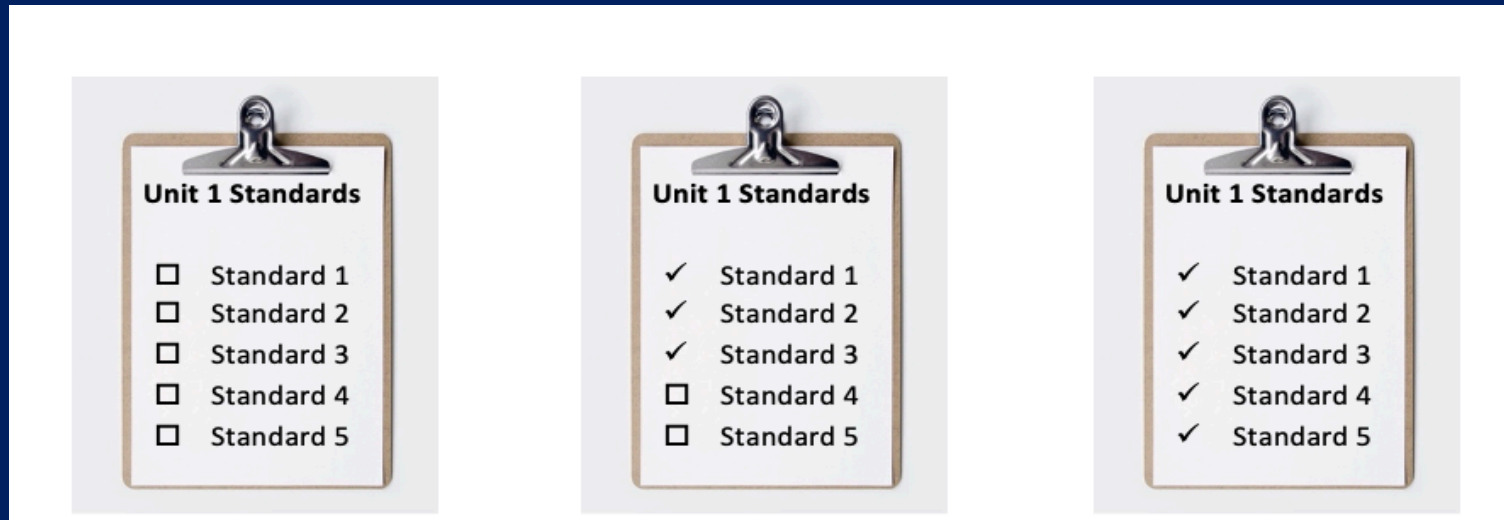


Pre-assessment

60% or above on all standards

Or

60% or above on most standards





One way the data could present

- 60% or above on all standards
 - Would benefit from instruction and practice for those elements they need
 - Formative assessment success – go on to something else
 - Formative assessment not yet – full curriculum and instruction



Another way the data could present

- Over 60% or above on 3 out of 5 standards
 - Compact out of those 3 standards
 - Provide instruction and limited practice for the additional 2 standards
 - Formative assessment success – go on to something else
 - Formative assessment not yet – full curriculum and instruction

Change it

- Advanced standards
- Supplemental sources
- Tiering for cognitive complexity
- Increasing Depth of Knowledge

1

2

3

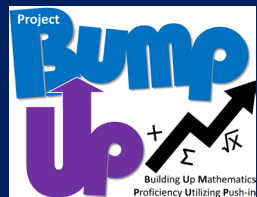
Selecting Advanced Resources



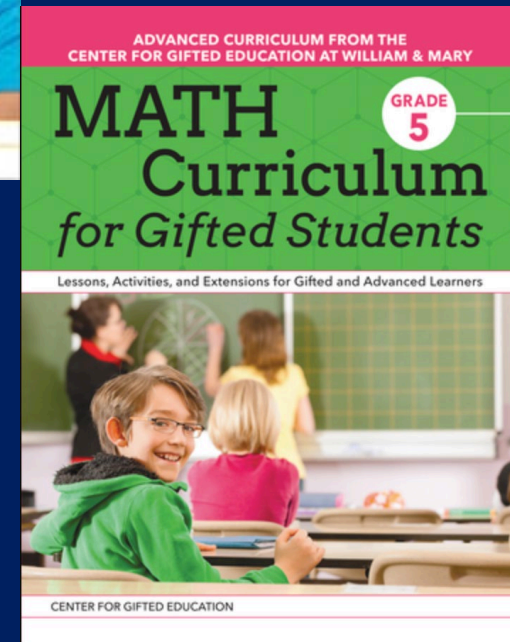
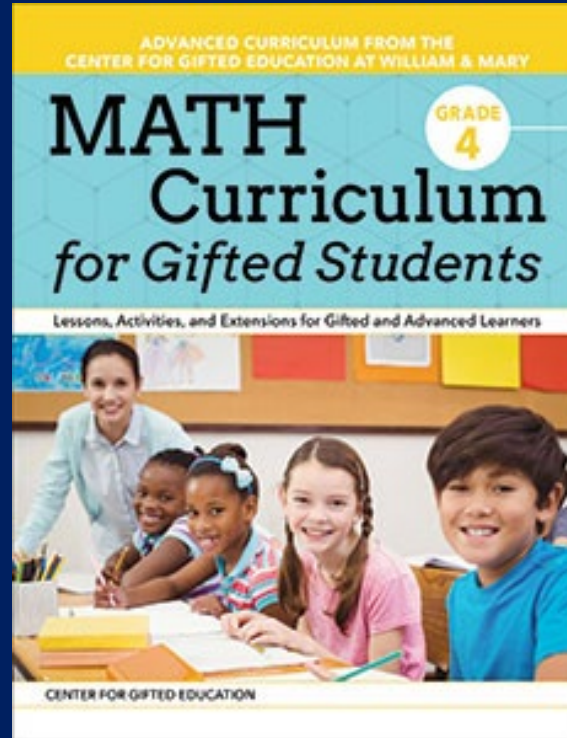
William & Mary Math Units

Grade	K-1	2	3	4	5	6
Thinking Like A Mathematician			x			
Concept-Based Units						
Splash	x					
Spatial Reasoning		x	x	x		
Polygons Galore!			x	x	x	
Beyond Base Ten			x	x	x	x
Moving Through Dimensions						6-8
Math Curriculum for Gifted Students			x	x	x	x

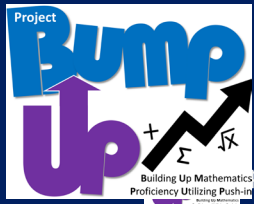
<https://education.wm.edu/centers/cfge/curriculum/mathematics/materials/index.php>



Math Curriculum for Gifted Students



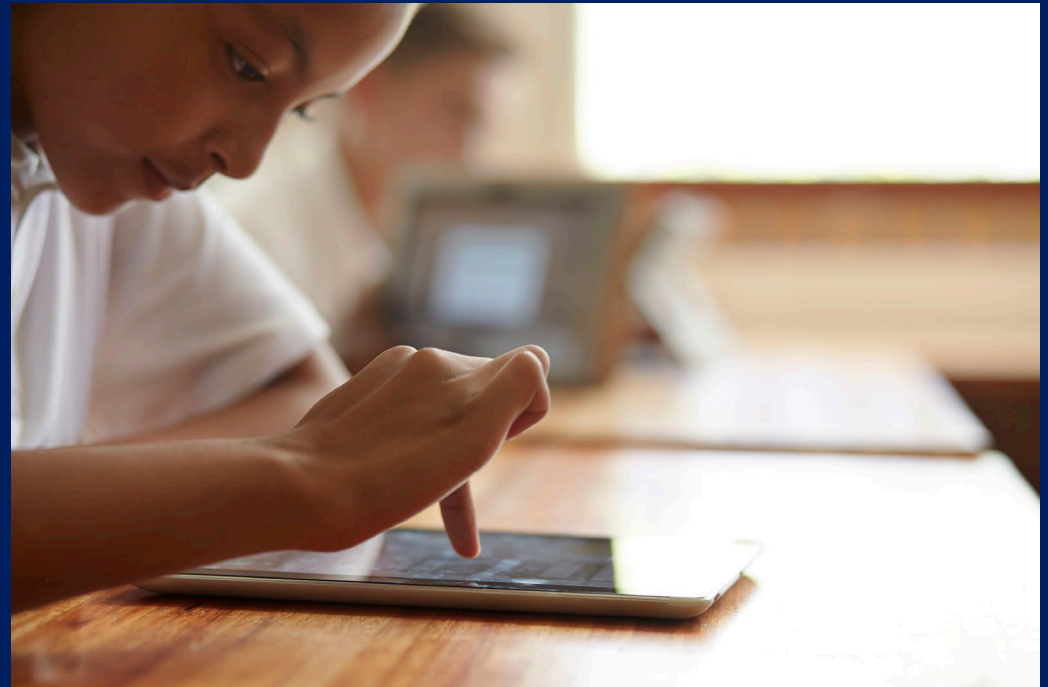
Open-ended, Real-world Problem or Project- based Learning



Project- and Problem-Based Learning

Both

- Open-ended
- Authentic tasks
- Build 21st century skills
- Longer than usual lessons and assignments





Not necessary to reinvent . . .

- <https://www.youcubed.org/tasks/>
- <https://robertkaplinsky.com/lessons/>
- <https://hcpss.instructure.com/courses/107/pages/three-act-tasks>

The screenshot shows the 'Tasks' page on the YouCubed website. It features a navigation bar with 'Grades' and 'Topics' dropdown menus. Below the navigation, there is a grid of task cards. Each card includes a title, a small image, and a list of topics. The visible tasks are:

- 36 Fences**: Topics include Number Sense, Patterns + Generalizations, and Shapes, Space + Measures.
- Crackers**: Topics include Number Sense and Patterns + Generalizations.
- Taxicab**: Topics include Number Sense, Patterns + Generalizations, and Shapes, Space + Measures.
- Exploring Exponents**: Topics include Number Sense and Patterns + Generalizations.
- Penny Collection**: Topics include Number Sense.

A grid of four task cards, each with a unique image and title:

- What Rides Can You Go On?**: Image of a red and white ride vehicle.
- How Many Stars Are There In The Universe?**: Image of a starry night sky.
- Do You Have Enough Money?**: Image of several coins.
- Which Bed Bath & Beyond Coupon Should You Use?**: Image of a Bed Bath & Beyond store building.

The slide features a white background with a green horizontal line at the top. The main title 'Three Act Tasks' is written in a large, bold, orange font. Below it, the subtitle 'Engaging Students in Math' is written in a smaller, black font, flanked by two short green horizontal lines.



Alternative standards

Can we can go further or deeper?



Selecting Standards You Do Not Normally Reach



- Sub-standards you do not have as much time to address
- Standards at the end of the year

Progression of Strands

Selecting Higher Grade Standards

K	1	2	3	4	5	6	7	8	9-12	
Number Sense and Operations (NSO)										
	Fractions (FR)									
Algebraic Reasoning (AR)										
								Functions (F)		
								Financial Literacy (FL)		
Measurement (M)										
Geometric Reasoning (GR)										
								Trigonometry (T)		
Data Analysis and Probability (DP)										
								Logic and Discrete Theory (LT)		
								Calculus (C)		
Mathematical Thinking and Reasoning Standards (MTR)										



For example...



- Gr. 4.NSO.1.1: Express how the value of a digit in a multi-digit **whole number** changes if the digit moves one place to the left or right.
- Gr. 5.NSO.1.1: Express the value of a digit in a multi-digit number with **decimals** to the thousandths changes if the digit moves one or more places to the left or right.
- Gr. 6.NSO.1.1: 1.1: Extend previous understanding of numbers to define rational numbers. **Plot, order, and compare rational numbers.**

Tiering for Cognitive Complexity

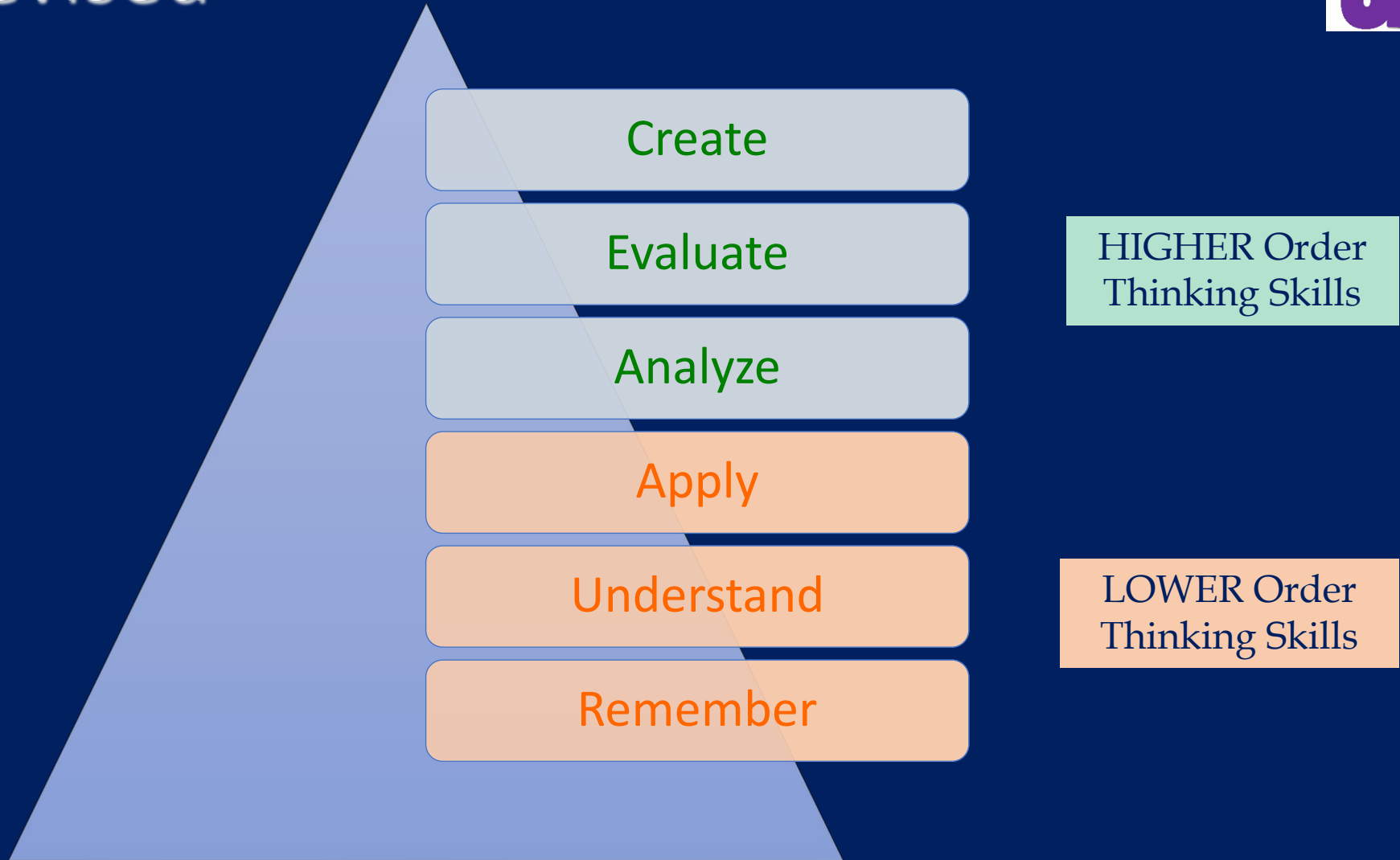
Bloom's Taxonomy

Webb's Depth of Knowledge



Bloom's Revised Taxonomy

(Anderson & Krathwohl, 2002)



Overlap

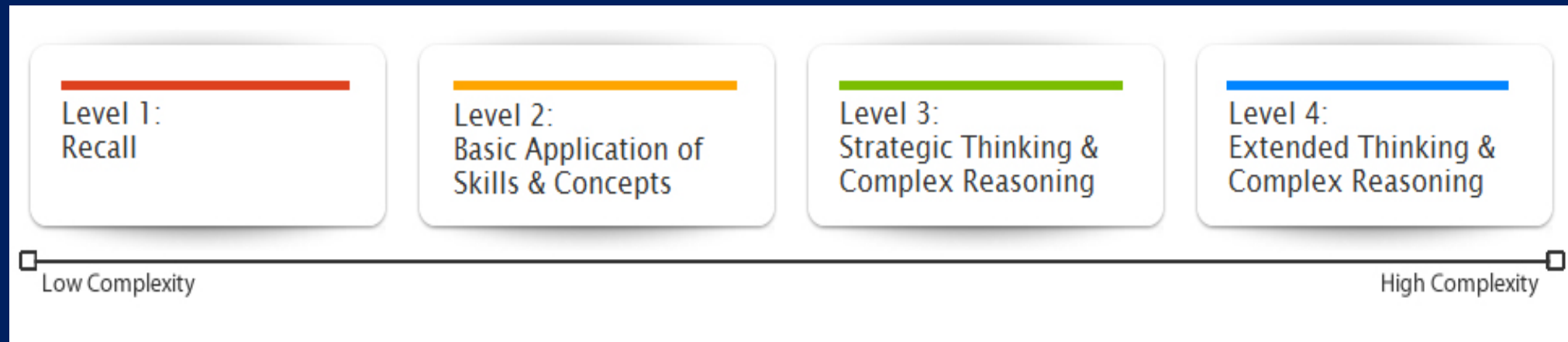
Context matters:
DOK

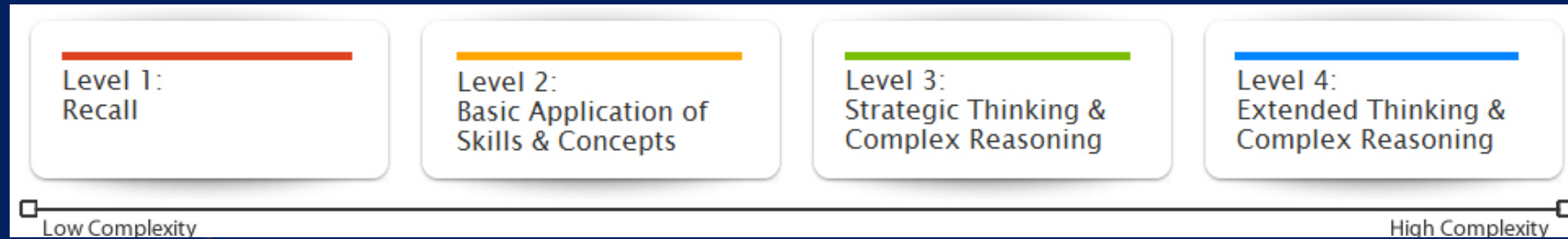
REVISED Bloom's Taxonomy Action Verbs

Definitions	I. Remembering	II. Understanding	III. Applying	IV. Analyzing	V. Evaluating	VI. Creating
Bloom's Definition	Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.	Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas.	Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.	Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.	Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.
Verbs	<ul style="list-style-type: none"> Choose Define Find How Label List Match Name Omit Recall Relate Select Show Spell Tell What When Where Which Who Why 	<ul style="list-style-type: none"> Classify Compare Contrast Demonstrate Extend Illustrate Infer Outline Relate Rephrase Show Summarize Translate 	<ul style="list-style-type: none"> Apply BUILD Choose Develop Experiment with Identify Interview Make use of Model Organize Plan Select Solve Utilize 	<ul style="list-style-type: none"> Analyze Assume Categorize Classify Compare Conclusion Contrast Discover Dissect Distinguish Divide Examine Function Inference Inspect List Motive Relationships Simplify Survey Take part in Test for Theme 	<ul style="list-style-type: none"> Agree Appraise Assess Award Choose Compare Conclude Criteria Criticize Decide Deduct Defend Determine Disprove Estimate Evaluate Explain Influence Infer Interpret Judge Justify Mark Measure Opinion Perceive Prioritize Prove Rate Recommend Rule on Select Support Value 	<ul style="list-style-type: none"> Adapt BUILD Change CONSTRUCT Combine Compile Compose Construct Create Delete Design Develop Discuss Elaborate Estimate Formulate Happen Imagine Improve Invent Make up Maximize Minimize Modify Original Originate Plan Predict Propose Solution Solve Suppose Test Theory

Webb's Depth of Knowledge (Webb, 1997)

- Number of connections of concepts
- Factors that influence cognitive demands

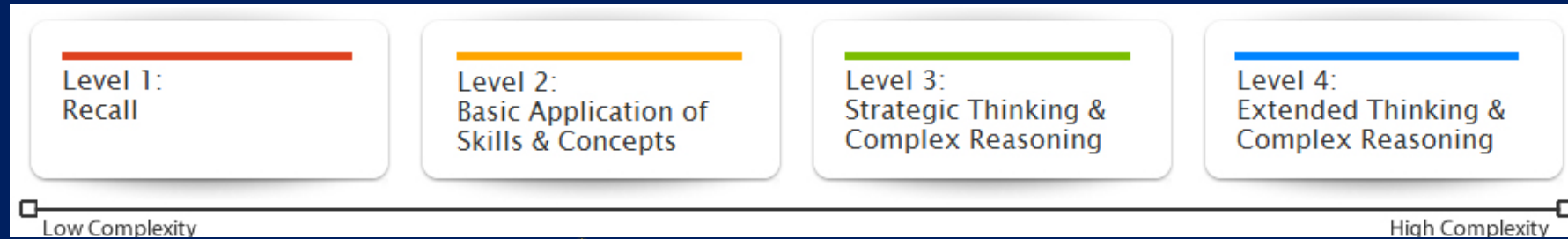




- One step
- Recall or find
- Simple algorithm or a formula
- Key words “identify,” “recall,” “recognize,” “use,” and “measure.” (Webb, 2002, p. 3)

EXAMPLE:

Recognize that $700 \div 70 = 10$ by applying concepts of place value and division



- Processing beyond a habitual response
- Decisions on solving
- Not just more than one step; more than one concept
- Visualization and probability skills (Webb, 2002, p. 4)

EXAMPLE:

DOK Level 2: Jess uses powers of 10 and exponents to find the product of the following terms.

What are the products?

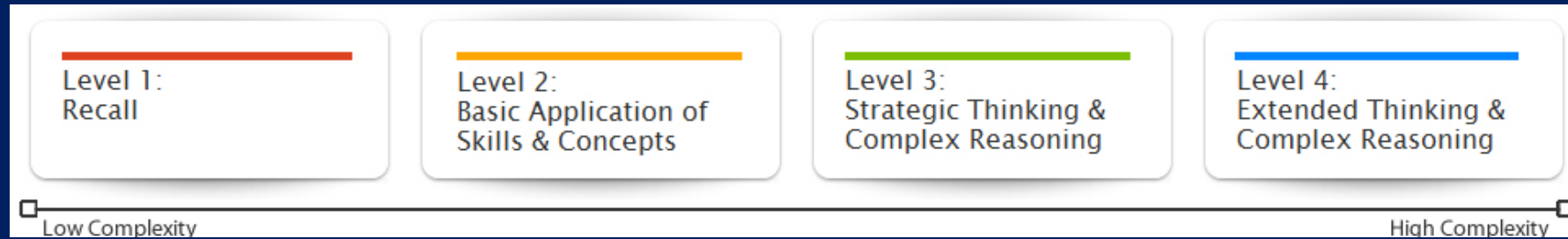
$$0.5 \times 10^5 = \underline{\hspace{2cm}} \quad 0.05 \times 10^5 = \underline{\hspace{2cm}}$$



- Requires reasoning, planning, using evidence, and a higher level of thinking
- Complex and abstract
- More than one possible answer
- Justify the response
- Draw conclusions
- Cite evidence (Webb, 2002, p. 4)

EXAMPLE:

DOK Level 3: Explain why $700 \div 70 = 10$, including the role of place value in doing the division.



- Complex reasoning
- Extended time
- High cognitive demands
- Several connections
- Synthesizing (Webb, 2002, p. 4)

EXAMPLE:

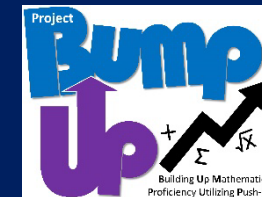
DOK Level 4: For our annual food drive, we must figure out how to **ship over 400 cans**. **Decide the best shipping method** (crates, cases, or individual boxes) to use as few packages as possible. **Write a letter to the principal projecting** the amount of money the school will spend shipping the packages. **Justify** the most efficient packaging and shipping methods. (DeKalb County School District, n.d.)

BLOOM'S TAXONOMY

Verbs

WEBB'S DEPTH OF KNOWLEDGE

Context; What follows the verbs



Math Content Standards & Math Practices

Depth + Thinking	Level 1 Recall & Reproduction	Level 2 Skills & Concepts (routine applications)	Level 3 Strategic Thinking (support with data, equations, models, etc.)	Level 4 Extended Thinking (across domains)
Remember	Know math facts, terms			
Understand	Attend to precision Evaluate expressions, plot point	Model with mathematics Estimate, predict, observe, explain relationships	Construct viable arguments Geometry proof	Integrate concepts across domains
Apply	Calculate, measure, make conversions	Make sense of routine problems	Make sense of non-routine problems	Design & conduct a project
Analyze	Identify a pattern Locate information in table	Use tools strategically Classify, organize data, extend a pattern	Reason abstractly Generalize a pattern	Analyze multiple sources of evidence
Evaluate			Critique the reasoning of others	
Create				Design a complex model

Depth + Thinking	Level 1 Recall & Reproduction	Level 2 Skills & Concepts	Level 3 Strategic Thinking/ Reasoning	Level 4 Extended Thinking
Remember	What is slope?			
Understand	Read, write, and represent these fractions	Explain how you solved this problem. Make and explain your estimate	Construct an argument to show equivalence using area, set, and linear models	
Apply	Convert this fraction to a decimal Add these fractions	Use these data to graph your solution	Conduct the investigation, interpret results, and support conclusions with data	
Analyze	What kind of graph or model is this? Which data point shows ___?	Which graph shows how the data would be displayed?	Interpret what was happening in the event? Justify your interpretation using what you know about slope.	
Evaluate	Which team is the best? (opinion without supporting evidence)		How would you rank these ___? Justify your rankings using data that supports your criteria.	Some say the NFL settlement for player brain injury is not adequate. Evaluate both sides using data to determine the validity of this claim.
Create		Create a card game using fractions. Create scenario explained by a data display.		



DOK at a Glance

One correct solution?

DOK 1

- Know or can find it (or not)

DOK 2

- More than one concept
- If/then; cause/effect

More than one correct solution requiring evidence?

DOK 3

- Interpret
- Reasoning (how and why)

DOK 4

- DOK 3
- Additional sources
- Initiate and complete project

Standard and Samples

DOK 1-4

Whole Numbers – Gr. 4

- **Use** place value understanding to round multi-digit whole numbers to any place.

Q: What is the highest DOK Level?

A: DOK 1: Recall

Whole Numbers – Gr. 4

DOK Level 1: What is 62,891 rounded to the nearest thousands?

- (a) 60,000
- (b) 62,000
- (c) 62,900
- (d) 63,000
- (e) 70,000

DOK Level 2: Round the following numbers to the nearest tenth: 10.892 and 112.429

DOK Level 3: A teacher asked her students to use estimation to decide if the sum of the problem below is closer to 4,000 or 5,000.

$$496 + 1,404 + 2,605 + 489 =$$

One student replied that she thinks the sum is closer to 4,000. She used the estimation shown below to support her reasoning.

Is the student's reasoning correct? Explain why or why not. If the reasoning is incorrect, explain how she should have estimated it.

$$496 + 1,404 + 2,605 + 489 =$$
$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$
$$0 + 1,000 + 3,000 + 0 = 4,000$$

DOK Level 4: Create a plan to reach out to family, friends, and neighborhood members to **gather data** about the number of pictures they have hanging in their homes. **Create a table** to display the information you collect. Then **decide what place value you should round to** that would allow you to showcase who has most pictures and least pictures hung up in their house. Construct a poster to **share your findings**.



Project BUMP UP's Leveling Up DOK 3-Step Approach

Grade 4

28 Standards

- Level 1 — 9
- Level 2 — 18
- Level 3 — 1
- Level 4 — 0

Grade 5

26 Standards

- Level 1 — 8
- Level 2 — 17
- Level 3 — 1
- Level 4 — 0

Steps for Leveling-up DOK

1. Analyze

- What is being asked of the students?
- What is the **DOK** level?

2. Determine

- **Where** do we see a similar concept in future standards?
- Where can we provide fewer supports?
- What **other questions** can we ask about this problem?

3. Construct

- **Select** from the standards and/or additional questions created.
- **Rewrite** the problem to remove supports and insert updated elements.

4. Re-Evaluate

Now that you have leveled-up the question, re-evaluate what students are being asked to do at the new DOK level.

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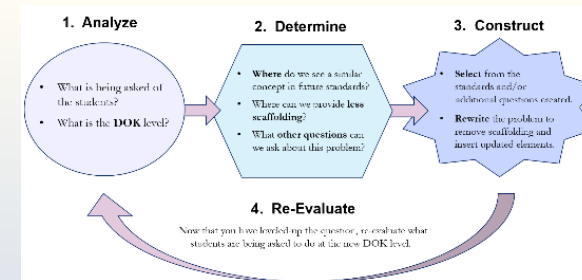
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- **Rewrite** the problem to remove supports and insert updated elements.

4. Re-Evaluate

Now that you have leveled-up the question, re-evaluate what students are being asked to do at the new DOK level.

Original Problem



Myra read 45 pages of her 100-page book. Her sister read $\frac{1}{2}$ of a 10-page book.

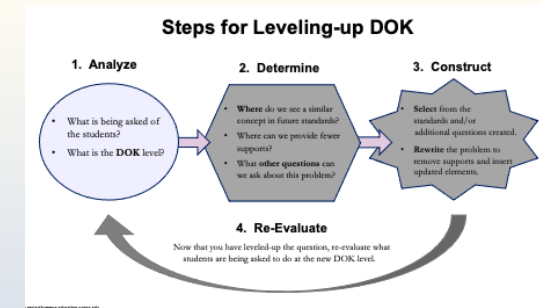
Who read a greater fraction of her book, Myra or her sister?

Show your work.

Hint: One fraction has a denominator of 100. The other fraction has a denominator of 10.

Currently, what is this question asking the student to do?

- Compare fractions



Myra read 45 pages of her 100-page book. Her sister read $\frac{1}{2}$ of a 10-page book.

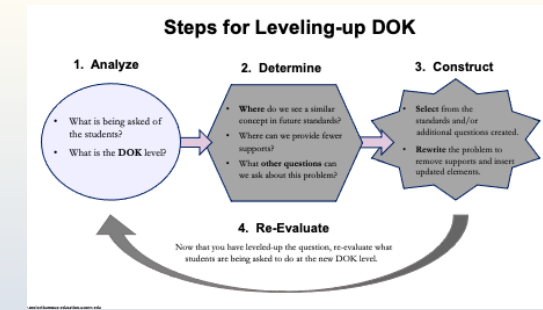
Who read a greater fraction of her book, Myra or her sister?

Show your work.

Hint: One fraction has a denominator of 100. The other fraction has a denominator of 10.

Currently, what is the DOK of this problem?

- DOK 2: Converting the fractions to those with similar denominators and then comparing the two fractions.



Myra read 45 pages of her 100-page book. Her sister read $\frac{1}{2}$ of a 10-page book.

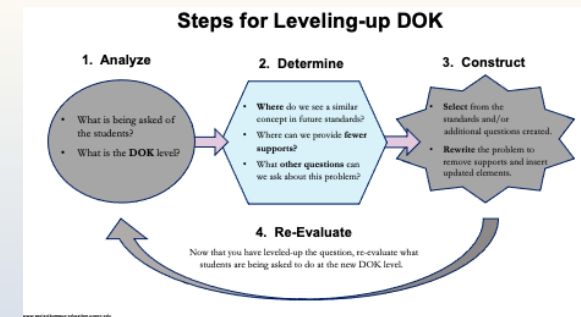
Who read a greater fraction of her book, Myra or her sister?

Show your work.

Hint: One fraction has a denominator of 100. The other fraction has a denominator of 10.

Looking Ahead: When will we see a similar concept like this in the future?

- Mixed fractions
- Conversions to decimals



Myra read 45 pages of her 100-page book. Her sister read $\frac{1}{2}$ of a 10-page book.

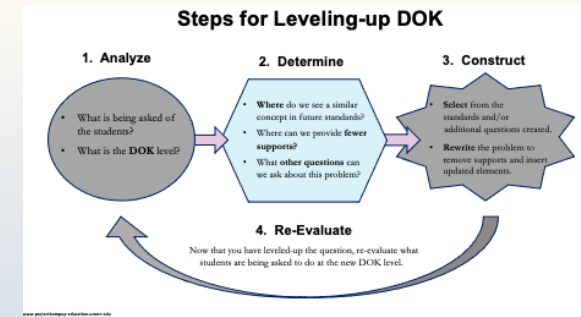
Who read a greater fraction of her book, Myra or her sister?

Show your work.

Hint: One fraction has a denominator of 100. The other fraction has a denominator of 10.

Where can we provide fewer supports for students?

- Eliminate the hint



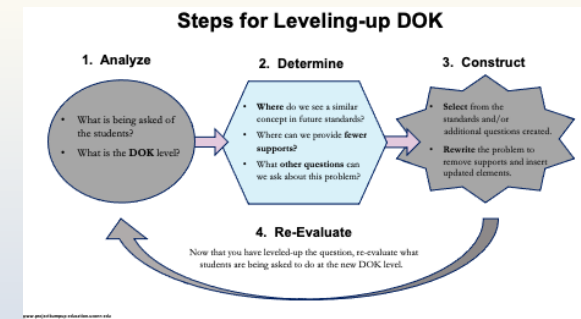
Myra read 45 pages of her 100-page book. Her sister read $\frac{1}{2}$ of a 10-page book.

Who read a greater fraction of her book, Myra or her sister?

Show your work.

~~Hint: One fraction has a denominator of 100. The other fraction has a denominator of 10.~~

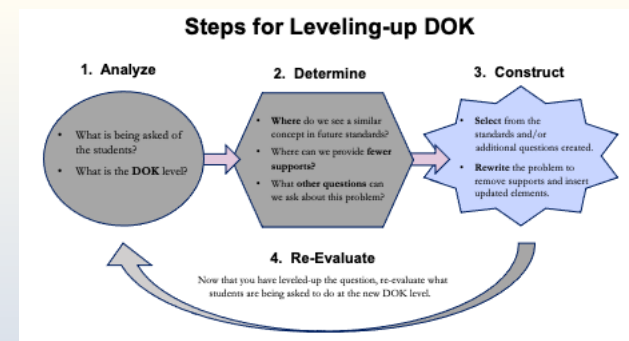
What other questions can we ask about this problem?



- Show two ways to answer the question, “Who read the greater fraction of her book, Myra or her sister?”
- How many pages would one sister have to read to equal the fraction the other sister read?
- Justify which sister read a greater portion of her book with evidence.
- Change the numbers for more complexity (e.g., 73 pages out of 192-page book and $\frac{1}{8}$ of a 212-page book).



How can we implement these questions? (Building the new problem)



New Problem

Myra read 73 pages of her 192-page book. Her sister read $\frac{1}{8}$ of a 212-page book.

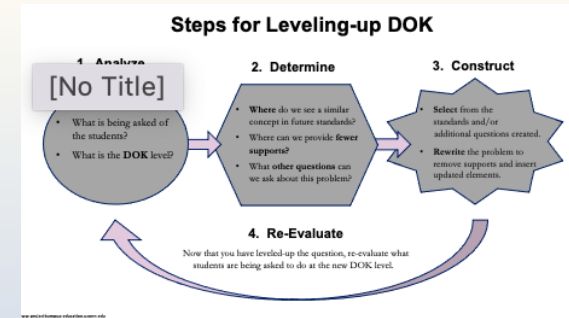
- Who read a greater fraction of her book, Myra or her sister? Provide evidence for your answer.

The sister who read less wants to catch up and read the same fraction as the other sister.

- How many more pages would the sister need to read to catch up? Explain your answer in two ways.



Now, what is this question asking the student to do?



(This should be the same as the original question/task.)

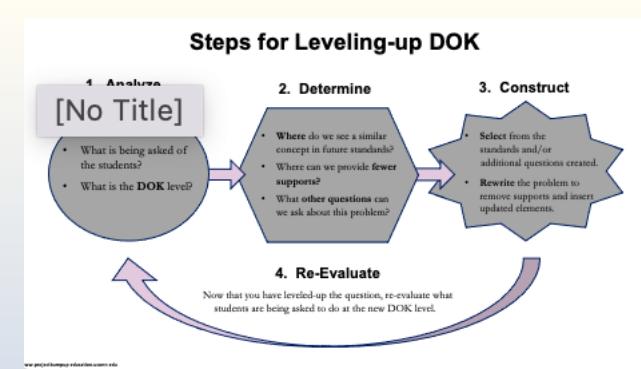
- Compare fractions



Now, what is the DOK of this problem?

(DOK should increase & look at Bloom's Taxonomy)

- DOK 3
 - **Explain** their thinking
 - **Another way** to approach the problem
 - **Compare** answers
 - **Analyze** their responses.



Activity

Gr. 5 Leveling Up! 1

Use the Steps for Leveling-up DOK to increase the complexity of the problem by typing into the answer boxes for each step.

Steps for Leveling-up DOK

1. Analyze

- What is being asked of the students?
- What is the DOK level?

2. Determine

- Where do we see a similar concept in future standards?
- Where can we provide fewer supports?
- What other questions can we ask about this problem?

3. Construct

- Select from the standards and/or additional questions created.
- Rewrite the problem to remove supports and insert updated elements.

4. Re-Evaluate

Now that you have leveled-up the question, re-evaluate what students are being asked to do at the new DOK level.

Gr. 5 Problem

1 kilogram is equivalent to 1,000 grams. How many grams are in 3.5 kilograms?
Circle the le>er of the correct answer.

- A. 0.35 gram
- B. 3.5 grams
- C. 3,500 grams
- D. 35,000 grams

Hint: Which unit is smaller, and which is larger? Which operation do you use to convert?

Rodney chose D as the correct answer. How did he get that answer?

Gr. 5 Leveling Up! 2

STEP 1: ANALYZE

What is being asked of the students?

What is the DOK level?

STEP 2: DETERMINE

Where might you see a similar concept in a future standard?

Where can we provide fewer supports?

What other questions can we ask about this problem?

STEP 3: CONSTRUCT

Select from the standards and/or additional questions created.
Rewrite the problem to remove supports and insert updated elements.

RE-EVALUATE

Now that you have leveled-up the question, re-evaluate what students are being asked to do at the new DOK level.
What is being asked of the students?
What is the DOK level?

Debrief

How did you level this up?

Gr. 4 Problem

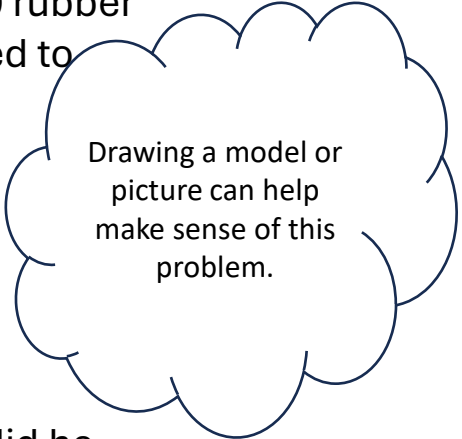
Carter has a pack of 800 rubber bands. Alicia has twice as many rubber bands as Carter. They combine their rubber bands so that they can make bracelets. Each bracelet needs 100 rubber bands. Which equation below can be used to find how many bracelets they can make?

A $(800 \times 2) \div 100$

B $(800 \times 3) \div 100$

C $(800 \div 100) \times 2$

D $(800 \times 100) \div 3$



Drawing a model or picture can help make sense of this problem.

Jon chose A as the correct answer. How did he get that answer?

1. Points, Lines, Angles, Rays (5 Days)

1.1: Using your knowledge...
pp. 238-39

1.2: Points, Lines, and Rays
pp. 240-43

1.3: Parallel, Perpendicular Lines
pp. 244-45

1.4: Identifying Points, Lines, Rays,
and Angles Together –
pp. 246-47

1.5: Identifying Points, lines, Rays,
and Angles – Independently
pp. 248-49

2. Classify 2D Figures (5 days)

2.1: What do you know?
pp. 350-351

2.2: Sorting Shapes Based on Side and
Sorting Shapes Based on Angles –
Modeled and Guided Instruction
pp. 352-355

2.3: Sorting Triangles – Modeled and
Guided Instruction
pp. 356-357

2.4: Practice Classifying Two
Dimensional Figures – Guided Practice
pp. 358-359

2.5: Practice Classifying Two-
Dimensional Figures – Independent
practice
pp. 360-361

3. Symmetry (5 Days)

3.1: What do you know?
pp. 362-363

3.2: Finding Lines of Symmetry –
Modeled and guided instruction
pp. 364-365

3.3: Drawing a Line of Symmetry –
Modeled and guided instruction
pp. 366-367


3.4: Practice Finding and Drawing
Lines of Symmetry – Guided practice
pp. 368-369

3.5: Practice Finding and Drawing
Lines of Symmetry – Independent
practice
pp. 370-371

4. Classify Shapes and Angles (2 days)

4.1: Introduction, modeled and guided
practice

4.2: Independent Practice



Deciding on advanced options...

Putting It All Together



Advanced Differentiation Options Planning Tool

Lesson or Unit _____	Date(s) _____	
Standard(s): 		
Advanced Differentiation Options		
Differentiation of Current Curriculum	Supplemental Source	Alternative Standard
Differentiation option from the textbook p. _____ # _____ DOK Level 3 _____ or 4 _____ <div style="text-align: center;">and/or</div> DOK Differentiated math up to Level 3 _____ or 4 _____ Brief description of differentiated activity:	Topic: _____ Source: _____ DOK Level 3 _____ or 4 _____ Brief description of differentiated activity:	Grade _____ Standard _____ DOK Level 3 _____ or 4 _____ Brief description of differentiated activity:
Notes:		

1.

Examine

the activity.



2.

Decide

if the activity is
advanced.

If it is not...



3.

Advance!

- Increase complexity
- Select an advanced standard
- Choose from a supplemental source



Examine



Decide



Advance



Textbook Activity

Advanced?

**Make it more
challenging?**

Write directions on how to draw a rectangle pp. 238-39

No! Six scaffolds provide students important details on rectangles. Makes it too easy.

Reduce scaffolding provided in parts a-f.

Advanced Differentiation Options

Differentiation of Current Curriculum	Supplemental Source	Alternative Standard
<p>Differentiation option from the textbook p. <u>12</u> # <u>30</u></p> <p>DOK Level 3 <u>X</u> or 4 _____</p> <p style="text-align: center;">and/or</p> <p>DOK Differentiated math up to Level 3 _____ or 4 _____</p> <p>Brief description of differentiated activity: <i>Lesson 1 - Removed scaffolding</i></p>	<p>Topic: _____</p> <p>Source: _____</p> <p>DOK Level 3 _____ or 4 _____</p> <p>Brief description of differentiated activity:</p>	<p>Grade _____ Standard _____</p> <p>DOK Level 3 _____ or 4 _____</p> <p>Brief description of differentiated activity:</p>

Examine



Decide



Advance



Textbook Activity

Advanced?

Make it more challenging?

Sorting Shapes on Side and Angles pp. 352-355

Parallel and perpendicular sort: lower-level questions; Repetitive of sorting activities on pp. 352, 354

[2.2 Advanced Activity](#): Gr. 5 Ready Textbook pp. 323-324

Advanced Differentiation Options

Differentiation of Current Curriculum	Supplemental Source	Alternative Standard
<p>Differentiation option from the textbook p. _____ # _____</p> <p>DOK Level 3 _____ or 4 _____</p> <p style="text-align: center;">and/or</p> <p>DOK Differentiated math up to Level 3 _____ or 4 _____</p> <p>Brief description of differentiated activity:</p>	<p>Topic: _____</p> <p>Source: _____</p> <p>DOK Level 3 _____ or 4 _____</p> <p>Brief description of differentiated activity:</p>	<p>Grade <u>5</u> Standard <u>G.2.3</u></p> <p>DOK Level 3 _____ or 4 <u>X</u></p> <p>Brief description of differentiated activity:</p> <p style="color: blue; font-family: cursive;">Lesson 2 - Gr. 5 Textbook pp. 323- 324</p>

Examine



Decide



Advance



Textbook Activity

Advanced?

Make it more challenging?

Practice Finding and Drawing Lines of Symmetry – Independent practice pp. 370-371

No: Describing/recognizing features. Not developing/discovering new information to deepen learning.

W&M Grade 4 Lesson 5.2 pp. 207-209 - develop methods for finding trapezoid area

Advanced Differentiation Options

Differentiation of Current Curriculum	Supplemental Source	Alternative Standard
Differentiation option from the textbook p. _____ # _____ DOK Level 3 _____ or 4 _____ <div style="text-align: center;">and/or</div> DOK Differentiated math up to Level 3 _____ or 4 _____ Brief description of differentiated activity:	Topic: <u>Symmetry</u> Source: <u>W&M Beyond Polygons</u> DOK Level 3 <u>X</u> or 4 _____ Brief description of differentiated activity: <u>Lesson 3 Gr. 3 Lesson 5.2 pp. 207-209: Analyzing lines of symmetry and formulating a pattern/rule about lines of symmetry and the number of sides shapes have.</u>	Grade _____ Standard _____ DOK Level 3 _____ or 4 _____ Brief description of differentiated activity:

Examine



Decide



Advance



Textbook Activity

Advanced?

Make it more challenging?

Introduction, modeled and guided practice of folding shapes.

Quick exploration of folding shapes is an introduction to symmetry. Not much opportunity to understand a real-world example.

[MiA Advanced Activity](#): Georgia Culminating Task Geometry Town pp. 90-97

Independent Practice of polygon question

Questions are regular-polygon specific and involve identification.

Advanced Differentiation Options

Differentiation of Current Curriculum	Supplemental Source	Alternative Standard
<p>Differentiation option from the textbook p. _____ # _____</p> <p>DOK Level 3 _____ or 4 _____</p> <p style="text-align: center;">and/or</p> <p>DOK Differentiated math up to Level 3 _____ or 4 _____</p> <p>Brief description of differentiated activity:</p>	<p>Topic: <u>polygons</u></p> <p>Source: <u>Georgia Curriculum Frameworks</u></p> <p>DOK Level 3 _____ or 4 <u>X</u></p> <p>Brief description of differentiated activity: <u>Lesson 4 - Geometry Town pp. 90-97</u> <u>https://www.georgiastandards.org/Georgia-Standards/Frameworks/4th-Math-Unit-6.pdf</u></p>	<p>Grade _____ Standard _____</p> <p>DOK Level 3 _____ or 4 _____</p> <p>Brief description of differentiated activity:</p>

Multiple differentiation options in one topic/unit:

Advanced Differentiation Options

Differentiation of Current Curriculum	Supplemental Source	Alternative Standard
<p>Differentiation option from the textbook p. <u>12</u> # <u>30</u></p> <p>DOK Level 3 <u>X</u> or 4 _____</p> <p>and/or</p> <p>DOK Differentiated math up to Level 3 _____ or 4 _____</p> <p>Brief description of differentiated activity: <u>Lesson 1 - Removed scaffolding</u></p>	<p>Topic: <u>polygons</u></p> <p>Source: <u>Georgia Curriculum Frameworks</u></p> <p>DOK Level 3 _____ or 4 <u>X</u></p> <p>Brief description of differentiated activity: <u>Lesson 4 - Geometry Town pp. 90-97</u> https://www.georgiastandards.org/Georgia-Standards/Frameworks/4th-Math-Unit-6.pdf</p> <hr/> <p><u>Symmetry W&M Beyond Polygons</u></p> <p><u>Lesson 3 Gr. 3 Lesson 5.2 pp. 207-209: Analyzing lines of symmetry and formulating a pattern/rule about lines of symmetry and the number of sides shapes have.</u></p>	<p>Grade <u>5</u> Standard <u>G.2.3</u></p> <p>DOK Level 3 _____ or <u>X</u> _____</p> <p>Brief description of differentiated activity: <u>Lesson 2 - Gr. 5 Ready Textbook pp. 323-324</u></p>

Plus-Minus-Interesting

Work with others to determine what is a plus, minus, or interesting about each differentiation option on ADOPT Differentiation Log.



Differentiation Strategies	Plus	Minus	Interesting
Higher Curriculum Standard or One You Do Not Typically Reach			
Advanced Differentiation Option in Textbook			
Leveling Up Depth of Knowledge (DOK) to Level 3 or Level 4			
Alternative Resources (Published Curriculum or Vetted Online Sources)			

Debrief



Differentiation Strategies	Plus	Minus	Interesting
Higher Curriculum Standard or One You Do Not Typically Reach			
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Thank you!

Interested in sharing what your district does for subject-specific acceleration?

- The National Center for Research on Gifted Education is conducting a research study to document and disseminate information on how school districts implement subject acceleration. We would like to conduct online interviews (~ 1 hour) with knowledgeable administrators from **school districts** who have systematic procedures in place for subject acceleration. **Scan the QR code** or contact Catherine Little at catherine.little@uconn.edu to learn more.



NATIONAL
CENTER
FOR
RESEARCH
ON
GIFTED
EDUCATION

*Seeking schools interested in
doing acceleration better?*

NCRGE is seeking schools serving
grades 2-5 interested in **FREE**
PROFESSIONAL LEARNING
OPPORTUNITIES and *assistance*
in making acceleration decisions.

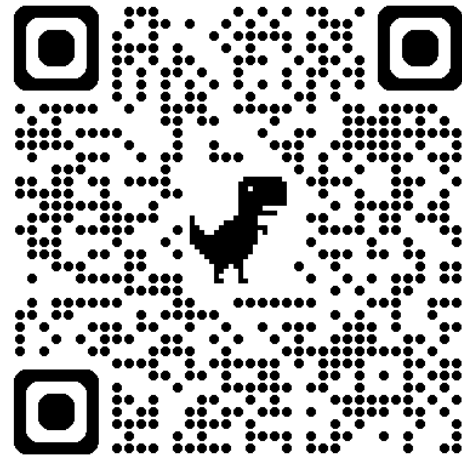
ncrge.uconn.edu/acceleration



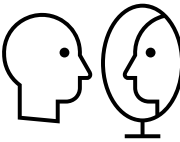
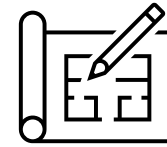
projectbumpup.education.uconn.edu



s.uconn.edu/adultrefs



Renzulli Executive Functioning Scale (REFS)



- **Task Initiation**
- **Task Persistence**
- **Organization**
- **Self-reflection/
Awareness**
- **Emotional
Regulation**
- **Collaboration**
- **Self-advocacy**

DOMAINS

You can assist in the creation of the new **Renzulli Executive Functioning Scale**


Grade 4-8 students will assess their...

1. ability to start tasks (e.g., I like starting new things),
2. ability to stay on task (e.g., I finish what I start)
3. organization (e.g., My desk is cleaned and organized)
4. awareness of strengths and weaknesses (e.g., I know what I can do well)
5. self-advocacy (e.g., I am not afraid to stand up for myself)
6. ability to collaborate (e.g., I work well with others)
7. awareness of ability to manage emotions (e.g., I can calm myself down when I am upset.)


Parents – **s.uconn.edu/refs**

Teachers – **s.uconn.edu/renzulliscale**



 Parent Code



 Teacher Code



One Day Virtual Event

A TASTE OF CONFRATUTE

- Thursday, October 24: Special Event: **Schoolwide Enrichment Model Overview**
- Wednesday, January 29: Taste of Confratute: **Thinking Skills**
- Wednesday, February 26: Taste of Confratute: **Social and Emotional Learning and Underachievement**
- Wednesday, March 26: Taste of Confratute: **Strength-Based Learning**

