USING THE RTI PROCESS IN MATHEMATICS

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Overview

RTI in mathematics—how does it look?
Overview of Curriculum-Based Measurement (CBM) in mathematics
Connecting pieces of assessment
Evidence-based interventions in mathematics
Strengthening Core Instruction in Math and Deepening Content Knowledge—Disciplinary Literacy
Critical elements—National Center on RTI
BASIC STEPS IN DEPTH
Basic steps in the RTI process

#1—Implementation of evidence-based core instruction for all students, including differentiated instruction
Most important part of instruction/intervention?

• The teaching!
  • Need to be deliberate and intentional about your teaching
  • MAXIMIZE every instructional minute
  • What are the elements of effective teaching practice?
Effective teaching components

• Evidence-based teaching practices are the key to high quality instruction/intervention
  • Objective for the lesson (concrete and measurable), including a rationale
  • Motivational activities to get students interested in and excited about the lesson
  • Modeling
  • Guided practice
  • Independent practice
  • Assessment
Treatment fidelity

• One of the key components of RtI is lack of response to validated instruction, implemented with integrity
  – Need to check on fidelity of implementation. How can this be done?
  – Checklists, observation, discussion, video

• The purpose of fidelity checks is to create open dialogue regarding what is effective and what needs to be altered
  – Should be an OPEN process—no surprises here!
Fidelity of implementation—critical to intervention success!

• How is this monitored in schools that you are working with? Or is it monitored?
• How can this become a routine part of a school environment?
• How can this lead to more open dialogue and better instructional methods?
• How would the example work in your building?
#2—Schoolwide screening/benchmarking

- All students screened (3 times per year is most prevalent) to determine which students are suspected to be at risk.
- I would suggest a Curriculum-Based Measurement (CBM) tool. More about this in a minute…
- These CBM data systems give you one data source to help determine students that fall into Tiered levels (based on national norms)
Basic steps in the RTI process—and considerations!

#3—Progress monitoring for students at risk

- Students receiving Tier 2 (supplemental) or Tier 3 (intensive) supports are progress monitored on a frequent basis, goals are set, data is graphed, and decisions are made based upon the data
  - Considerations—how often, what tool is used
  - Guidelines—Students in Tier 2 are progress monitored every other week. Students in Tier 3 are monitored weekly.
  - More frequent data=better decisions made more frequently.
How do assessments fit together?

1 to 3 times per year
- Outcome tests
- District test
- CBM Benchmarking
  - ? answered—how is this student doing compared to peers or benchmarks?

Weekly or monthly
**Progress monitoring** using CBM for students deemed at-risk after triangulation of data
  - ? answered—is the student benefitting from the instruction being provided?

Weekly or monthly
**Diagnostic tests** (unit or chapter tests, teacher-made tests)
  - ? answered—what specific skills are mastered or do I need to reinforce?
CBM—Overall Indicators

- Curriculum-Based Measurement (CBM) assessments like Aimsweb, EasyCBM, and DIBELSmath serve as indicators of academic proficiency, just like...
  - Temperature in degrees serves as an indicator of overall wellness
  - Weight in pounds serves as an indicator of overall health
  - A litmus test serves as an indicator of a solution’s acidity
CBM: An Index of Academic Health

Fact Fluency
Word Problems
Place value
Conceptual understanding
Measures Used For Monitoring

Math—CBM

• Early Numeracy
  • Oral Counting, Missing Number, Number Identification, and Quantity Discrimination
• Math Computation
• Math Concepts & Application
Examples of options for early numeracy indicators

- Measures in most systems include things like number identification, quantity discrimination, missing number, mixed numeracy, next number, and how many?
- Most measures in early numeracy are individually administered for 1-3 minutes
- Teachers score the measures later
Examples of sources for CBM early numeracy measures
Lembke and Foegen measures

- Number ID, Quantity Discrim, Missing Number, Mixed Numeracy
- Free at www.progressmonitoring.org. Click on research and early numeracy
- Both screening and progress monitoring measures
Examples of sources for CBM K-8 measures

- Aimsweb (aimsweb.com)—TEN, Tests of Early Numeracy; Computation (M-COMP); Concepts and Applications (M-CAP)
  - TEN—Oral counting, number id, QD, MN
  - Individually administered
  - For math only, $4 per student per year ($200 min)
Examples of sources for CBM K-8 measures

- EasyCBM (easycbm.com)
  - Geometry, Measurement, Numbers and Operations
  - Group administered
  - Free for ‘lite’ version (limited forms)
  - $4 per student plus $200 first time training fee
Examples of sources for CBM K-8 measures

• DIBELS math
  • In pilot testing right now (are any of you part of the pilot?)
  • Aligned with the common core standards
  • Individually administered
  • Free
We are also in the process of developing a problem solving component.
DIBELS MATH

DIBELS® Math key points:

1. The problem types are tightly constrained by grade, but also allow for several problems from the grade level before.

2. We include an optional error patterns analysis

Example 2:

Benchmark 1

<table>
<thead>
<tr>
<th>Problems</th>
<th>Skill Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 18 21, 25</td>
<td>Add a three-digit and a two- or three-digit number, without renaming.</td>
</tr>
<tr>
<td>7 12 17, 23</td>
<td>Add three one- or two-digit numbers, without renaming.</td>
</tr>
<tr>
<td>4 10 16</td>
<td>Add two two-digit numbers, with renaming from ones to tens.</td>
</tr>
<tr>
<td>3 11 19, 22</td>
<td>Add a three-digit and a two- or three-digit number, with renaming from ones to tens.</td>
</tr>
<tr>
<td>✗ ✗ 18</td>
<td>Subtract a one- or two-digit number from a two-digit number, with renaming.</td>
</tr>
<tr>
<td>✗ ✗ 15</td>
<td>Subtract a one-, two-, or three-digit number from a three-digit number, with renaming from tens to ones.</td>
</tr>
<tr>
<td>5, 14, 20, 24</td>
<td>Multiply a one-digit number by a one-digit number, resulting in a product of 20 or less.</td>
</tr>
</tbody>
</table>
Algebra progress monitoring measures

- Project AAIMS, Dr. Anne Foegen, Iowa State University
- http://www.education.iastate.edu/c_i/aaims/
- Resources for Algebra Progress Monitoring:
  - Algebra Basic Skills
  - Algebra Foundations
  - Algebra Content Analysis
  - Translations
Questions for discussion

- Which math measures will we use or are we using?
- When will we implement math screening and progress monitoring?
Basic steps in the RTI process—and considerations!

#4--Discussion and decision-making about the data with grade level, content-specific, or school-wide teams

• Consideration--Decision-making rules established. For instance:
  • After 6 data points are collected over 6 weeks, use the trend line or 4-point rule to make a decision about current plan
Decision-making--Progress Monitoring data

- Every 4 to 6 weeks, examine trend of data compared to goal line or 4 most recent consecutive data points
  - If trend or 4 points are below the goal line, make an instructional change
  - If trend or 4 points are above the goal line, consider past data to determine if the student can be moved to a lower tier or goal can be raised
  - If trend or 4 points are the same as the goal, stay the course
Progress Monitoring Improvement Report for Shaper Evans
from 02/04/2009 to 05/25/2009
Shaper Evans (Grade 7)
Grade 3: Reading - Standard Progress Monitor Passages

- Corrects
- Errors
- Corrects Aimline
- Corrects Trend

Trend line

Aimline (goal line)
Four-Point Method

Problems Correct in 7 Minutes

Weeks of Instruction

most recent 4 points

goal-line
Four-Point Method

![Graph showing weeks of instruction and problems correct in 7 minutes. The graph includes a goal-line and a box indicating the most recent 4 points.](image-url)
Discussion of data and decision making

- Use decision-making rules
- Use guiding questions in your handout packet to discuss data with your team
Basic steps in the RTI process—and considerations!

#5—Implementation of evidence-based interventions for students at-risk

• Consideration—how will fidelity be monitored?
• Logistical considerations—how will interventions be scheduled? How will they be chosen?
• Diagnostic consideration—how will skills be targeted?
Diagnostics

- Aligning instruction and intervention to common core (see handouts)
- Examining results from your common assessments
- Mathematics interviews?
- Error analysis
- Unit tests
- ‘Mad Minute’ assessments
- Can use DIBELS math diagnostic information
MATHEMATICS INTERVENTIONS
Recommendations for resources

• Lesson plans from NCTM
  http://illuminations.nctm.org/

• Mathematics intervention briefs—
  http://ebi.missouri.edu/?page_id=983
Intervention Plan

• What will you be doing for Tiers 1, 2, and 3?
  • How will you check fidelity on your plan?
• What are the critical areas of need for our students in math?
• How can we address these needs or how are we addressing these needs?
RESPONSE TO INTERVENTION IN MATH: SUPPORTING ALL STUDENTS

Strengthening Core Instruction in Math and Deepening Content Knowledge—Disciplinary Literacy
RtI in Math

Tier 1  On-level and standards based Math instruction
       Frequent practice of skills and activities that strengthen core knowledge
       Pyramid of skill levels progression from basic to complex computation
       Problem-Solving tasks offered in different context
       Hovering during independent practice with feedback
       Daily independent practice with progress check
       Homework

Literacy in the Content Area

Tier 2  Additional time allotted for pre-teach, tutoring, or acceleration
       Small group or one-to-one instruction
       Individualized correction in specified skill area
       Progress monitoring of daily work or progress checks with incentive

Tier 3  Additional course in Math or Extended learning environment
       Targeted skills development
       Contract with student to commit to certain amount of work completed in Math daily
       Increase amount of time in guided practice with daily corrective feedback
       Daily progress monitoring of scaffolded skill development or skill continuum
       After school tutoring intervention, Saturday school, or Intensive Math Camp
Tier I – Working on Strengthening Core Instruction and Deepening Content Knowledge – Disciplinary Literacy

• What does Disciplinary Literacy do for Core Instruction?
• DL applies literacy skills in the math content area to increase the amount of thought devoted to content
• DL starts at the basic literacy level coupled with math content and progresses towards the deep content knowledge level
• The goal of DL in math is to have students demonstrate their knowledge of the content through explanation; the understanding is demonstrated as the students are challenged by putting the math in their own words
Professional Development in DL

- Identify literacy teachers who can work with math teachers in developing DL in math
- Provide time during the 40 hour week to allow teams to collaborate on literacy-based math operations
- Provide literacy tools and demonstrate how to use them – improve the use of tools through collaborative talks between the literacy teacher and the math teacher
- Provide coaching – if possible- or provide feedback to the math teacher on the application of DL strategies
- Plan on-going professional development on school-wide DL which should include the studying of student work where literacy practice is embedded in math
- Incorporate learning walks that focus on strengthening core instruction and using DL within math (and the content areas)
Toolbox

The parent function $f(x) = x^2$ has a vertex at $(0,0)$ on the graph. If the graph for the transformed equation is $f(x) = \frac{1}{4}(x-4)^2 + 3$, then the graph will shift over the x-axis by a factor of $\frac{1}{4}$, move right 4 units, and up 3 units.

The effect that will happen when $f(x) = x^2$ is transformed equation $f(x) - \frac{1}{4}(x-4)^2 + 3$, is that this will cause a reflection over the x-axis. The parabola on the graph will also have a horizontal compression or a factor of 4, which means it will get wider. The vertex will also change, to $(4,3)$. This function transformed from a vertical stretch to horizontal compression, reflected over the x-axis.

The normal $f(x) = x^2$ looks like a normal parabola going up not too large but not too fast. Therefore, the negative sign in front of the $\frac{1}{4}$ is going to cause it to reflect over the x-axis, while the $\frac{1}{4}$ is going to cause the parabola to get wider. The negative sign inside decreases the opening from left to right, and in this case it moves to the right 4 times. Last but not least, the $\frac{1}{4}$ in the parentheses causes the parabola to move from left to right 4 times, causing its width to be a factor of $\frac{1}{4}$, creating a horizontal compression, with its up or down, the positive $\frac{1}{4}$ makes the graph move up 3 units, causing the final graph to look like this.
Quiz Over Simplifying Polynomials and Distributive Property

1. \(6(3) - 2 = \frac{18 - 2}{-} \) 
   \(\text{Answer: } 5\)

2. \(-2 + 6 = \) 
   \(\text{Answer: } 4\)

3. \(-2(4+2) = \) 
   \(\text{Answer: } -12\)

4. Which of the following are not like terms? \(C\)
   a. \(3x^2\) and \(-4x^2\)
   b. \(2xyz\) and \(xyz\)
   c. \(3y^3\) and \(3y^2\)
   d. \(4x^2y\) and \(x^2y\)

5. Group the pairs of like terms from the following polynomial using the underlining technique:

   \[2x^2 + 3x - x^2 + 4 - 5 - x\]

   Simplify:
   
   6. \[2x - 4 - 5x + 4 = -3x\]
   7. \[2x^2 - 3 - 3x - x^2 + 6x + 4 = 2x^2 + 5x + 3\]
   8. \[3y + 2x - y + 4x + 3 = 5x + 4x + 3\]
   9. \[3y^2 + 2xy - y^2 + 5x^2 + xy = 5x^2 + 5x^2 + xy - y\]
   10. \[2(2x+3) = 4x + 6\]
   11. \[2(x^2+4) + 3(2x-3) = 2x^2 + 6x - 6\]
       \[2x^2 + 6x - 6\]
The step I found that is most helpful is "N," which is "Notice." It helps you notice what you are being asked to find. Also, if you are sure what you are looking for in a problem, you have to know what the problem is asking in order to get it correctly. Being able to notice is good. Sometimes you don't notice the problem or even get the problem. But mostly I do notice what is asking.
Below is the work Julio used to solve the following equation. Use the equation, Julio’s work, and Julio’s solution to write a Short Answer paragraph using the APE strategy. Use your notes on the APE strategy from your notebook to guide your writing. A quality answer has to fit inside the box below and should be at least 4 or more sentences.

\[
7x - 5 - 2x + 13 = 9x - 5 - 13 \\
7x + 2x - 5 = 2x + 13 \\
x = 18 \\
x = 2
\]

**STAAR SHORT ANSWER READING QUESTIONS**

**EXAMPLE OF RESPONSE BOX**

For the equation he worked on his answer was true. To check your answer, you can plug in the two on the x’s. You have to show the line down the equal sign. Move all the x’s to one side. Then you solve the equation more algebra.
Literacy-rich Summaries of Math

7. On Wednesdays an athlete's schedule allows no more than 25 minutes for morning training. One round of a strength routine, x, requires 4 minutes. One round of an endurance routine, y, requires 12 minutes. Which of these best represents the time available for the athlete to spend on strength and endurance routines on Wednesdays?

- $20x + 8y < 75$
- $8x + 12y < 75$
- $12x + 75 + 8y$
- $17x + 26y < 100$

8. An oyster provides approximately 17 calories, and a shrimp provides approximately 25 calories. Jay wants to consume no more than 300 calories eating oysters and shrimp. Which inequality best represents the number of oysters, x, and the number of shrimp, y, that Jay can eat and stay within this limit?

- $(17 + 25)x + y > 300$
- $(17 + 25)x + (26 + y) > 300$
- $(17 + 26)x + y < 300$
- $17x + 26y < 100$

9. At a restaurant the cost for a breakfast taco and a small glass of milk is $3.70. The cost for 2 tacos and 3 small glasses of milk is $5.15. Which pair of equations can be used to find the cost of a taco, x, and the cost of a small glass of milk, y?

- $t + x = 2.10$
- $2t + 3x = 5.15$
- $3t + 3x = 5.15$
- $2t + 2x = 2.10$

10. At a college bookstore, Carlos purchased a math textbook and a novel that cost a total of $53, not including tax. If the price of the math textbook, m, is $5 more than 3 times the price of the novel, n, which system of linear equations could be used to determine the price of each book?

- $m + n = 8$
- $m = 3n + 54$
- $m = 3n + 4$
- $m = 3n + 8$

11. At a firefighters' pancake breakfast, the firefighters sold 345 people and raised $159.5. If the cost of an adult ticket to the pancake breakfast was $2.50 and the cost of a child's ticket was $3, what was the number of adult tickets sold?

Equations:
- $13.95 = 50c + 3a$
- $159.5 = 50 + 3c$

12. What is the solution for this system of linear equations?

- $y = -3x + 13$
- $y = \frac{2}{3}x + 2$
- $x = -13$

Parent Signature: ___________________________
Parent Phone number: ___________________________

Thank you for making sure your son/daughter does their homework!!

Coach Workman and Mrs. Hamiter
Literacy-based Practice in Math

[Image of sheet with math problems and explanations]
7. How many boxes of stuffed animals can be made with $5,000?

\[
\begin{align*}
5000 & \div 20n + 2800 \\
- & \quad 2300 \\
\hline
2700 & \div 20n
\end{align*}
\]

\[
\frac{2700}{20n} = \frac{2700}{20} = 135 \text{ boxes}.
\]

8. In a paragraph, use your APE strategy to explain how you found your solution to problem 7. Make sure to use complete sentences and be specific.

The way I found the answer to problem 7 is by plugging in the number ($5,000) where it belongs. You're mainly trying to find how many boxes you can get with $5,000 plus the $2,300 you have to pay automatically. So, if $5,000 - 2,300, we need to find the "n" you have to subtract 5000 - 2300 because you have to pay 2,300 automatically. After that, you'll get 2,700. Now you can get the boxes with 2700. Then divide 2,700 \div 20 = 135. 135 is how many boxes you can get.

<table>
<thead>
<tr>
<th>4 - Outstanding</th>
<th>3 - Good</th>
<th>2 - Average</th>
<th>0 - Not Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer</td>
<td>Student states the correct answer and shows work.</td>
<td>Student states an answer but is incorrect.</td>
<td>Present but incorrect or unclear.</td>
</tr>
<tr>
<td>Prove</td>
<td>Solutions have multiple sentences explaining all steps in solving the problem.</td>
<td>Student has at least two sentences explaining the steps.</td>
<td>Student has some information about how they solved the problem.</td>
</tr>
<tr>
<td>Explain</td>
<td>Student explains how they plugged the solution back into the equation and checked.</td>
<td>Student just said they checked their answer.</td>
<td>There is something written but it is unclear.</td>
</tr>
<tr>
<td>Following instructions</td>
<td>Student wrote everything inside the box with at least 4 complete, grammatically correct sentences.</td>
<td>Student wrote everything inside the box with at least 4 complete sentences, but has grammatical errors.</td>
<td>Student either wrote outside the box or did not use 4 complete sentences minimum.</td>
</tr>
</tbody>
</table>
## Learning Walks in Content Areas

### Walker's Observations

**Teacher:** __________________________  **Class Period:** ___________  **Date:** ___________

#### RIGOUROUS INSTRUCTION

1. **What was the Instructional Method Used by the teacher?** How did the students respond to the lesson?

2. **What was the Thinking Rigor Level obtained by the teacher?** How did the students respond to the Rigor being required of them?

3. **What was the Questioning Technique used by the teacher?** How did the students respond to the teacher's questioning?

4. **What was done in order to obtain student engagement?** How were the students engaged in this lesson?

#### DISCIPLINARY LITERACY

<table>
<thead>
<tr>
<th>Teacher's Question</th>
<th>Student's Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>How was the execution of the Literary Task used by the teacher in order to demonstrate deep-content knowledge?</td>
<td>What was observed to be the students’ response and level of content-learned as a result of the Literary Task?</td>
</tr>
</tbody>
</table>

- **What are your wonderings?**

---

Thank you for participating in the learning walk. What suggestions can you give us in order to improve the learning walk.
Look-For's in Math

Disciplinary Literacy – (what was observed)
Look for include – ACTUAL CONTENT WRITING that improves thinking, deep content knowledge
- Writing folders
- Answer – Prove – Explain (APs)
- Essays – especially Argumentative, Expository, or Analytical
- Quick-writes
- Other literacy work (reading, writing, thinking, questioning) that develops deep content knowledge
- Document Based Question work (AP / Advanced Academics)

Instruction (types observer would want to see) – (from Curriculum Projects)
1. Foster Connections at the B, M, E of the lesson
2. Cultivate Thoughtfulness
3. Strengthen understanding and blending modalities
4. Guide Quality through continuous feedback
5. Nurture Focus
6. Encourage consolidation of core concepts and skills at the end of every lesson (from Learning Focus)
7. Lesson segmentation that provides for content deepening (chunking)

Thinking Rigor (Levels of Rigor according to Blooms plus questioning stems) (from Curriculum Projects)
1. Knowledge – to recall (remember, list, recount, recognize, restate)
2. Comprehension – to understand (explain, describe, express, clarify, paraphrase)
3. Application – to use (classify, summarize, apply, distinguish, compare)
4. Analysis – to examine (isolate, determine, compare, contrast, speculate)
5. Creative Thinking – to change (generate, hypothesize, adapt, imagine, speculate)
6. Critical Thinking – to justify (judge, conclude, decide, infer, interpret)

Model Questioning Strategies (not questioning level but method to obtain input from student)
(from Curriculum Projects)
1. Cognitive Verb in Questioning
2. Cognitive Verb in Questioning and recognizing student
3. Simultaneity in Questioning types
   a. Pair/Share
   b. Choral Response
   c. Visual Cue
   d. Quick Write
   e. Time Thinking
4. Randomness (with computer, popsicle sticks)
5. Wait Time plus coaching student

Engagement (from Schlechty Center on Student Success in Engagement)
1. Actual Engagement – meaningful
2. Strategic Compliance – to get a good grade/to get a grade
3. Ritual Compliance – compliant behavior but not engaged
4. Retreat-ism – do not participate, are not on task
5. Rebellion – student is acting out
Studying Student Work

### Studying Student Work Reflection

1. List specific reasons the papers are considered:

<table>
<thead>
<tr>
<th>Low</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Medium</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>High</th>
</tr>
</thead>
</table>

2. What are possible causes for the differences between the HIGH and LOW papers?

3. What are the possible causes for the differences between the HIGH and MEDIUM papers?

(Possible examples for #2 and #3- student didn’t revise/edit and rewrite, writing prompt wasn’t clear to the student, LEP or SpEd concerns, modeling was not provided, ineffective feedback for rewrite, etc.)

4. Where are the student’s weaknesses in the short answers? Please list specific issues addressing the following:

<table>
<thead>
<tr>
<th>Answer</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Proof</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Explanation</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Other issues</th>
</tr>
</thead>
</table>

5. Where are the student’s weaknesses in the essays? Please list specific issues addressing the following:

<table>
<thead>
<tr>
<th>Thesis statement</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Determining the main points to be discussed</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Elaboration on their main points</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Introduction</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Conclusion</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Other issues</th>
</tr>
</thead>
</table>
The Short Answer Response Strategy:

Follow this strategy to answer short answer questions correctly and efficiently each time. Be concise but thorough. Read the text carefully.

Step 1:

**Answer the question.**
- The text uses ________ (choose whichever fits your prompt-formula, hypothesis, facts, literary element, etc.). ________ to (demonstrate or appropriate cognitive verb) the ________ (answer). ________
- DO NOT add anything after your answer-“because”, “since”, “so”, “and”, etc. do not belong here!!!
- Ex. The text uses the Pythagorean theorem to determine that side x is 2 inches long.

Step 2:

**Prove your answer.**
- Your proof for your answer should be a quote taken directly from the text. Lift the words directly from the text. The proof must prove or support your answer.
- You MUST embed your quote. YOU start this sentence with YOUR explanation, embed the quote to continue your explanation, then finish your thought.
  - Ex. Steinbeck revealed “a dread of west and a love of east” in many of his works.
- Don’t forget to put the quote in quotations marks.

Step 3:

**Explain your proof.**
- Explain how your quote successfully proves or supports your answer to the question.
- Why is this important in the text?
- What impact does it have on the outcome?
- Do not merely restate the quote or answer.
Students Peer Editing Tool

Peer Edit

On your partner's paper, do the following:

Highlight the **ANSWER** in **YELLOW**

Highlight the **PROOF** in **PINK** (only if it supports their answer)

Highlight the **EXPLANATION** in **BLUE** (only if they explain HOW the proof supports their answer WITHOUT restating the proof)

What is great about this short answer?
What is confusing about this short answer?

**No highlighters? No problem!!**

Peer Edit

On your partner's paper, do the following:

**CIRCLE THE ANSWER**

**UNDERLINE THE PROOF** (only if it supports their answer)

Put a **BOX** around **THE EXPLANATION** (only if they explain HOW the proof supports their answer WITHOUT restating the proof)

What is great about this short answer?
What is confusing about this short answer?
Revising and Editing a Math Essay

Revise and Edit

Always revise Content first then edit grammatical mistakes

1. See what color is missing:
   - Yellow= Answer
   - Pink= Proof
   - Blue= Explanation

Add the missing parts of the APE writing strategy.

2. Note what your Peer Editor mentioned is confusing about your answer and correct it.

3. CUPS- Capitalization, Usage, Punctuation, Spelling

No highlighters:

Revise and Edit

Always revise Content first then edit grammatical mistakes

1. See what is missing:
   - Circle= Answer
   - Underline= Proof
   - Box= Explanation

Add the missing parts of the APE writing strategy.

2. Note what your Peer Editor mentioned is confusing about your answer and correct it.

3. CUPS- Capitalization, Usage, Punctuation, Spelling
Algebra II Essay Sample

Algebra II – Essay Prompt

There are two forms of a Quadratic Function, the Vertex Form $f(x) = a(x - h)^2 + k$ and the Standard Form $f(x) = ax^2 + bx + c$. Please explain how the values of $a$, $h$ and $k$ in the Vertex Form of a quadratic equation affects the transformation of the function’s graph.
Algebra II Essay Rubric

Circle the box that represents the student’s work:

**Short Essay**

<table>
<thead>
<tr>
<th>Category</th>
<th>3</th>
<th>2</th>
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</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Information is restated and described using mathematical knowledge</td>
<td>Information is restated and vocabulary is defined, but the information is not described using mathematical knowledge</td>
<td>Information is restated only</td>
<td>Does not describe the prompt at all</td>
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<td></td>
<td>Vocabulary is defined</td>
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<tr>
<td>Proof and Explanation</td>
<td>A(3 proofs), h(2 proofs) and K(2 proofs) are stated with explanations and math terminology</td>
<td>A(3 proofs), h(2 proofs) and K(2 proofs) are stated with explanations but without math terminology</td>
<td>A(3 proofs), h(2 proofs) and K(2 proofs) are stated with no explanations of transformations</td>
<td>a, h and k are not stated/ explanation does not comply with the prompt (talked about something else)</td>
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<tr>
<td>Conclusion</td>
<td>Answer is stated in terms of the question and is explained</td>
<td>State answer in terms of the question but has no explanation</td>
<td>The answer is stated but not in terms of the question</td>
<td>Answer is not stated</td>
</tr>
<tr>
<td>Spelling &amp; Grammar</td>
<td>Every sentence correctly uses capitalization, punctuation and spelling.</td>
<td>One sentence contains a misuse of capitalization, punctuation, or spelling.</td>
<td>Two sentences contain a misuse of capitalization, punctuation, or spelling.</td>
<td>Three or more sentences contain a misuse of capitalization, punctuation, or spelling.</td>
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<td>(CUPS-Capitalization, Usage, Punctuation, Spelling)</td>
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</table>
Write a paragraph about your favorite parent function. Please describe why it’s your favorite, the shape of the graph, its domain and range and what the x and y intercepts are. Compare this parent function to another parent function that is similar and describe how they are similar.
# Create a Plan for Disciplinary Literacy

**Disciplinary Literacy 2013-2014 SECOND SEMESTER**

<table>
<thead>
<tr>
<th>4th Six Weeks</th>
<th>5th Six Weeks</th>
<th>6th Six Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goals:</strong> To use reading strategies effective for your students and improve quality of writing.</td>
<td><strong>Goals:</strong> To use reading strategies effective for your students and improve quality of writing utilizing critical thinking.</td>
<td><strong>Goals:</strong> To use reading strategies effective for your students to deepen reading, thinking, and writing skills in order to create high quality, critical writing.</td>
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</tbody>
</table>

## Reading:

**4th Six Weeks**
- Continue using reading strategies
- Read a minimum of **twice per week IN CLASS** (Do Now, during lesson, or closing activity that can lead to homework)
- Students must have a product (short answer, essay, graphic organizer, notes, quickwrite, etc.) from the reading to be kept in their Writing Folders.
- The Graphic organizers, notes, and quickwrites can lead to their Short Answers and Essays.

**5th Six Weeks**
- Continue using reading strategies
- Read a minimum of **twice per week IN CLASS** (Do Now, during lesson, or closing activity that can lead to homework)
- Students must have a product (short answer, essay, graphic organizer, notes, quickwrite, etc.) from the reading to be kept in their Writing Folders.
- The Graphic organizers, notes, and quickwrites can lead to their Short Answers and Essays.

**6th Six Weeks**
- Continue using reading strategies
- Read a minimum of **twice per week IN CLASS** (Do Now, during lesson, or closing activity that can lead to homework)
- Students must have a product (short answer, essay, graphic organizer, notes, quickwrite, etc.) from the reading to be kept in their Writing Folders.
- The Graphic organizers, notes, and quickwrites can lead to their Short Answers and Essays.

## Writing:

**4th Six Weeks**
- Continue Reading Assessments via Short Answer Responses- One every two weeks.
- Produce one essay by the end of the 6 weeks. **Essays are 26 lines** - they can be longer
- Students must revisit their writing to revise/edit and rewrite for higher quality products based on feedback.
  - Give feedback on their first draft which can be done AS they are writing.
  - Have the students revise/edit then write a final draft- this can be done for homework.
  - Give a grade for all 3 parts of the process.

**5th Six Weeks**
- Continue Reading Assessments via Short Answer Responses- One every two weeks.
- Produce one essay by the end of the 6 weeks. **Essays are 26 lines** - they can be longer
- Students must revisit their writing to revise/edit and rewrite for higher quality products based on feedback.
  - Give feedback on their first draft which can be done AS they are writing.
  - Have the students revise/edit then write a final draft- this can be done for homework.
  - Give a grade for all 3 parts of the process.

**6th Six Weeks**
- Continue Reading Assessments via Short Answer Responses- One every two weeks.
- Produce one essay by the end of the 6 weeks. **Essays are 26 lines** - they can be longer
- Students must revisit their writing to revise/edit and rewrite for higher quality products based on feedback.
  - Give feedback on their first draft which can be done AS they are writing.
  - Have the students revise/edit then write a final draft- this can be done for homework.
  - Give a grade for all 3 parts of the process.
Include Literacy in Weekly Math Plans

**Disciplinary Literacy Second Semester 2013-2014**

<table>
<thead>
<tr>
<th>EACH WEEK:</th>
<th>As the Semester Progresses:</th>
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<tbody>
<tr>
<td>To utilize <strong>one specific reading analysis strategy</strong> - Say, Mean, Matter - to deepen reading, thinking, and writing skills. To write consistently and have students revise/edit and rewrite to produce higher quality work from each student.</td>
<td>To further enhance student’s reading, thinking, and writing skills</td>
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<table>
<thead>
<tr>
<th>READING</th>
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<tbody>
<tr>
<td><strong>Use Say, Mean, Matter Reading Strategy</strong> **a minimum of ** <strong>ONCE PER WEEK</strong> <strong>in all classes.</strong></td>
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<td><strong>Reading Options:</strong></td>
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<tr>
<td>- Read and complete Graphic Organizer for Homework- peer grade as Do Now for homework accountability</td>
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<td>- Read for homework and fill in Graphic Organizer for Do Now the following day</td>
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<tr>
<td>- Read and complete Graphic Organizer in Class- independent or small group</td>
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<tr>
<td>- Read in class and students fill in “Say” portion of graphic organizer, complete “Mean” portion for homework, finish the “Matter” portion for Do Now the following day- this will lead into an extension activity for this day utilizing Creative and Critical Thinking (could be a writing piece)</td>
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<td><strong>&quot;Each Graphic Organizer will be graded and kept in their Writing/Reading folders&quot;</strong></td>
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<thead>
<tr>
<th>WRITING</th>
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<tbody>
<tr>
<td>**Students will write a minimum of ** <strong>ONCE PER WEEK</strong> <strong>in all classes.</strong></td>
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<tr>
<td><strong>1.</strong> Students must revisit their writing to revise/edit and rewrite for higher quality products</td>
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<td><strong>2.</strong> Write a short answer/essay for homework or in class,</td>
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<td><strong>3.</strong> Have students peer grade for Do Now (if it was homework) or at the end of class</td>
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<td><strong>4.</strong> Students can revise/edit and rewrite during class or for homework,</td>
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<td><strong>5.</strong> You grade or peer grade the final product- each part should be a grade (first draft, peer grade, revise/edit, and final) so they understand the importance of it all</td>
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<tr>
<td>Simply put- have the students write an essay or short answer the first week, peer grade and have them revise/edit and rewrite the second week- they have produced one piece in two weeks and have written each week whether in class or for homework (repeat this process two more times and you have fulfilled the DL expectations for the 6 weeks)</td>
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<td><strong>It is crucial you time everything that is done in class:</strong></td>
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<tr>
<td>- essay writing- ONE class period</td>
<td>- essay peer grading- 10-15 minutes</td>
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Create Literacy and Content Teams

<table>
<thead>
<tr>
<th>Date</th>
<th>Coach</th>
<th>Teacher</th>
<th>Class Periods</th>
<th>Class</th>
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<tbody>
<tr>
<td>22-Jan-14</td>
<td>Bries</td>
<td>Drake</td>
<td>1st and 2nd</td>
<td>Alg. II</td>
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<tr>
<td></td>
<td>Bries</td>
<td>Englehart</td>
<td>4th and 7th</td>
<td>Geom/H. Geom.</td>
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<tr>
<td></td>
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<td>Richardson</td>
<td>5th and 6th</td>
<td>H. Alg. II</td>
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<tr>
<td></td>
<td>Fowler</td>
<td>Castillo</td>
<td>1st and 2nd</td>
<td>H. Pre Cal</td>
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<tr>
<td></td>
<td>Fowler</td>
<td>Lara</td>
<td>3rd and 5th</td>
<td>Theory/M. Hist.</td>
</tr>
<tr>
<td></td>
<td>Fowler</td>
<td>Russell</td>
<td>4th and 7th</td>
<td>AP Eco.</td>
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<td></td>
<td>Kuhl</td>
<td>Quear</td>
<td>1st and 2nd</td>
<td>AVTC</td>
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<tr>
<td></td>
<td></td>
<td>Wright</td>
<td>3rd and 4th</td>
<td>H. Chem.</td>
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<tr>
<td></td>
<td></td>
<td>Hill</td>
<td>5th and 6th</td>
<td>Money/Hum. Serv.</td>
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<tr>
<td></td>
<td>Nakamoto</td>
<td>Hawkins</td>
<td>1st and 3rd</td>
<td>W. Geo/H. W. Geo</td>
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<td></td>
<td>Crouse</td>
<td>4th and 5th</td>
<td>W. Geo</td>
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<td>Hamiter</td>
<td>6th and 7th</td>
<td>Alg. I</td>
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<td>Rodriguez</td>
<td>Tritten</td>
<td>2nd and 3rd</td>
<td>Chemistry</td>
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<td></td>
<td>Sanders</td>
<td>4th and 5th</td>
<td>BIM</td>
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<td>Basdeo</td>
<td>6th and 7th</td>
<td>Physics</td>
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<tr>
<td></td>
<td>Kinney</td>
<td>Hubble</td>
<td>1st and 5th</td>
<td>Eco</td>
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<td>Barger</td>
<td>2nd and 3rd</td>
<td>Biology</td>
<td></td>
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<tr>
<td></td>
<td>Tatum</td>
<td>6th and 7th</td>
<td>Biology</td>
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<tr>
<td>1/23/2014</td>
<td>Fowler</td>
<td>Parada</td>
<td>1st and 2nd</td>
<td>Arch. Const.</td>
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<tr>
<td></td>
<td>Cowen</td>
<td>4th and 6th</td>
<td>Physics</td>
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<td></td>
<td>Terak-Daas</td>
<td>3rd and 7th</td>
<td>Art I</td>
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<td>Kinney</td>
<td>Korn</td>
<td>1st and 4th</td>
<td>Math Models</td>
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<td>Clardy</td>
<td>2nd and 3rd</td>
<td>W Geo/US</td>
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<td></td>
<td>Alexander</td>
<td>5th and 7th</td>
<td>Nutrition/Fam. CS</td>
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<tr>
<td></td>
<td>Kinney</td>
<td>Workman</td>
<td>1st and 2nd</td>
<td>Alg.</td>
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Short Answer Responses Focus
Do Now: Short answer- 15 minutes
1. Immediate teacher feedback: hovering- during Do Now
2. Peer editing: teacher MUST continue to hover- 10 minutes
3. Revise/Edit and Rewrites: Teacher facilitates- 10-15 minutes
Make Literacy and Content Work a part of the School-wide Calendar

**Disciplinary Literacy**  
**February 2014**

<table>
<thead>
<tr>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
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<td>7</td>
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</table>
| 9   |     |     |     |     | **Waiver Day**  
Disciplinary Literacy Planning | 8   |
|     | 10  | 11  | 12  | 13  | 14  | 15  |
| Reading—minimum of twice per week  
Writing—minimum of twice per week | 16  | 17  | 18  | 19  | 20  | 21  |
|     | 17  | 18  | 19  |     |     | 22  |
| DL Coaches meet to plan reading and essay with teachers | DL Coaches meet to plan reading and essay with teachers | DL Coaches meet to plan reading and essay with teachers | **Learning Walk**  
Disciplinary Literacy Focus—Reading |     |
|     | 23  | 24  | 25  | 26  | 27  | 28  |
| Reading—minimum of twice per week  
Writing—minimum of twice per week |     |     |     | **Faculty Meeting**  
Study student work—Essays |     |     |
|     |     |     |     |     |     | **End of 4th 6 weeks**  
Think about group reading—groups chart information and conduct a Gallery Walk |
Contact Information

Yassmin Lee, Principal
Diamond Hill-Jarvis High School
Yassmin.Lee@fwisd.org
817-815-0010
Wrap Up, Discussion

- Final Questions
- Next steps in your classroom or school?