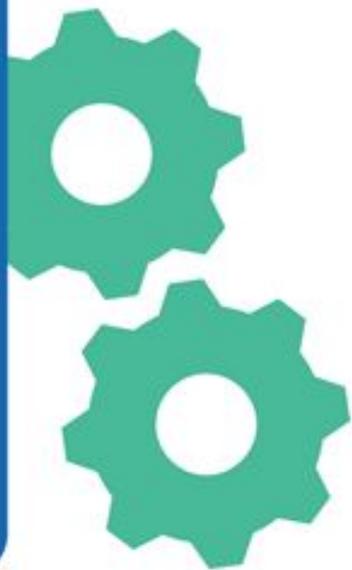
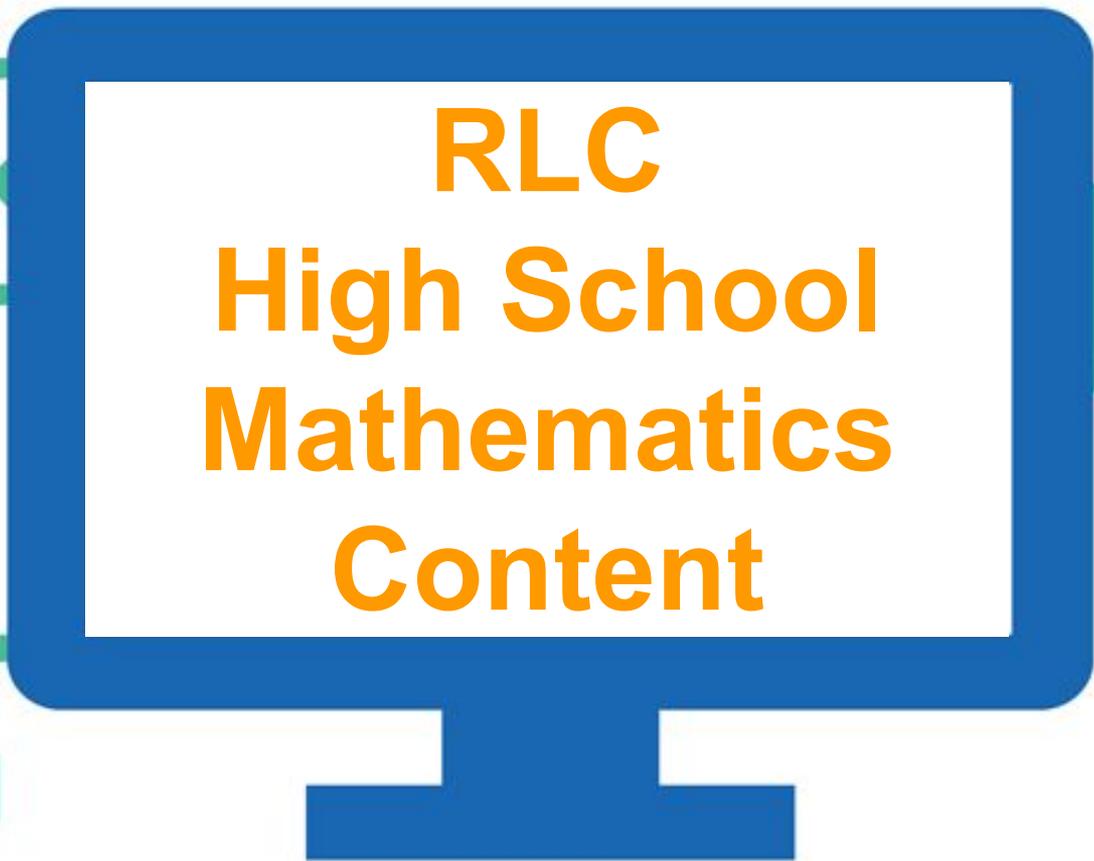
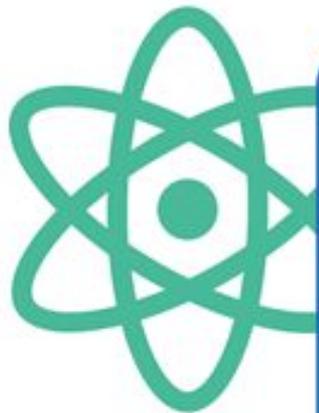


RLC

Remote Learning Chats





RLC

High School Mathematics Content

Today's Amazing Line-Up

Iesha Clarke

Gwinnett County Public Schools,
Mathematics Instructional Specialist



Lisa Pizzuto

Fulton County Schools
Fulton Virtual School, Teacher



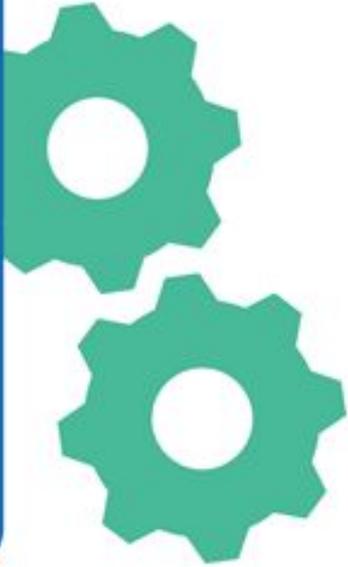
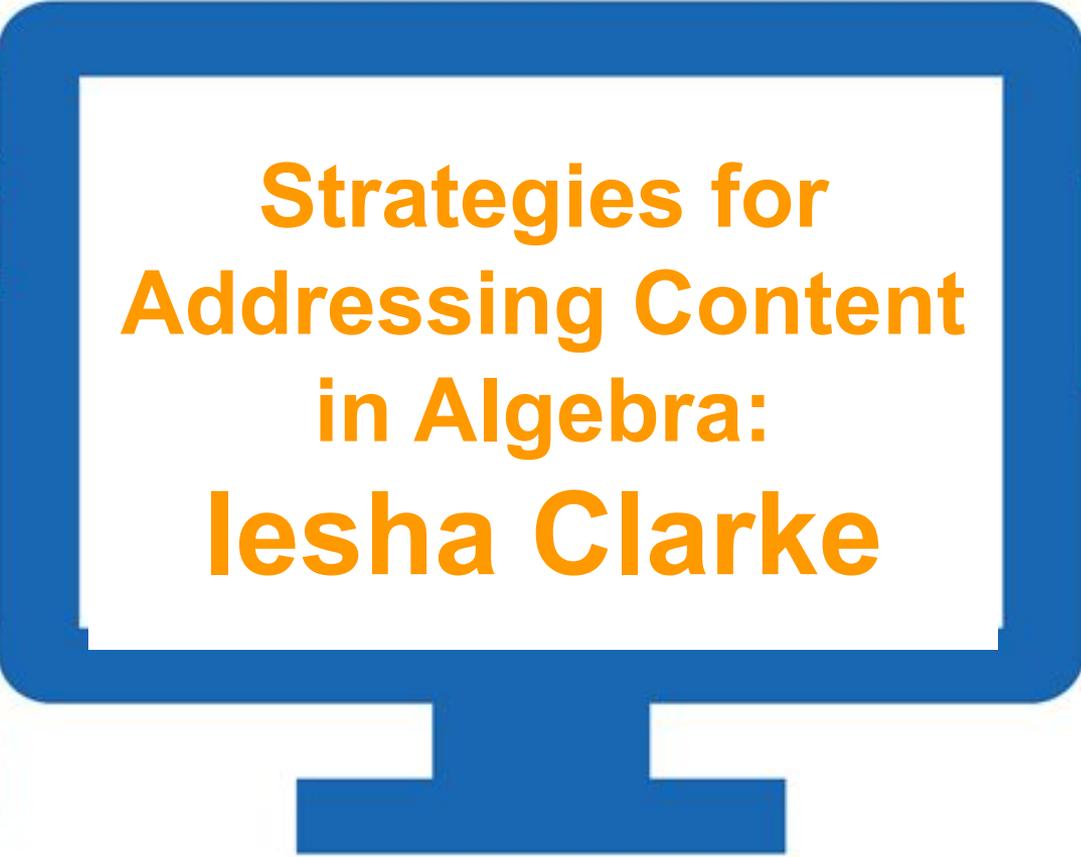
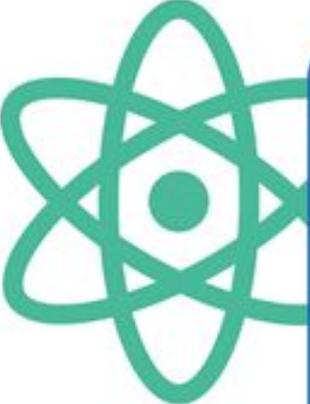
Laura Harms

Henry County Schools
Impact Academy, Teacher



Karla Cwetna, PhD

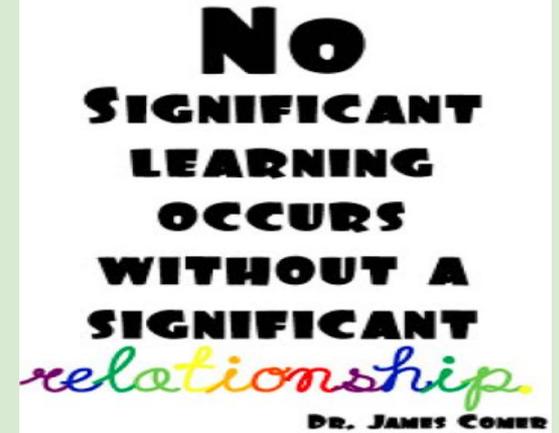
Fulton County Schools
Fulton Virtual School, Teacher



Strategies for Addressing Content in Algebra: Ilesha Clarke

Algebra/Coordinate Algebra

Beginning of the School Year



- Establish norms with students. Students should be active participants in creating the norms.
- Start building a relationship with your students from the first day. Be sincere, students know when teachers are just going through the motions.
- Assume goodwill with your students. It's no secret that this school year will be very different from others due to pandemic. Some students have experienced loss, illness, pain and may still be dealing with some issues at the beginning of the school year.

Algebra / Coordinate Algebra

Formative Assessments:

A process	A one-time thing
Planned	Unplanned
Using evidence to make instructional adjustments and/or verifying learning	Moving on or spending more time on a topic regardless of evidence
Involves giving specific student feedback that is turned into student action	Grading

- frequently assess students' learning in a variety of ways.
- use assessment information to differentiate instruction, provide timely and useful feedback, and guide students to monitor and reflect on their own progress towards mastery.
- monitor and reflect on academic progress as a part of learning.
- act on feedback to demonstrate learning of the standards.

Algebra / Coordinate Algebra

Formative Assessments Examples

- Exit/Admit Tickets
- 1 Minute Paper
- Justified List
- Error Analysis
- Agree/Disagree
- Card Sort



Name:

Which functions below are linear?

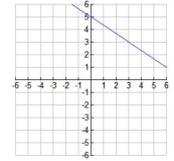
Circle all the examples below that are linear functions.

A.

x	2	3	4
y	4	9	16

B. $5x - y = 2$

C.



D.

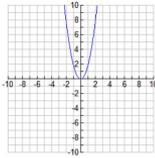
x	10	20	30
y	4	7	10

E.

(3, -1), (6, -5), & (9, -9)

F. $y = 5x^3 + 4$

G.



H. $y = \sqrt{x}$

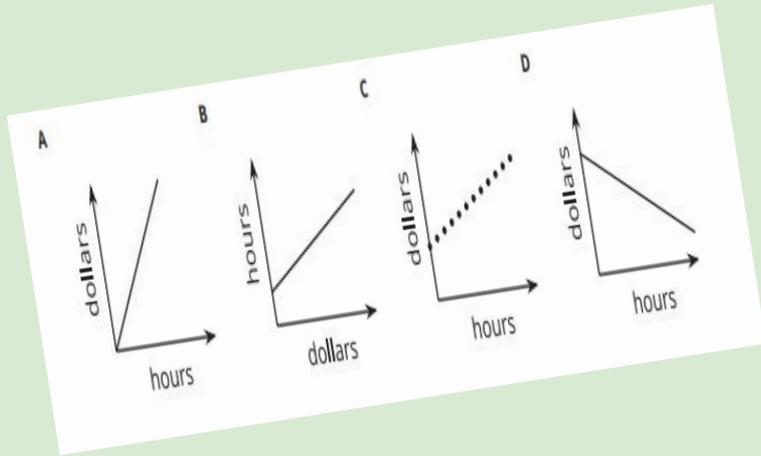
I.

(0, 5), (1, 7) & (2, 10)

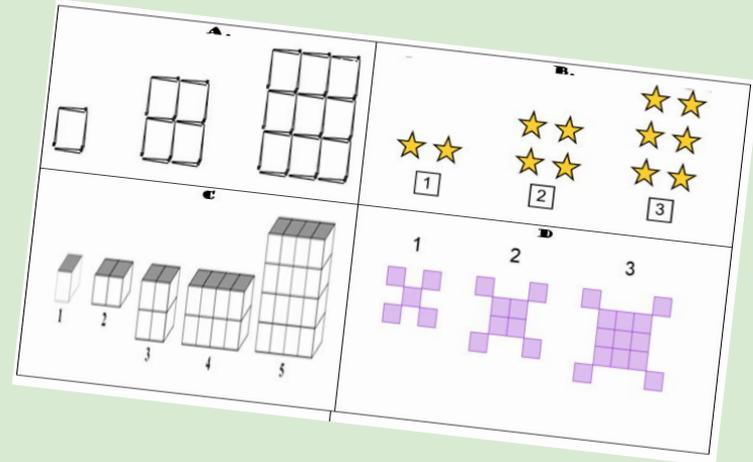
Explain why each function you circled is a linear function.

Admin/Exit Tickets

What do you notice? What do you wonder?



Which One Doesn't Belong? Why?



Some resources for distance learning: Discussion boards google forms,, www.padlet.com, www.flipgrid.com, www.nearpod.com

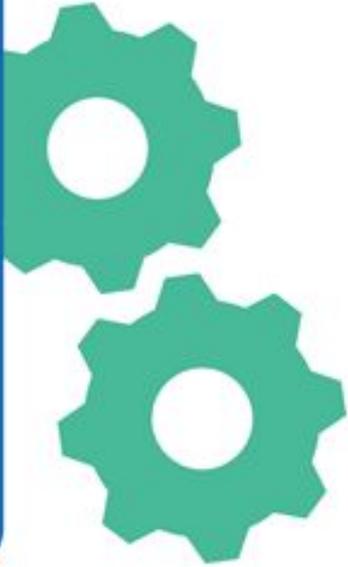
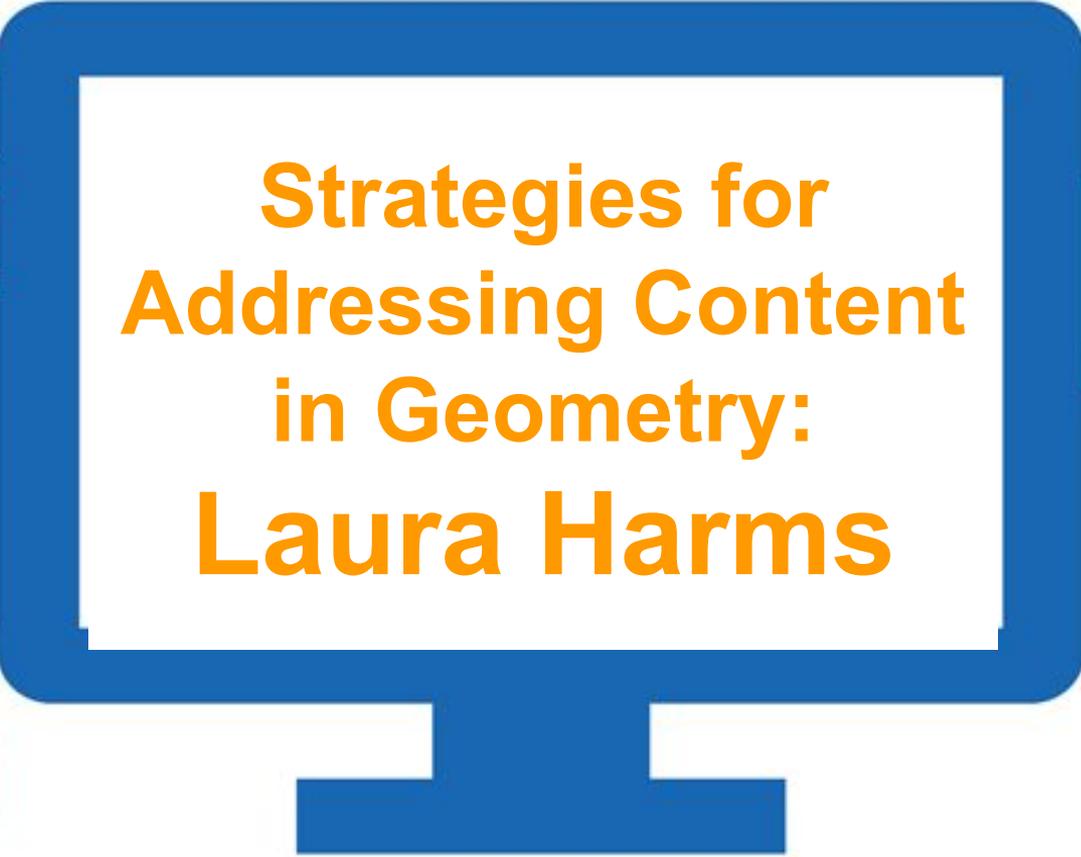
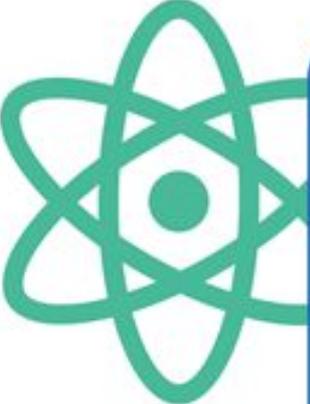
Card Sort

Premade teacher activities: www.teacher.desmos.com

An example of a digital card sort:

<https://teacher.desmos.com/activitybuilder/custom/579b87d30a4f3e3512892937>

Linear Function	Quadratic Function	Exponential Function																				
A. A savings account, which earns no interest, receives a deposit of \$723 per month.	B. <table border="1" data-bbox="1522 408 1684 482"><thead><tr><th>x</th><th>1</th><th>2</th><th>3</th><th>4</th></tr></thead><tbody><tr><td>y</td><td>6</td><td>9</td><td>12</td><td>15</td></tr></tbody></table>	x	1	2	3	4	y	6	9	12	15	C. <table border="1" data-bbox="1746 380 1862 521"><thead><tr><th>x</th><th>g(x)</th></tr></thead><tbody><tr><td>2</td><td>9</td></tr><tr><td>3</td><td>14</td></tr><tr><td>4</td><td>21</td></tr><tr><td>5</td><td>30</td></tr></tbody></table>	x	g(x)	2	9	3	14	4	21	5	30
x	1	2	3	4																		
y	6	9	12	15																		
x	g(x)																					
2	9																					
3	14																					
4	21																					
5	30																					
D. <table border="1" data-bbox="1344 570 1460 711"><thead><tr><th>x</th><th>f(x)</th></tr></thead><tbody><tr><td>1</td><td>7</td></tr><tr><td>2</td><td>14</td></tr><tr><td>3</td><td>28</td></tr><tr><td>4</td><td>56</td></tr></tbody></table>	x	f(x)	1	7	2	14	3	28	4	56	E. The value of a machine depreciates by 17% per year.	F. <table border="1" data-bbox="1715 604 1889 679"><thead><tr><th>h(x)</th><th>1</th><th>2</th><th>3</th><th>4</th></tr></thead><tbody><tr><td>y</td><td>56</td><td>28</td><td>14</td><td>7</td></tr></tbody></table>	h(x)	1	2	3	4	y	56	28	14	7
x	f(x)																					
1	7																					
2	14																					
3	28																					
4	56																					
h(x)	1	2	3	4																		
y	56	28	14	7																		
G. Each week, $\frac{9}{10}$ of a radioactive substance remains from the beginning of the week.	H. <table border="1" data-bbox="1541 762 1657 904"><thead><tr><th>x</th><th>y</th></tr></thead><tbody><tr><td>2</td><td>4</td></tr><tr><td>4</td><td>16</td></tr><tr><td>6</td><td>36</td></tr><tr><td>8</td><td>64</td></tr></tbody></table>	x	y	2	4	4	16	6	36	8	64	I. A liter of water evaporates from a swimming pool every day.										
x	y																					
2	4																					
4	16																					
6	36																					
8	64																					



Strategies for Addressing Content in Geometry: Laura Harms



Resources to Start the School Year

1. Video Introduction
2. [Flipgrid.com](https://www.flipgrid.com)
3. [Linoit.com](https://linoit.com) or an online bulletin board
4. Google Form Survey

Geometry is Special. It is all around

Find ways to let students use their talents, strengths, and hobbies in geometry.

1. Photography
2. Draw pictures with certain specifications
3. Building Google Slides





Essential Skills for Unit 1

- Plotting Points
- Congruence/Correspondence
- Recognizing Line and Rotational Symmetry
- Area and Perimeter
- Concepts of Ratios
- Solving Equations (Continuous)



Let's talk about Essential Skills

Ideas for Assessing Essential Skills:

1. Look up essential skills needed for each unit on DOE webpage
2. You assessment of your choice to measure success with these.
3. Measure 2-3 at a time
4. Keep it Simple/ Quizizz.com
5. Always assess students ability to solve equations.

Next steps for filling in the Gaps:

1. Bootcamp with mini live lessons on Fridays.
2. Offer Incentive Points when students attend and practice
3. Use delta math or Khan Academy for student practice.

Great Resource:

 Shared Content

► **Subject**

- Language Arts
- Math
- Middle School
- Science
- Social Studies
- World Language
- CTAE/Effectives
- Fine Arts
- Student/Teacher Resources

Report Error in Course

► **Courses**

-   Mathematics of Finance (Updated '19)
-   AP Calculus AB
-   AP Calculus BC
-   GSE Coordinate Algebra
-   GSE Algebra I
-   GSE Analytic Geometry
-   GSE Geometry
-   GSE Advanced Algebra

Shared Content Terms of Use



[New Microcourse on Digital Learning Days!](#)



Just in Time for Teachers: Digital Learning Days Course ([click here](#)) will introduce digital learning basics and will assist in planning for digital learning days. As Georgia's trusted partner for innovative digital learning experiences, emphasizing skills to prepare students for success in the global world, this course will share critical best practices, tools and knowledge based on 15 years of virtual education experience at Georgia Virtual to assist educators who are planning for and transitioning to an online format to support digital learning days.

[GaVirtual Learning's Effective Online Teaching Course](#)

The Effective Online Teaching Course ([click here](#)) from Georgia Virtual is thorough, and the material is focused on the basic skills necessary to be an effective online instructor. Topics include aspects of participation and communication in an online learning environment, development of savvy navigation and evaluation skills online, and the creation of learning content and opportunities for students.

OER Terms of Use

OER Content Terms of Use [Click Here](#)



Module Title

Module Title	Index
Transformations in the Coordinate Plane	View
Similarity, Congruence, and Proofs Part One: Dilations and Similarity	View
Similarity, Congruence, and Proofs Part Two: Congruence and Proofs	View
Right Triangle Trigonometry	View
Circles and Volume Part One: Angles, Arcs, and Segments	View
Circles and Volume Part Two: Arc Length, Sector Area, and Volume	View
Geometric and Algebraic Connections Part One: Lines, Segments, and Shapes in the Coordinate Plane	View
Geometric and Algebraic Connections Part Two: Modeling with Geometry	View
Applications of Probability	View

Standards: [Click Here](#)

[http://www.gavirtualllearning.org/Resources/SharedMath1\(MathCopy\).aspx](http://www.gavirtualllearning.org/Resources/SharedMath1(MathCopy).aspx)

Remote Learning May Require Additional Skills:

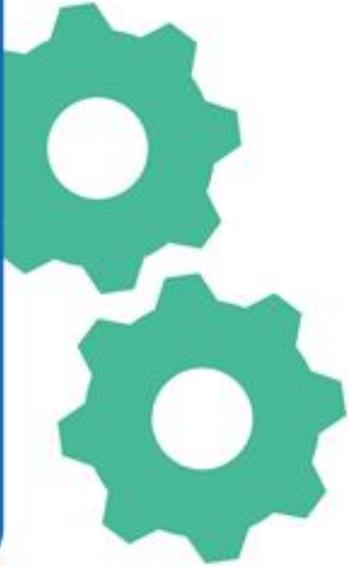
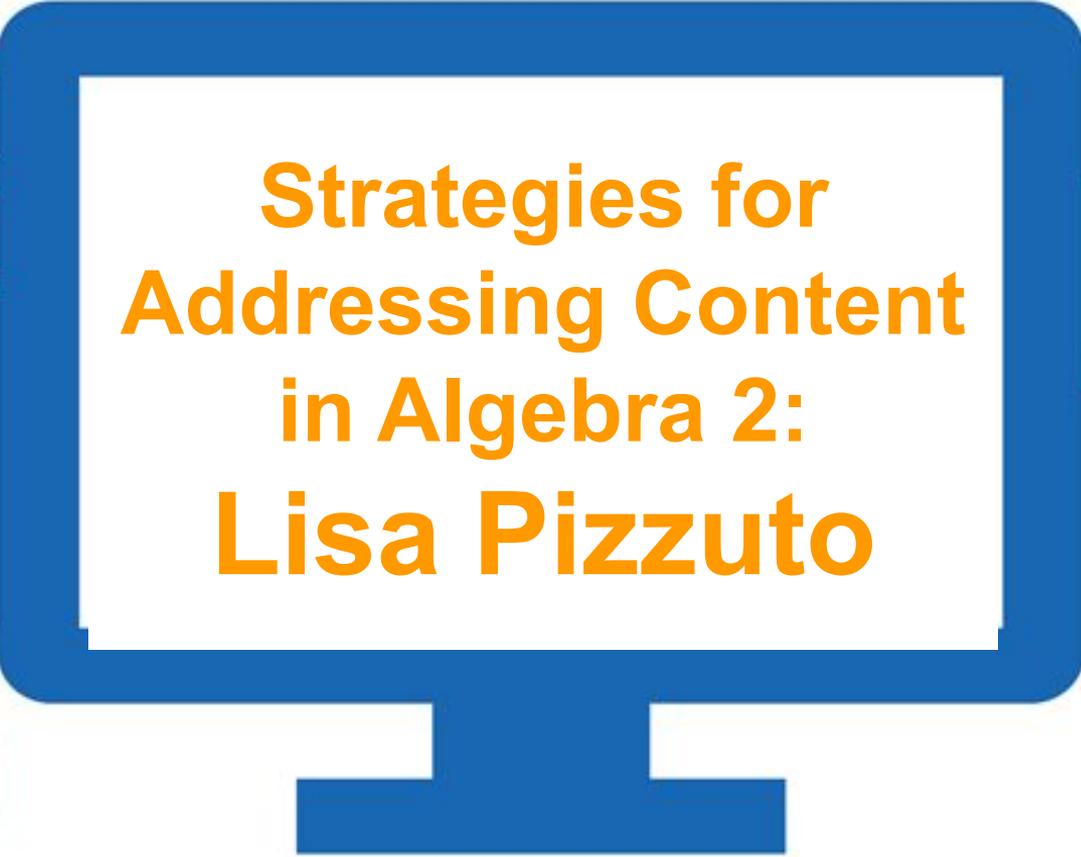
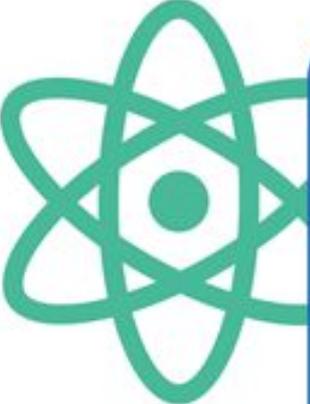
1. Time Management Skills
2. Communication Skills
3. Motivation
4. Independence
5. A Good Study Environment



Have Fun with it!



- Warm ups ideas: Scavenger hunts for a certain geometric term or shape.
- TOTD ideas: Linoit.com Have students leave a sticky with something they learned and a question they have.
- Use breakout rooms and shared docs so students can work in small groups.
- Assign “Hands on” projects. Students like to create and build.



Strategies for Addressing Content in Algebra 2: Lisa Pizzuto

Start of the year



- Get to know your students.
 - One of the first things I do is during the Meet the Teacher call I get a full understanding of what math courses a student has successfully completed prior to taking the course.
- Why are they taking the course
 - Also, an understand if they are taking the course as an option why they chose this as an option.
- Do they have the Prerequisite courses
 - If necessary and possible I review the student's transcripts. This will be essential this year to see if students have completed the coursework in both Algebra 1 and Geometry.



Addressing essential knowledge and skills

A brief skills quiz can be used at the beginning of each unit for the prerequisite skills that will be needed. This can be done through Forms.

Unit1:

- Students will revisit solving quadratic equations in this unit.
- Students explore relationships between number systems: whole numbers, integers, rational numbers, real numbers, and complex numbers.
- Students will perform operations with complex numbers and solve quadratic equations with complex solutions.
- Students will also extend the laws of exponents to rational exponents and use those properties to evaluate and simplify expressions containing rational exponents

Forms (10 questions)

- Solve a quadratic equation with real solutions. One that can be factored. One that cannot.
- Add, subtract and multiply binomials
- Add, subtract and multiply terms with degree higher than 1.

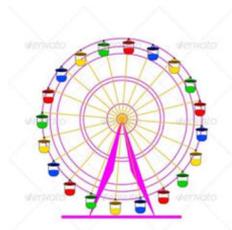
Strategies to determine students' strengths

Creating a personal connection through feedback and support calling will help to build on student strengths. Provide students an opportunity to demonstrate master in other ways other than just objective assessments.

- Projects
- Discussion Based Assessments
- Written Assignments

FERRIS WHEEL PROJECT

INTRODUCTION RUBRIC STEPS



During this project you will explore how to represent the motion of a Ferris Wheel using a sinusoidal graph. You will follow each of the steps and then attach your finished project to the Project Tab in Edgenuity.

Step 1: Review the Video on a variety of Ferris Wheel and take notes. Print the Ferris Wheel Project worksheet.
Step 2: Decide which famous Ferris Wheel you would like to explore.
Step 3: Do the research.
Step 4: Explore the Digital Tools you will need to create an electronic Graph in Google Sheets that represents the motion of your Ferris.
Step 5: Attached your finished Ferris Wheel Project worksheet including a hyperlink to your Google Sheet to your Edgenuity Project.

Don't Forget to Check out the [Rubric](#).

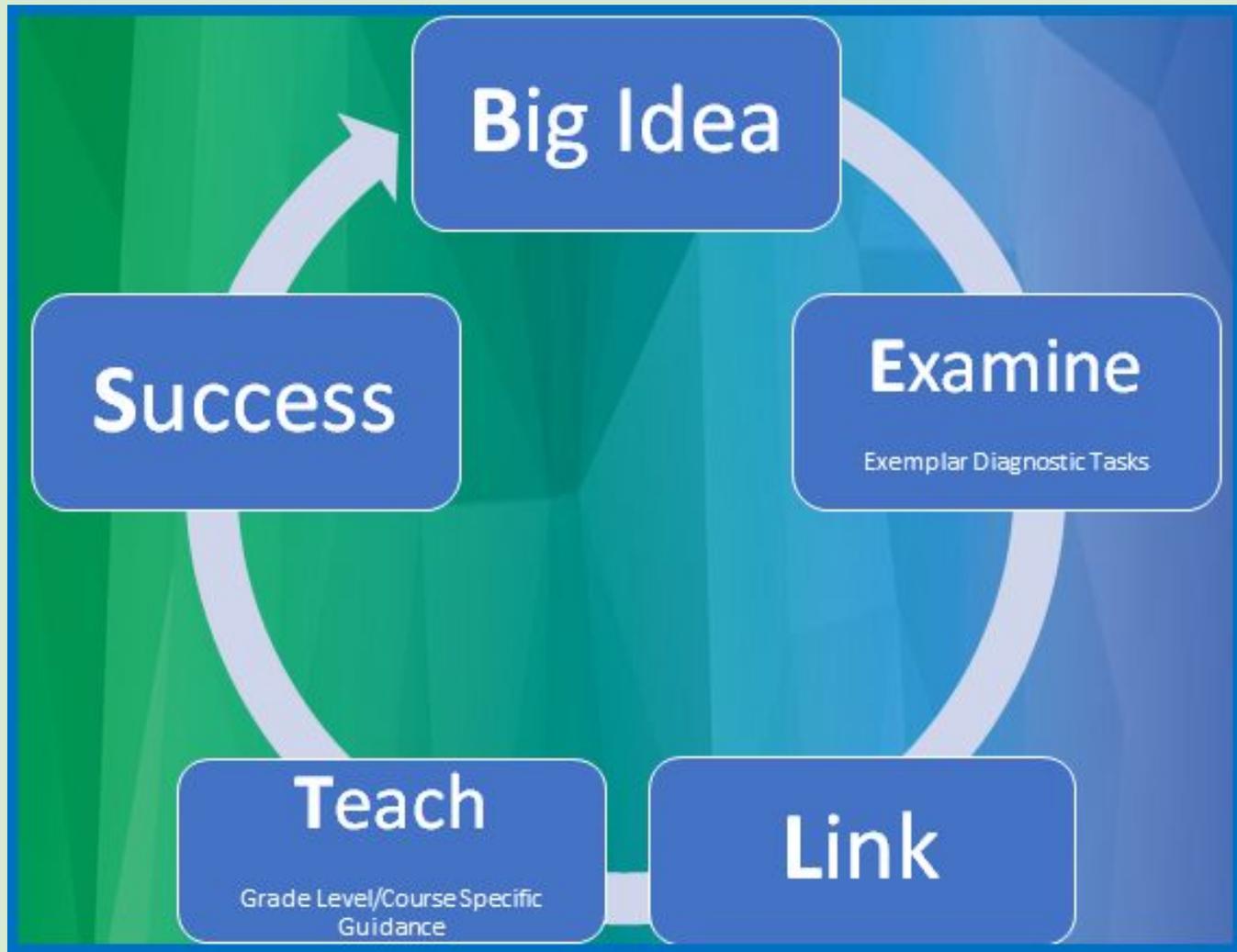
Building Relationships while Addressing Content

Discussion Based Assessments.

This term I plan to address many of the priority standards through Discuss Based Assessments.

Students are given an opportunity to complete 3-4 questions at increasing difficulty levels they will turn in to me for feedback and then the student will call and have a brief five to ten minute conversation over the phone where I can evaluate their deeper understanding of the content.

Student Success Toolkit



Student Success Toolkit

Big Idea/ Topic	<p>Interpret relationships between quantities.</p> <p>Understand that “equivalent equations” are equations that have <u>exactly the same solutions</u>, and that multiple equivalent equations can represent the same relationship.</p> <p>Determine and explain whether two equations are equivalent.</p> <p>Identify operations that can be performed on an equation to create equivalent equations.</p>
Standard Alignment	<p>MGSE9-12.A.SSE.1 Interpret expressions that represent a quantity in terms of its context</p> <p>MGSE9-12.A.SSE.2 Use the structure of an expression to rewrite it in different equivalent forms.</p> <p>MGSE9-12.A.SSE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.</p>

Student Success Toolkit



Diagnostic Assessment

Students will translate verbal expressions and area models into algebraic expressions.

Link: [https://lor2.gadoe.org/gadoe/file/60256318-3d22-482b-9ea8-](https://lor2.gadoe.org/gadoe/file/60256318-3d22-482b-9ea8-17cc080b46fc/1/Coordinate%20Algebra%20%26%20Algebra%20I%20Diagnostic%20Exemplar%202019-2020)

[17cc080b46fc/1/Coordinate%20Algebra%20%26%20Algebra%20I%20Diagnostic%20Exemplar%202019-2020](https://lor2.gadoe.org/gadoe/file/60256318-3d22-482b-9ea8-17cc080b46fc/1/Coordinate%20Algebra%20%26%20Algebra%20I%20Diagnostic%20Exemplar%202019-2020)

Student Success Toolkit

Instructional Design

Engage + Explore + Apply + Reflect

Student Success Toolkit

Engage

(Include an evidence-based instructional strategy that can be used as an introduction that mentally engages students to capture their interest, provides an opportunity to communicate what they know, and allow them to connect what they know to new ideas)

- **Synchronous** : Presented like a Number Talk, put an equation on the board and have students think of an equivalent equation. They should be encouraged to remain quiet and think of multiple equivalent equations so that all students have time to think about their responses. Example: $6x + 9 = 12$. Responses might include: $2x + 3 = 4$, $3x + 4.5 = 6$, etc. After a few minutes, the teacher can record their responses and allow students to self-correct, listen to each other, and share strategies for finding equivalent equations. Extension: Ask students how they might represent the equation without using any numbers (i.e. pictorial representation). How do you know these equations are equivalent?
- **Asynchronous**
Using a tool such as Flipgrid, present an equation to the students and instruct them to respond with an equivalent equation. They should then respond to a classmate with questions about their strategy, comments about how their equations are similar or different, an explanation of how their equations are equivalent, etc.
- **Unplugged/ Offline**
Consider having students keep a journal for daily math entries. The prompt for this day could be: Given the following equation, write as many equivalent equations as you can. How do you know when two equations are equivalent.

Explore

(Include an evidence-based instructional strategy that allows students to engage in hands-on activities to explore the new concept/big idea at a deep level)

- **Synchronous** – [Seesaw 3-Act](#) task. [Click here](#) to read more about 3-Act tasks as a strategy for engaging students in more conceptual learning of mathematics.
- **Asynchronous** – The 3-Act task from above was reworked into an online Desmos activity: <https://teacher.desmos.com/activitybuilder/custom/59053e7beea92c4f782eb9a2>
- **Unplugged/ Offline** --

Apply

(Include an evidence-based instructional strategy that allows students to apply what they have learned in a new situation to develop a deeper understanding of the big idea)

Card sort activity: <https://mathgeekmama.com/equivalent-expressions-activity/>

- **Synchronous** – Provide students the materials to complete this card sort activity in class. Students cut out the expressions and glue them to create equivalent equations.
- **Asynchronous** - Students cut out the expressions and glue them to create equivalent equations. Students can take a picture to submit to their teacher.
- **Unplugged/ Offline** – Provide students the materials to complete this activity at home. Students cut out the expressions and glue them to create equivalent equations

Reflect

(Include an evidence-based instructional strategy that allows students the opportunity to review and reflect on their own learning and new understandings)

Students will create a [Frayer Model](#) graphic organizer to describe what they know about Equivalent Equations.

- **Synchronous** Think-pair-share. First, students work independently to *think* about what they know and complete the Frayer Model. Next, students pair up and share their models with each other. Finally, students engage in a large group discussion to discuss their models. If you're working synchronously *online*, you might explore your ability to have breakout rooms to allow students to work in groups.
- **Asynchronous** Virtual Think-Pair-Share. First, students work independently to *think* about what they know and complete the Frayer Model. If you're able to group your students, you might consider having them work together to complete the Frayer
- **Unplugged/ Offline** Provide students a blank template of a Frayer Model and instruct them to complete it with information about Equivalent Equations.

Sample activities for Support classes:

In this lesson, students apply mathematical reasoning, critical thinking, and problem-solving techniques to work-related problems. Great use of unit conversions throughout this lesson!

<https://gpb.pbslearningmedia.org/resource/gedappm.work.math.five/workkeys-applied-mathematics-level-5/support-materials/>

The Power of Expressions: Desmos activities.

<https://teacher.desmos.com/collection/5d9d12cd9bb4713ab3b0d267>

Success

- Explain assessment protocol to evaluate student mastery of content
- Include formative and summative assessment options (during learning or at the conclusion)
- Offline:
https://d43fweuh3sg51.cloudfront.net/media/media_files/equivalent_expressions_problems.pdf

Instructional Design

Engage

Addition [Number Talks](#) Display the addition problem on the board and allow students time to think of how to solve it in more than one way. Step by step instructions for completing a Number Talk can be found at the link.

- **Synchronous** Complete during a classroom discussion or virtual classroom meeting.
- **Asynchronous** Introduce the problem to students in a virtual platform; this can be done via e-document or video. Allow students to share responses and provide feedback to their peers within the virtual platform/classroom. Provide feedback to individual student responses and highlight multiple strategies used by students.
- **Unplugged/ Offline** Encourage students to provide a written explanation of their thinking and how they reached their solution when solving problems. Provide feedback that demonstrates different strategies to solve problems. Alternatively, share a problem along with a strategy and solution; ask students to explain a different way to solve the problem.

Suggestions for Acceleration and Intervention, as needed

- [Race to One Hundred](#) This game provides students an opportunity to practice addition, subtraction, multiplication, and division as they try to reach 100 on a number chart.
 - o **Intervention** - Students who need additional support/practice with addition and subtraction can play this game using one operation at a time to strengthen their knowledge.
 - o **Acceleration**- Students who have mastered addition and subtraction can be challenged by adding multiplication and division.

At Home Support

[Dice Addition and subtraction games](#)

This resource contains four different games that can be played with dice to review addition and subtraction at home.

[RoboGarden STEAM \(Online\)](#)

Student practices counting, addition and subtraction while solving some coding challenges

[Zearn](#)

Independent digital addition and subtraction lessons.

[Khan Academy](#)

Addition, subtraction, and estimation

Mathematics Resources

Introduction		
Kindergarten	1st Grade	2nd Grade
3rd Grade	4th Grade	5th Grade
6th Grade	7th Grade	8th Grade
Coordinate Algebra	Algebra I	Analytic Geometry
Geometry	Algebra II - Advanced Algebra	Precalculus
Calculus-Based HS Courses		All Other HS Courses
Additional Teacher Resources		

<https://www.gadoe.org/Curriculum-Instruction-and-Assessment/Curriculum-and-Instruction/Documents/Mathematics/GADOE-Remote-Learning-Supplemental-Resources-for-Mathematics-K-12.pdf>



GaDOE Mathematics Team



@GADOEMath

Lya R. Snell, Ph.D.

Mathematics Program Manager

Phone: 404-463-7087

Email: lsnell@doe.k12.ga.us

Michael Wiernicki

Mathematics Elementary Program Specialist

Phone: 404-463-1736

Email: mwiernicki@doe.k12.ga.us

Jenise Sexton

Mathematics Special Education Program Specialist

Phone: 404-463-0634

Email: jsexton@doe.k12.ga.us