USING THE RTI PROCESS IN MATHEMATICS

Dr. Erica Lembke
University of Missouri
lembkee@missouri.edu

Yassmin Lee, Principal
Diamond Hill-Jarvis High School
Yassmin.Lee@fwisd.org

Overview

RTI in mathematics—how does it look?

Overview of Curriculum-Based Measurement (CBM) in mathematics

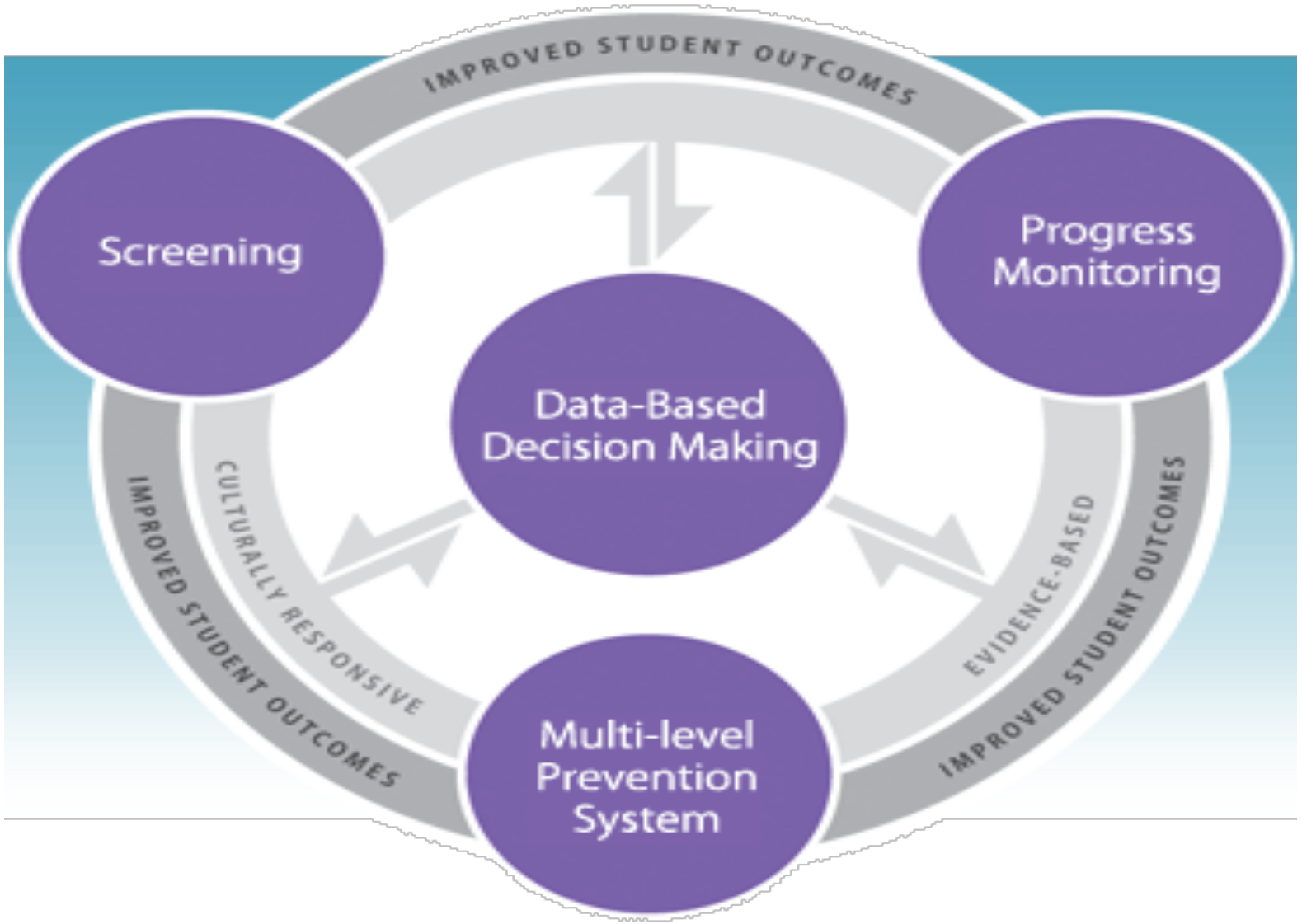
Connecting pieces of assessment

Evidence-based interventions in mathematics

Strengthening Core Instruction in Math and Deepening Content Knowledge– Disciplinary Literacy

Many slides taken or adapted from the National Center on Student Progress Monitoring, www.student.progress.org

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?

Basic steps in the RTI process

#2—Schoolwide screening/benchmarking

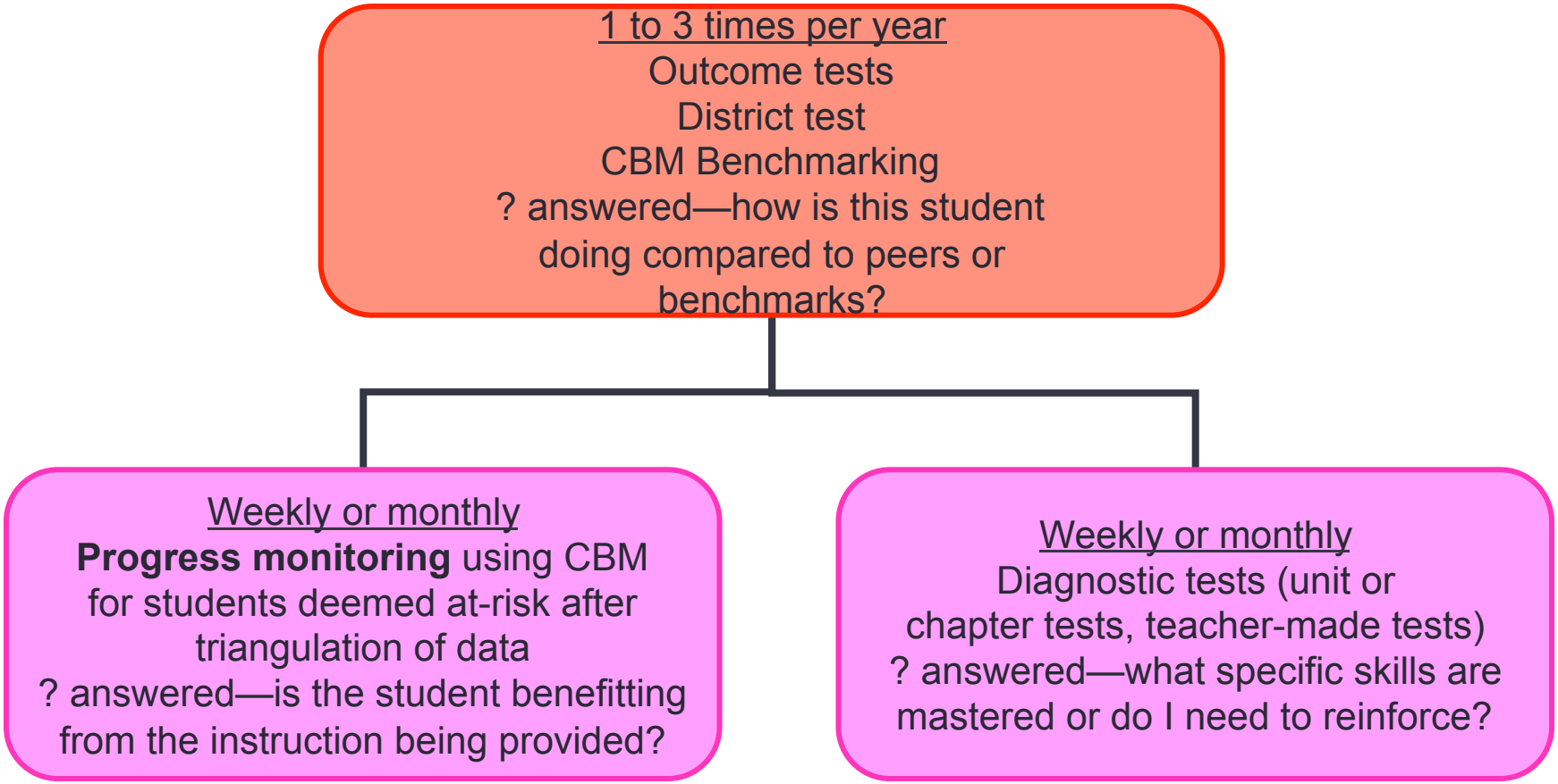
- All students screened (3 times per year is most prevalent) to determine which students are suspected to be at risk.
- I would suggest a Curriculum-Based Measurement (CBM) tool. More about this in a minute…
- These CBM data systems give you one data source to help determine students that fall into Tiered 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.

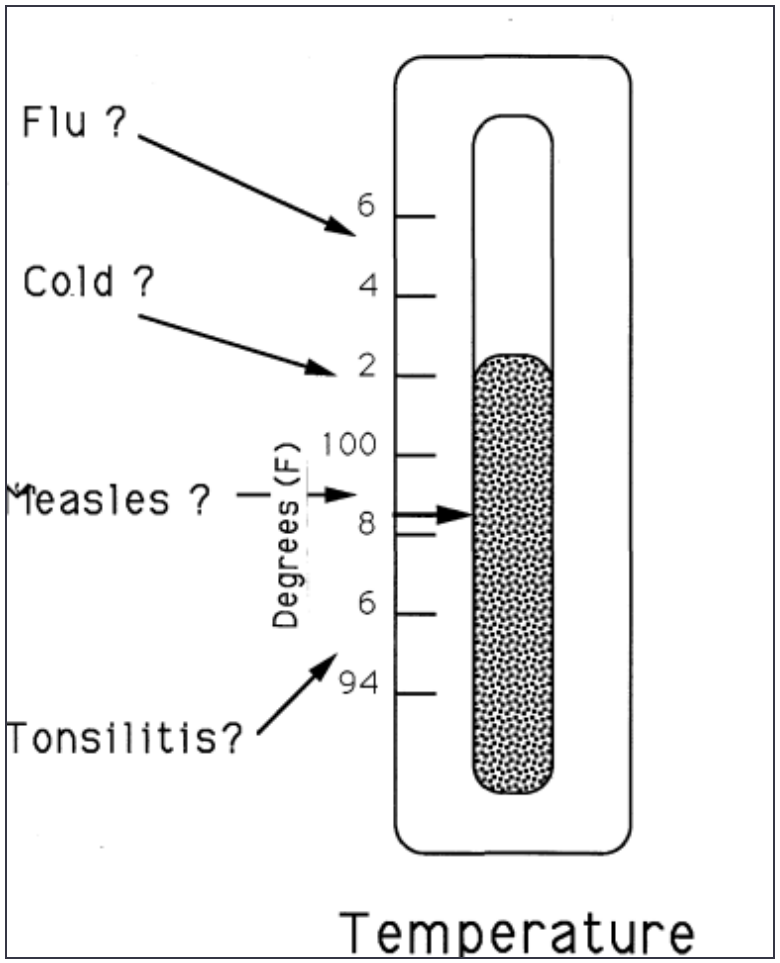
How do assessments fit together?

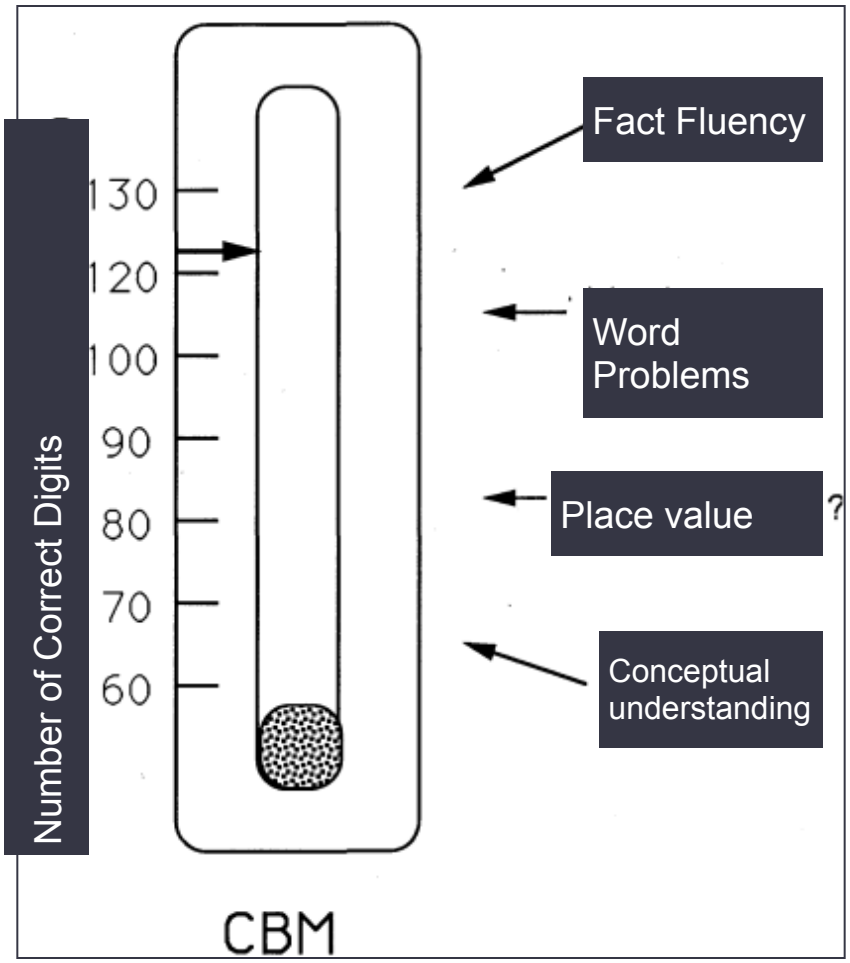


CBM—Overall Indicators

- 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





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

DIBELS math

	Beginning Quantity Discrimination	Number Identification	Next Number Fluency	Advanced Quantity Discrimination	Missing Number Fluency	Computation
K						
1st						
2nd						
3rd						
4th						
5th						

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

Problems	Skill Assessed
1, 8, 21, 25	Add a three-digit and a two- or three-digit number, without renaming.
7, 12, 17, 23	Add three one- or two-digit numbers, without renaming.
4, 10, 16	Add two two-digit numbers, with renaming from ones to tens.
3, 11, 19, 22	Add a three-digit and a two- or three-digit number, with renaming from ones to tens.
X, X, 18	Subtract a one- or two-digit number from a two-digit number, with renaming.
X, X, 15	Subtract a one-, two-, or three-digit number from a three-digit number, with renaming from tens to ones.
5, 14, 20, 24	Multiply a one-digit number by a one-digit number, resulting in a product of 20 or less.

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

AIMSweb®

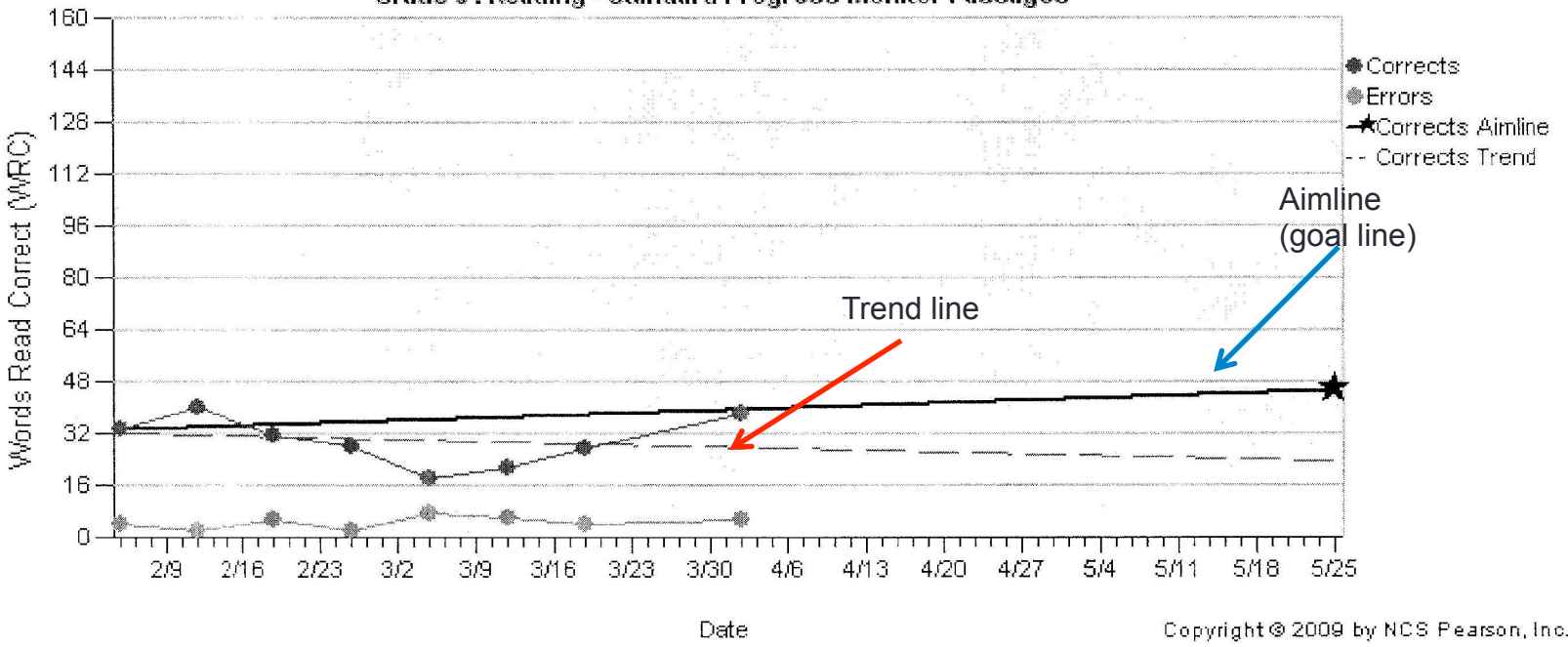
Year: 2008-2009

Progress Monitoring Improvement Report for Sharpay Evans

from 02/04/2009 to 05/25/2009

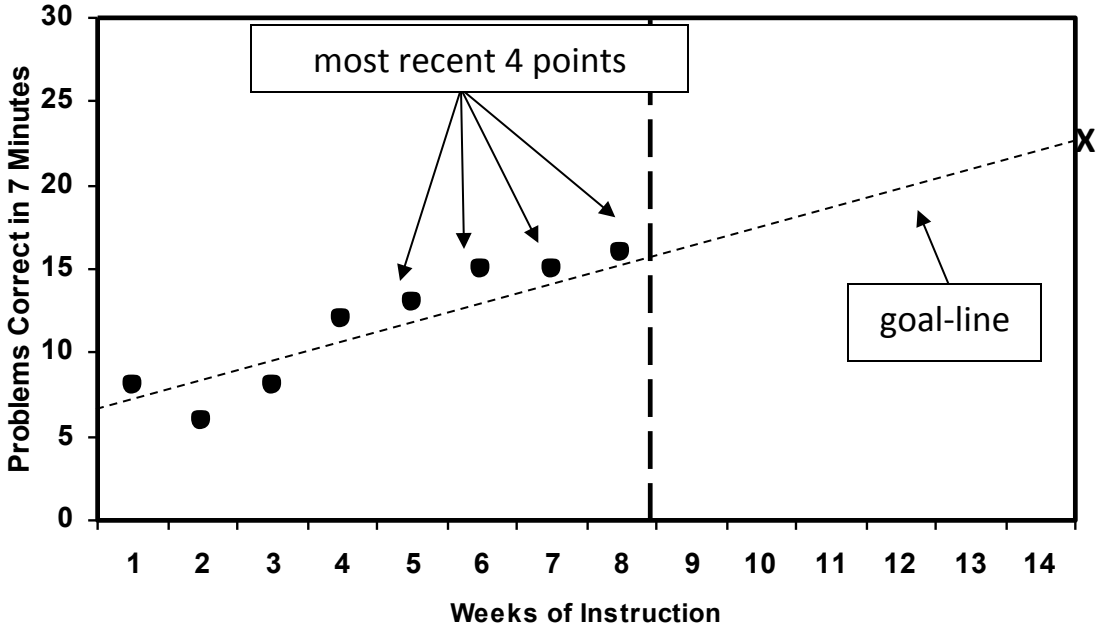
Sharpay Evans (Grade 7)

Grade 3 : Reading - Standard Progress Monitor Passages

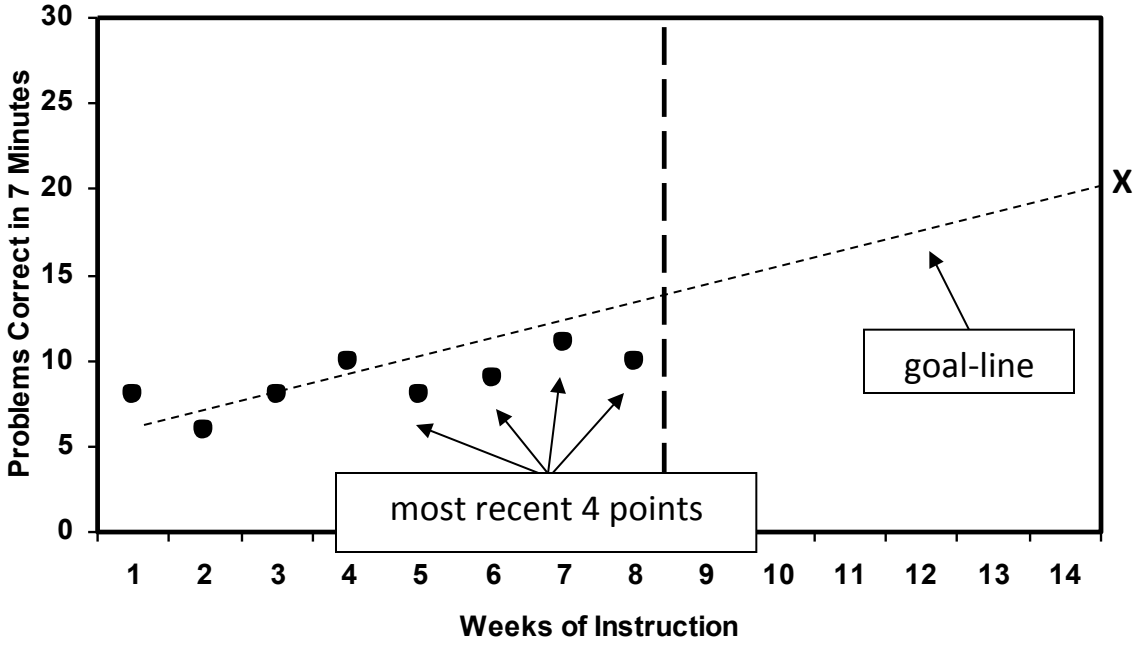


25

Four-Point Method



Four-Point Method



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 I	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

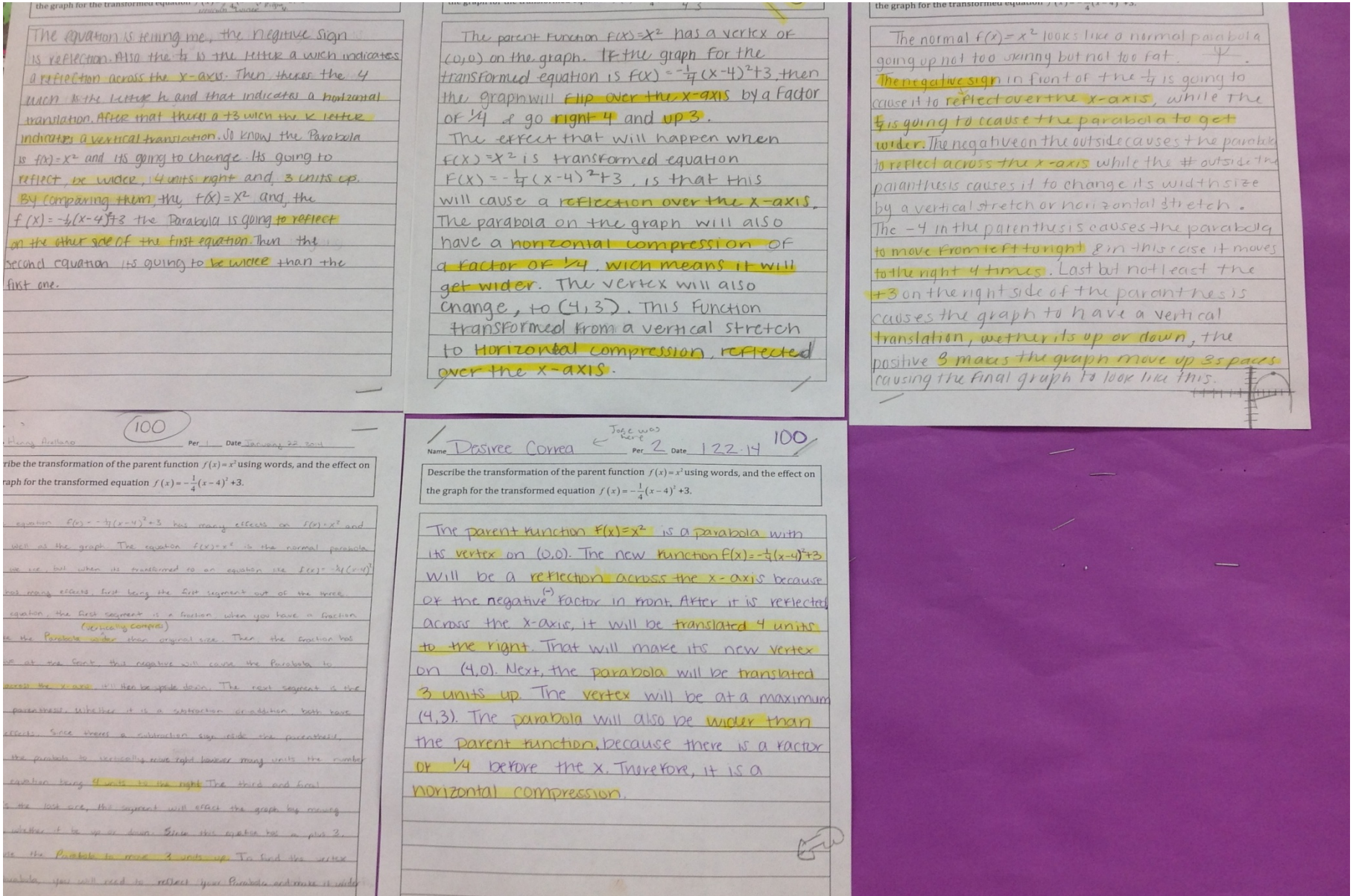
Tier I – Working on Strengthening Core Instruction and Deepening Content Knowledge – Disciplinary Literacy

- 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 equation is telling me, the negative sign is reflection. Also the 1/4 is the letter a which indicates a reflection across the x-axis. Then there's the 4 which is the letter h and that indicates a horizontal translation. After that there's a +3 which the k letter indicates a vertical translation. So know the Parabola is $f(x)=x^2$ and its going to change. Its going to reflect, be wider, 4 units right and 3 units up. By comparing them, the $f(x)=x^2$ and, the $f(x)=-\frac{1}{4}(x-4)^2+3$ the Parabola is going to reflect on the other side of the first equation. Then the second equation its going to be wider than the first one.

The parent function $F(x)=x^2$ has a vertex of (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 flip over the x-axis by a factor of 1/4 & go right 4 and up 3. 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 of a factor of 1/4, 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 skinny but not too fat. The negative sign in front of the 1/4 is going to cause it to reflect over the x-axis, while the 1/4 is going to cause the parabola to get wider. The negative on the outside causes the parabola to reflect across the x-axis while the # outside the parenthesis causes it to change its width size by a vertical stretch or horizontal stretch. The -4 in the parenthesis causes the parabola to move from left to right & in this case it moves to the right 4 times. Last but not least the +3 on the right side of the parenthesis causes the graph to have a vertical translation, wether its up or down, the positive 3 makes the graph move up 3 spaces causing the final graph to look like this.

100

Per 1 Date January 22 2014

ribe the transformation of the parent function $f(x)=x^2$ using words, and the effect on raph for the transformed equation $f(x)=-\frac{1}{4}(x-4)^2+3$.

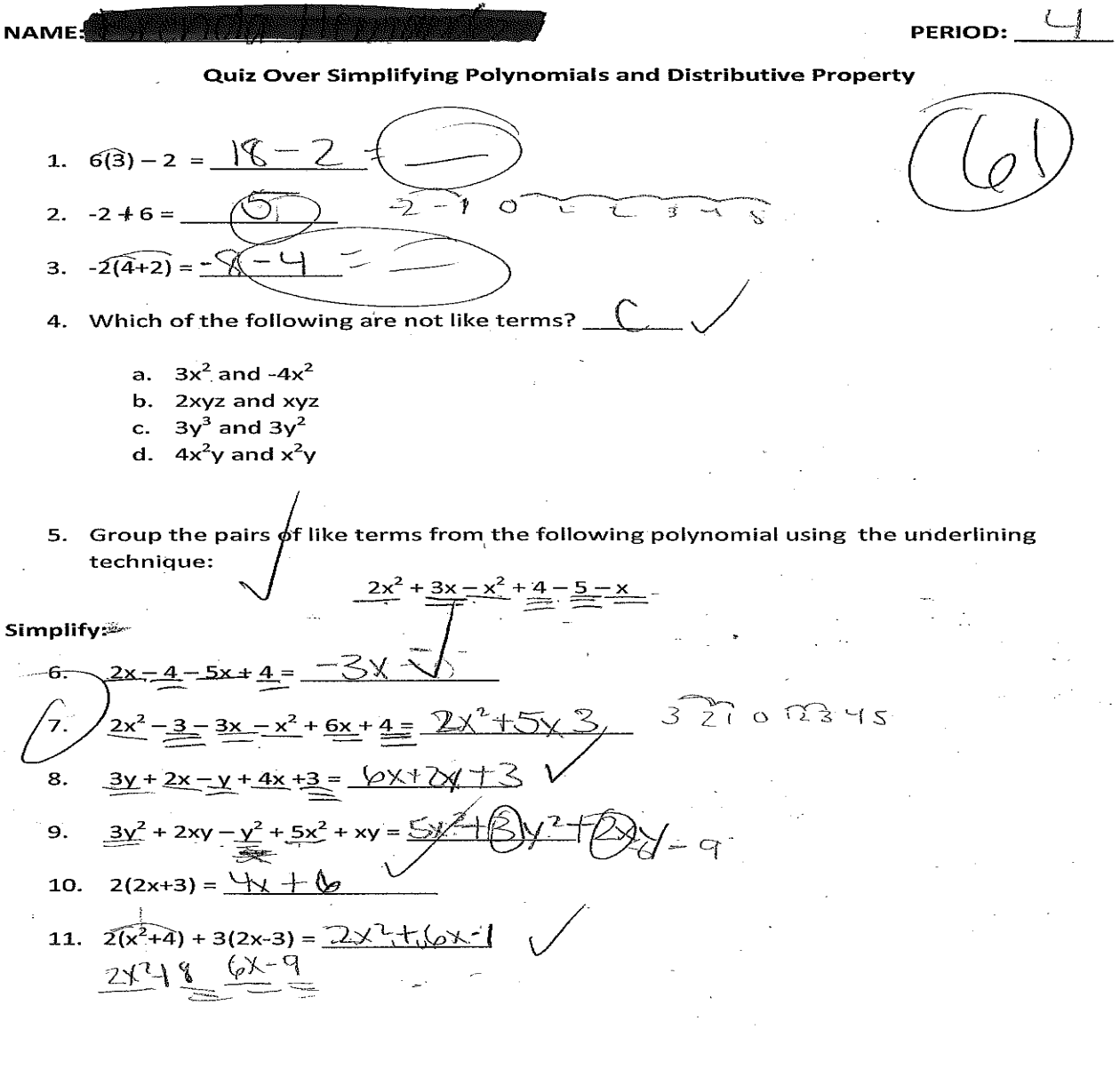
equation $F(x)=-\frac{1}{4}(x-4)^2+3$ has many effects on $F(x)=x^2$ and well as the graph. The equation $F(x)=x^2$ is the normal parabola we've, but when its transferred to an equation like $F(x)=\frac{1}{4}(x-4)^2$ has many effects, first being the first segment out of the three, equation, the first segment is a fraction when you have a fraction (vertically compress) the Parabola wider than original size. Then the fraction has ve at the front, that negative will cause the Parabola to across the x-axis, it'll then be upside down. The next segment is the parenthesis, whether it is a subtraction or addition both have effects. Since there's a subtraction sign inside the parenthesis, the parabola is vertically move right however many units the number equation being 4 units to the right. The third and final is the last one, this segment will effect the graph by moving whether it be up or down. Since this equation has a plus 3, the Parabola to move 3 units up. To find the vertex parabola, you will need to reflect your Parabola and make it wider

Name Desiree Correa ← Jose was here Per 2 Date 1.22.14 100

Describe the transformation of the parent function $f(x)=x^2$ using words, and the effect on the graph for the transformed equation $f(x)=-\frac{1}{4}(x-4)^2+3$.

The parent function $F(x)=x^2$ is a parabola with its vertex on (0,0). The new function $f(x)=-\frac{1}{4}(x-4)^2+3$ will be a reflection across the x-axis because of the negative (-) factor in front. After it is reflected across the x-axis, it will be translated 4 units to the right. That will make its new vertex on (4,0). Next, the parabola will be translated 3 units up. The vertex will be at a maximum (4,3). The parabola will also be wider than the parent function, because there is a factor of 1/4 before the x. Therefore, it is a horizontal compression.

Samples of Student Work



NAME: [redacted] PERIOD: 4

Quiz Over Simplifying Polynomials and Distributive Property

61

1. $6(3) - 2 =$ 18 − 2 = 16
2. $-2 + 6 =$ 6
3. $-2(4+2) =$ −8 − 4 = −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. $2x^2 - 3 - 3x - x^2 + 6x + 4 =$ $2x^2+5x3$
8. $3y + 2x - y + 4x + 3 =$ $6x+2y+3$ ✓
9. $3y^2 + 2xy - y^2 + 5x^2 + xy =$ $5y^2+3y^2+2xy-9$
10. $2(2x+3) =$ 4x + 6
11. $2(x^2+4) + 3(2x-3) =$ $2x^2+6x-1$ ✓

    $2x^2+8$ $6x-9$

Short Answer Response

[redacted] Jan. 22, 2014

From the problem solving method "UNDER" used in class yesterday, which step did you find most helpful? Use the space below to plan your answer. Write your final answer in the box below.

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 get the problem.

3.5

NAME: [redacted] PERIOD: 4th

	4 - Outstanding	3 - Good	2 - Average	0 – Not Present
Answer	Student states the answer clearly.		Present but unclear.	Not present.
Prove	Student has multiple sentences explaining the way they used it in solving the problem.	Student has at least two sentences explaining the way they used it in solving the problem.	Student has some information about how they used it to solve the problem.	Not present.
Explain	Student fully explains how they found it helpful.	Student partially explains how they found it helpful.	There is something written but it is unclear.	Not present.
Following Instructions	Student wrote everything inside the box with at least 4 complete, grammatically correct sentences.	Student wrote everything inside the box with at least 4 complete sentences, but has grammatical errors.	Student either wrote outside the box or did not use 4 complete sentences minimum.	Not present.

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.

[redacted]

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? I like how she had her short answer nice and organized.

What is confusing about this short answer?

Nothing was confusing for me.

Short Answer Response

	4 - Outstanding	3 - Good	2 - Average	0 – Not Present
Answer	Student states the correct answer clearly.	Student states an answer but is incorrect.	Present but incorrect and unclear.	Not present.
Prove	Student has multiple sentences explaining all steps in solving the problem.	Student has at least two sentences explaining the steps.	Student has some information about how they solved the problem.	Not present.
Explain	Student explain how they plugged the solution back into the equation and checked.	Student just said they checked their answer.	There is something written but it is unclear.	Not present.
Following Instructions	Student wrote everything inside the box with at least 4 complete, grammatically correct sentences.	Student wrote everything inside the box with at least 4 complete sentences, but has grammatical errors.	Student either wrote outside the box or did not use 4 complete sentences minimum.	Not present.

4

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.

$$7x - 5 = -2x + 13$$
$$7x + 2x - 5 = -2x + 2x + 13$$
$$9x - 5 = 13$$
$$9x - 5 + 5 = 13 + 5$$
$$9x = 18$$
$$\frac{9x}{9} = \frac{18}{9}$$
$$x = 2$$

STAAR SHORT ANSWER READING QUESTIONS
EXAMPLE OF RESPONSE BOX

For the equation he worked on his answer was two. To check your answer you can plug in the two on the x's. You have to draw the line down the equal sign. Move all the x's to one side. Then you solve the equation More about the steps!

Literacy-rich Summaries of Math

Eagle Sheet 4-3 RECEIVED FEB 12 P.M.

Name [redacted] Period [redacted]

Due: 2-10

Show all your work!

1. Amy is choosing between two local internet service providers, Simple.com and Call.com. The graph shows the relationship between the total cost per month of each internet provider and the hours spent on-line.

Write equations for both internet service providers:

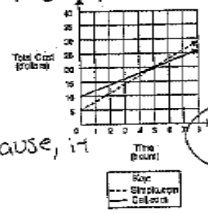
Simple.com: y=5+15/5x

Call.com: y=10+10/5x

What does the intersection mean? Where they payed the same amount of money

Which provider would be best for Amy if she is on-line about 7 hours a month? Explain.

Call.com because, it is cheper



2. The Future Teachers of America club sold cookies for $0.25 each and cupcakes for $0.50 each to raise money attend the state convention. If the club raised $24.75 from selling cookies and cupcakes during lunch time, find a reasonable combination of the number of cupcakes and cookies that were sold if 75 total items were sold?

Set up the system and solve using any method.

.25)24.75 = 99 = 72

Total Cookies: 72

Total Cupcakes: 3

3. Explain your reasoning and tell which inequality symbol you would use on these problems:

➢ What does it mean if a person can spend no more than $80 on groceries?

Meaning: 80 or less

Inequality symbol: ≤

➢ What does it mean if a person needs at least an 80 on her final test to past the course?

Meaning: 80 or more

Inequality symbol: ≥

4. Explain your reasoning and tell which inequality symbol you would use on these problems:

➢ What does it mean if a person wants to weigh at most 130 pounds?

Meaning: 130 or less

Inequality symbol: ≤

➢ What does it mean if a person ran more than 10 miles in a week?

Meaning: 10 or more

Inequality symbol: >

5. Anna makes hand-painted plates. Her overhead costs are $750 per week, and she pays an additional $10 per plate in material costs. If Anna sells the plates for $25 each, how many plates does she have to sell each week before she can make a profit?

50 or more plates

15p=750

6. Ms. Barton determined that the total cost of her wedding, c, could be represented by the equation c = 75a + 1500, where a is the number of people attending the wedding. If Ms. Barton's wedding cost $8625, how many people attended the wedding?

95 people

7. On Wednesdays an athlete's schedule allows no more than 75 minutes for morning training. One round of a strength routine, s, requires 8 minutes. One round of an endurance routine, e, requires 12 minutes. Which of these best represents the time available for the athlete to spend on strength and endurance routines on Wednesdays?

F $20(s+e) > 75$

G $8s = 75 - 12e$

H $8s + 12e \leq 75$

J $12e < 75 + 8s$

8. An oyster provides approximately 17 calories, and a shrimp provides approximately 26 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?

F $(17+26)(x+y) > 300$

G $(17+x)+(26+y) > 300$

H $(17+26)(x+y) \leq 300$

J $17x+26y \leq 300$

9. At a restaurant the cost for a breakfast taco and a small glass of milk is $2.10. The cost for 2 tacos and 3 small glasses of milk is $5.15. Which pair of equations can be used to determine t, the cost of a taco, and m, the cost of a small glass of milk?

A $t+m=2.10$, $2t+2m=5.15$

B $t+m=2.10$, $3t+3m=5.15$

C $t+m=2.10$, $3t+2m=5.15$

D $t+m=2.10$, $2t+3m=5.15$

10. At a college bookstore, Carla purchased a math textbook and a novel that cost a total of $54, not including tax. If the price of the math textbook, m, is $8 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?

F $m+n=8$, $m=3n+54$

G $m+n=8$, $m=3n-54$

H $m+n=54$, $m=3n+8$

J $m+n=54$, $m=3n-8$

11. At a firefighters' pancake breakfast, the firefighters served 345 people and raised $1395. If the cost of a, an adult's ticket to the pancake breakfast, was $5 and the cost of c, a child's ticket, was $3, what was the number of adult tickets sold?

Equations:

1395=5a+3c

Adult Tickets:

279

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

y=-3x+13

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

3x-y=-13

y=mx+b -y/-1 = -3x-13/-1

ax+by=c

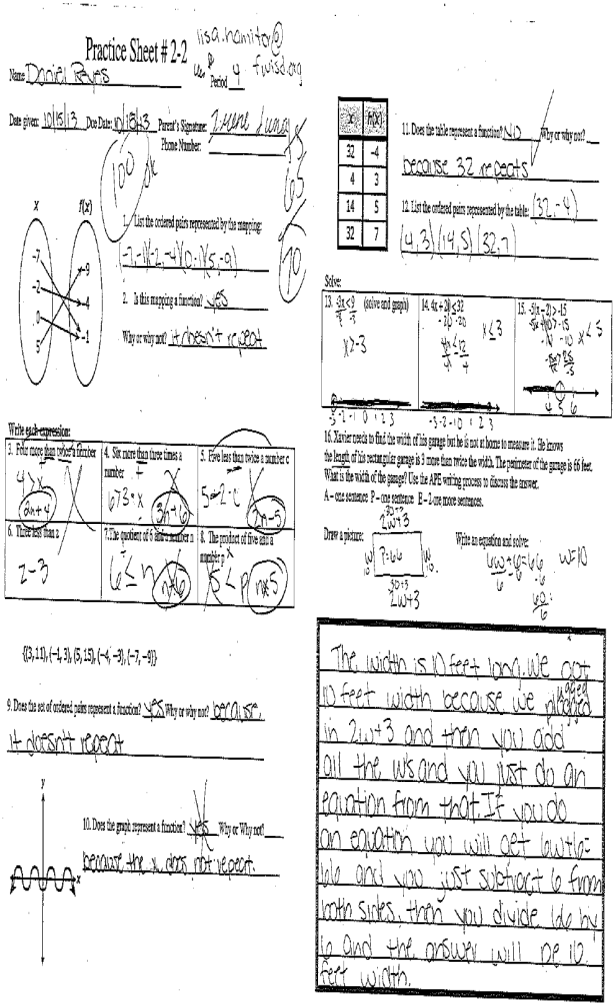
Parent Signature: [redacted]

Parent Phone number: _____

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

Coach Workman and Mrs. Hamiter

Literacy-based Practice in Math



Practice Sheet # 2-2

Name: Daniel Reyes

Period 4

Date given: 10/15/13 Due Date: 10/18/13 Parent's Signature:

Phone Number:

1. List the ordered pairs represented by the mapping: {-1, -4), (-2, -4), (0, -5), (5, -9)}

2. Is this mapping a function? yes

Why or why not? it doesn't repeat

x	f(x)
32	-4
4	3
14	5
32	7

11. Does the table represent a function? No Why or why not?

because 32 repeats

12. List the ordered pairs represented by the table: (32, -4) (4, 3) (14, 5) (32, 7)

Solve:

13. $\frac{3}{4}x < 3$ (solve and graph) $x > 3$

14. $4x + 2 \leq 32$, $-10 \quad -20$, $\frac{4x}{4} \leq \frac{12}{4}$, $x \leq 3$

15. $-5(x+2) > 15$, $-5x - 10 > 15$, $-10 \quad -10$, $\frac{-5x}{-5} > \frac{25}{-5}$, $x < 5$

Write each expression:

3. Peter more than robert's brother: $4x + 4$

4. Six more than three times a number: $3 \cdot x$, $3x + 6$

5. Five less than twice a number c: $5 - 2 \cdot c$, $2x - 5$

6. Three less than z: $z - 3$

7. The quotient of 6 and a number n: $6 \leq n$, $n \neq 6$

8. The product of five and a number p: $5 < p$, $p \neq 5$

16. Xavier needs to find the width of his garage but he is not at home to measure it. He knows the length of his rectangular garage is 3 more than twice the width. The perimeter of the garage is 66 feet. What is the width of the garage? Use the APE writing process to discuss the answer.

A – one sentence P – one sentence E – 2 or more sentences.

Draw a picture: $2w+3$, w, w, $2w+3$

Write an equation and solve: $2w + 3 + 2w + 3 = 66$, $4w + 6 = 66$, $-6 \quad -6$, $\frac{4w}{4} = \frac{60}{4}$, $w = 10$

The width is 10 feet long. We got 10 feet width because we plugged in 2w+3 and then you add all the ws and you just do an equation from that. If you do an equation you will get w while and you just subtract 6 from both sides. then you divide 4w by 4 and the answer will be 10 feet width.

{(3, 13), (-4, 3), (5, 15), (-4, -8), (-7, -9)}

9. Does the set of ordered pairs represent a function? yes Why or why not? because it doesn't repeat

10. Does the graph represent a function? yes Why or Why not?

because the x does not repeat.

Literacy Homework in Math

HOMEWORK

7. How many boxes of stuffed animals can be made with $5,000?

$5000 = 20n + 2300$

$-2300 \quad -2300$

$2700 = 20n$

$\frac{2700}{20} = \frac{20n}{20}$

$n = 135$ 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 it's $5000 = 20n + 2300, we need to find the "n". You have to subtract 5000 - 2300 because you have to pay 2300 automatically. After that you'll get 2,700. Now you can get the boxes with 2700. Then divide 2700 ÷ 20 = 135. 135 is how many boxes you can get.

STUDENTS MAY NOT WRITE OUTSIDE THE BOX

	4 - Outstanding	3 - Good	2 - Average	0 – Not Present
Answer	Student states the correct answer clearly.	Student states an answer but is incorrect.	Present but incorrect and unclear.	Not present.
Prove	Student has multiple sentences explaining all steps in solving the problem.	Student has at least two sentences explaining the steps.	Student has some information about how they solved the problem.	Not present.
Explain	Student explains how they plugged the solution back into the equation and checked.	Student just said they checked their answer.	There is something written but it is unclear.	Not present.
Following Instructions	Student wrote everything inside the box with at least 4 complete, grammatically correct sentences.	Student wrote everything inside the box with at least 4 complete sentences, but has grammatical errors.	Student either wrote outside the box or did not use 4 complete sentences minimum.	Not present.

Learning Walks in Content Areas

DHJ High School

Learning Walk Focus Teacher:	Learning Walk Focus Student:
1. Instruction Method Used	1. Work in response to instruction
2. Thinking Rigor Level	2. Work in response to Rigor
3. Questioning Techniques Used	3. Response to Question
4. What is done for Engagement	4. Observation of Engagement
5. Literacy task in the Content	5. Content-Learned as a result of Lit task

Walker's Observations

Teacher: _____ **Class Period:** _____ **Date:** _____

RIGOROUR INSTRUCTION	
What was the Instructional Method Used by the teacher? How did the students respond to the lesson?	
What was the Thinking Rigor Level obtained by the teacher? How did the students respond to the Rigor being required of them?	
What was the Questioning Technique used by the teacher? How did the students respond to the teacher's questioning?	
What was done in order to obtain student engagement? How were the students engaged in this lesson?	
DISCIPLINARY LITERACY	
How was the execution of the Literary Task used by the teacher in order to demonstrate deep-content knowledge?	What was observed to be the students' response and level of content-learned as a result of the Literary Task?

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 fors include – ACTUAL CONTENT WRITING that improves thinking, deep content knowledge
- Writing folders
- Answer – Prove – Explain (APEs)
- 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:

Low	
Medium	
High	

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:

Answer	
Proof	
Explanation	
Other issues	

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

Thesis statement	
Determining the main points to be discussed	
Elaboration on their main points	
Introduction	
Conclusion	
Other issues	

The Short Answer Response Strategy

The Short Answer APE 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 Rubric

Algebra II Essay Rubric

Circle the box that represents the student's work:

Short Essay

Category	3	2	1	0
Introduction	Information is restated and described using mathematical knowledge Vocabulary is defined	Information is restated and vocabulary is defined, but the information is not described using mathematical knowledge	Information is restated only	Does not describe the prompt at all
Proof and Explanation	A(3 proofs), h(2 proofs and K(2 proofs) are stated with explanations and math terminolgy	A(3 proofs), h(2 proofs and K(2 proofs) are stated with exp lanations but without math terminology	A(3 proofs), h(2 proofs and K(2 proofs) are stated with no explanations of transformations	a, h and k are not stated/ explanation does not comply with the prompt (talked about something else)
Conclusion	Answer is stated in terms of the question and is explained	State answer in terms of the question but has no explanation	The answer is stated but not in terms of the question	Answer is not stated
Spelling & Grammer (CUPS- Capitalization, Usage, Punctuation, Spelling)	Every sentence correctly uses capitalization, punctuation and spelling.	One sentence contains a misuse of capitalization, punctuation, or spelling.	Two sentences contain a misuse of capitalization, punctuation, or spelling.	Three or more sentences conatin a misuse of capitalization, punctuation, or spelling.

Math Short Essay Response

Name_____ Per_____ Date_____

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

4th Six Weeks Goals: To use reading strategies effective for your students and improve quality of writing.	5th Six Weeks Goals: To use reading strategies effective for your students and improve quality of writing utilizing critical thinking.	6th Six Weeks Goals: To use reading strategies effective for your students to deepen reading, thinking, and writing skills in order to create high quality, critical writing.
Reading: 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.	**Reading:** 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.	**Reading:** 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: Continue Reading Assessments via **Short Answer Responses- One every two weeks.** **Produce one essay by the end of the 6 weeks.** Essays are at least 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.	**Writing:** Continue Reading Assessments via **Short Answer Responses- One every two weeks.** **Produce one essay by the end of the 6 weeks** focus on cognitive verbs and discipline specific vocabulary **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.	**Writing:** Continue Reading Assessments via **Short Answer Responses- One every two weeks.** **Produce one essay by the end of the 6 weeks.** The students must include cognitive verbs and discipline specific vocabulary **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

	Each 6 weeks	As the Semester Progresses:
GOALS	**EACH WEEK:** To utilize **one specific reading analysis** strategy- **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.	To further enhance student's reading, thinking, and writing skills
READING	• Use **Say, Mean, Matter Reading Strategy** a minimum of **ONCE PER WEEK** in all classes. • **Reading Options:** - **Read and complete Graphic Organizer for Homework**- peer grade as Do Now for homework accountability - **Read for homework and fill in Graphic Organizer for Do Now the following day** - **Read and complete Graphic Organizer in Class**- independent or small group - **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) ***Each Graphic Organizer will be graded and kept in their Writing/Reading folders*	• Strengthen the Say, Mean, Matter reading strategy • Develop Discipline Specific Reading Strategies and Graphic Organizers with the assistance of each department • Test the Discipline Specific Reading Strategies toward the end of the semester
WRITING	* Students will write a minimum of **ONCE PER WEEK** in all classes. * By the end of **EACH** 6 weeks, every student will produce: 1. Two short answer responses and 1 essay **or** 2. Two essays and one short answer response. **Essays are at least 26 lines- they can be longer** *** Writing Process:** - Students must revisit their writing to revise/edit and rewrite for higher quality products 1-Write a short answer/essay for homework or in class, 2- Have students peer grade for Do Now (if it was homework) or at the end of class 3- Students can revise/edit and rewrite during class or for homework, 4- 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 **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)** **It is crucial you time everything that is done in class:** **- short answer writing- 10-15 min. - short answer peer grading- 5 min. - short answer revise/edit/ rewrite- 15 min.** **- essay writing- ONE class period - essay peer grading- 10-15 minutes - essay revise/edit and rewrite- 20 minutes**	- Focus on improved quality due to **refined analysis skills, increased rigor, and higher level of assessment.** - Student created rubrics

Create Literacy and Content Teams

The coach will model teach the first class and observe/give feedback to the teacher from the second class.			
	22-Jan-14		
Coach	**Teacher**	**Class Periods**	**Class**
Briese	Drake	1st and 2nd	Alg. II
	Englehart	4th and 7th	Geom/H. Geom.
	Richardson	5th and 6th	H. Alg. II
Fowler	Castillo	1st and 2nd	H. Pre Cal
	Lara	3rd and 5th	Theory/M. Hist.
	Russell	4th and 7th	AP Eco.
Kuhl	Quear	1st and 2nd	AVTC
	Wright	3rd and 4th	H. Chem.
	Hill	5th and 6th	Money/Hum. Serv.
Nakamoto	Hawkins	1st and 3rd	W. Geo/ H. W. Geo
	Crouse	4th and 5th	W. Geo
	Hamiter	6th and 7th	Alg. I
Rodriguez	Tritten	2nd and 3rd	Chemistry
	Sanders	4th and 5th	BIM
	Basdeo	6th and 7th	Physics
Kinney	Hubble	1st and 5th	Eco
	Barger	2nd and 3rd	Biology
	Tatum	6th and 7th	Biology
	1/23/2014		
Fowler	Parada	1st and 2nd	Arch. Const.
	Cowen	4th and 6th	Physics
	Tezak-Daus	3rd and 7th	Art I

Kinney	Korn	1st and 4th	Math Models
	Clardy	2nd and 3rd	W Geo/US
	Alexander	5th and 7th	Nutrition/Fam. CS

	1.24.2014		
Kinney	Workman	1st and 2nd	Alg.

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

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7 **Waiver Day** Disciplinary Literacy Planning	8 **Think about using Quickwrites as a Do Now and a Ticket Out of The Door**
9 Reading– minimum of twice per week Writing– minimum of twice per week	10	11	12	13 **Learning Walk** Disciplinary Literacy Focus– Reading	14	15 **Think about having the students critically read the information– not you creating a Powerpoint over it**
16 Reading– minimum of twice per week Writing– minimum of twice per week	17 DL Coaches meet to plan reading and essay with teachers	18 DL Coaches meet to plan reading and essay with teachers	19 DL Coaches meet to plan reading and essay with teachers	20	21	22 **Think about adding short answers and/or essays to your tests**
23 Reading– minimum of twice per week Writing– minimum of twice per week	24	25	26 **Faculty Meeting** Study student work– Essays	27	28 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?