Moving from Irrelevant to Relevant:
Revising Tasks to Be Responsive to Students in Our Classroom

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Who are your presenters?

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Reflection

- Reflect silently on this question
- Turn to an elbow partner, introduce yourself, and share your thoughts

What does it mean to you for curriculum to reflect students' community, interests, & concerns for the world?

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Share Broadly

What does it mean to you for curriculum to reflect students' community, interests, & concerns for the world?

Scan the QR code or use the URL to complete a Word Cloud Activity.

https://bit.ly/MENTICLOUD

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Word Cloud Results

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Goals for Today

- Create a shared understanding of Culturally Relevant, Responsive, and Sustaining Curriculum
- Explore an example of adapting a task
- Share resources to continue this work

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Components of Culturally Sustaining Math Curriculum

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Components

- Collaboration with myriad of voices
- Student identities as assets
- Discourse
- Uses criticality
- Uses metacognition
- Allows for productive struggle
- Includes agency and authenticity

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Created in Collaboration

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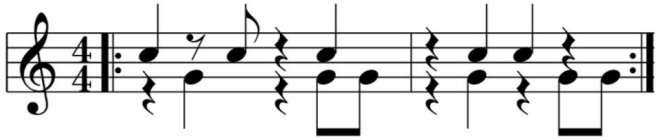
Student Identities as Assets: Culture & Math

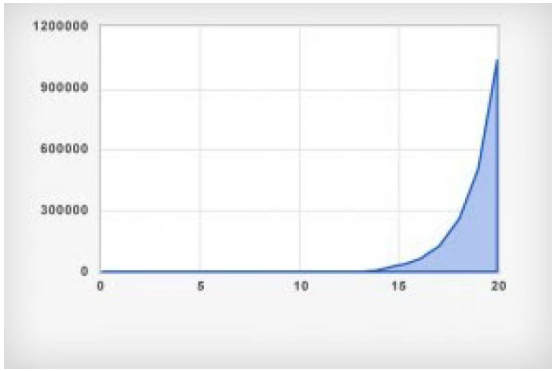
Gaming

Music



Art

Dance



Public Policy

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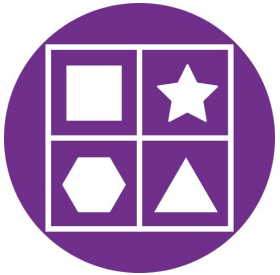
Student Identities as Assets: Instructional Routines

Notice and Wonder



Which One Doesn't Belong?

Co-Craft Questions

Collect and Display

BCS Instructional Framework: Read; Write; Think; Listen; Speak; Move
Addressing: NC.M1.A-SSE.1a

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What are ways you use student identities as assets?

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Discourse

RESPONSIVE STRATEGY

Use color and annotations to illustrate student thinking. As students share their reasoning about what they notice and wonder, describe their thinking on a display. Color code connections students make between the ratio columns and complementary angles.

Supports accessibility for: Visual-spatial processing; Conceptual processing

RESPONSIVE STRATEGY

Display sentence frames to support students during the whole-class discussion. For example, "Both ____ and ____ are alike because...," " ____ and ____ are different because...," "One thing that is the same is...," and "One thing that is different is...."

Supports accessibility for: Language

Discussion Supports (MLR8)

Three Reads

Discussion Supports

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How have the MLRs (Math Language Routines) supported student learning?

cms
Charlotte-Mecklenburg Schools

Uses Criticality

- Critical local context (housing crisis in Charlotte, NC)
- Teacher choice in scaffolding options for students
- Multiple ways for students to show understanding
- Opportunities for self-reflection

Charlotte-Mecklenburg Schools Math 2. Unit 8. Lesson 7

LESSON

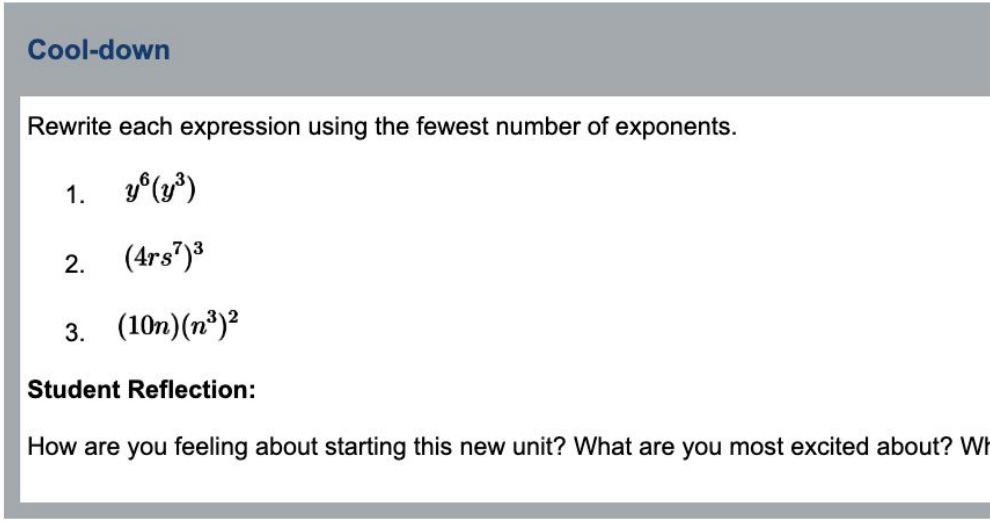
Modeling Prompt #15: Housing Crisis

In this modeling prompt, students will use data to explore the housing crisis in Mecklenburg County. There are two versions of this prompt: 15A and 15B. In 15A, students are given multiple variables and must determine which models are needed to answer the given questions. In 15B, students are given fewer variables, with more structured / targeted questions to guide them through the modeling process. Determine, in advance, which Modeling Prompt (15A or 15B) students will receive, based on the lift-analysis, timing, and access to data.

Uses Metacognition

Student Reflection Questions:

- In today's lesson, you had options of tools to use to work through problems. What helped you most? What helped you least?
- Why do you think one strategy was easier for you then another strategy?



Cool-down

Rewrite each expression using the fewest number of exponents.

1. $y^6(y^3)$
2. $(4rs^7)^3$
3. $(10n)(n^3)^2$

Student Reflection:

How are you feeling about starting this new unit? What are you most excited about? Wh

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What questions or curiosities do you have around embedding criticality and metacognition into math tasks?

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Allows for Productive Struggle

- Opportunities for students to explore tasks independently and with a partner
- Includes strategies to support a variety of learning styles
- Offers student centered discussion
- Includes suggestions on how to advance student thinking without giving away the math

RESPONSIVE STRATEGY

Chunk this task into more manageable parts to differentiate the degree of difficulty or complexity by beginning with fewer cards. For example, give students a subset of the cards to start with and introduce the remaining cards once students have completed sorting their initial set.

Supports accessibility for:
Conceptual processing; Organization

Advancing Student Thinking: For students who struggle to match the equations to the graphs, suggest they graph the input and output pairs from the table and see which points are on which graph.

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Agency and Authenticity

Are You Ready For More?

Students in Charlotte, NC were interested in examining the access in their city. They collected the following data. In this case, they also collected the population within the neighborhood (defined by zip code).

Population	Median household income (2019)	Organic produce available
71048	65963	27
59664	93942	40
49635	59438	43
9280	136333	44
53629	51676	44
37286	91494	44
37309	45808	46
11315	88039	47

Population	Median household income (2019)	Organic produce available
11195	92786	55
43931	52766	55
42263	71914	55
19283	93938	56
28523	90057	57
20317	76022	58
47208	49465	59

1. Create a scatter plot for the (*median household income, organic produce available*) and describe any relationship between the two variables.

2. Compare this relationship to the one you found for San Antonio. What do you think are the reasons for any similarities or differences?

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"IT'S NOT ABOUT PERFECT. IT'S ABOUT EFFORT. AND WHEN YOU IMPLEMENT THAT EFFORT INTO YOUR CURRICULUM EVERY SINGLE DAY, THAT'S WHERE TRANSFORMATION HAPPENS. THAT'S HOW CHANGE OCCURS. KEEP GOING. REMEMBER WHY YOU STARTED"
THE-IRON-ANGEL.TUMBLR.COM | STRENGTH & FITNESS BLOG

Starting with a Math Task

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What is a math task?

- Focus student attention on a math idea
- Must be cognitively demanding
- Should allow the learner to draw from familiar events

Exemplary math tasks provide specific direction for the learner to address social, cultural and political contexts.

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Modifying for Local and Immediate Math Connections

Change a general parade clean-up problem…	to one focused on a local mural project.

After a parade, a group of volunteer
pick up the trash along a 2-mile str

The group decides to divide the ler
so that each volunteer is responsib
up equal-length sections.

1. Find the length of a road sectio
volunteers. Be prepared to expl

a. 8 volunteers
b. 10 volunteers
c. 25 volunteers
d. 36 volunteers

Below is a mural titled "Bloom"[1] by artist Osiris Rain. It can be found at the corner of N. Davidson and 35th Street in Historic NoDa, Charlotte, North Carolina. This piece of street art covers 460 square feet of the building (46 feet x 10 feet).

Imagine a scenario where Osiris needed to have the 460 square foot mural completed in one day. To complete the project in time, he needs a team of artists to help him, each artist taking an equal area of mural.

1. Determine the area of the building each artist would paint each day to have it complete in time if there were:

   a. two artists

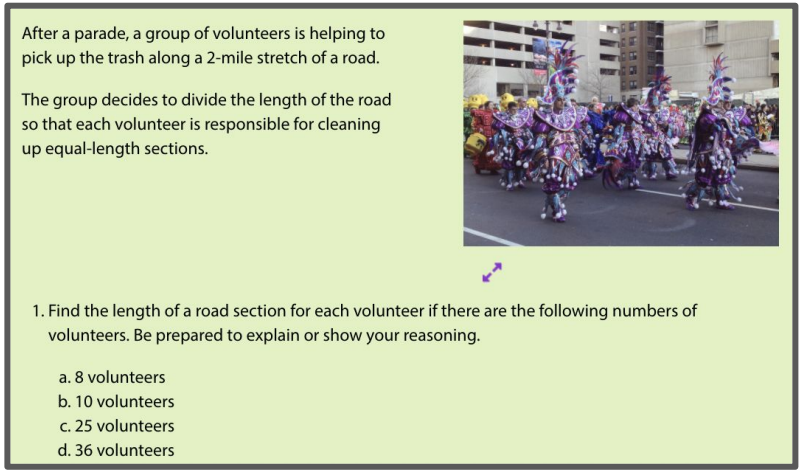
   b. three artists

   c. five artists

   d. eight artists

Getting Started

1. **Identify an upcoming task**
   Look through the curriculum material of the upcoming unit and identify a task.
2. **What is the math focus?**
   Identify the aligned math standards.
3. **Begin to brainstorm**
   Consider relevant topics that would support the math concept.


After a parade, a group of volunteers is helping to pick up the trash along a 2-mile stretch of a road.

The group decides to divide the length of the road so that each volunteer is responsible for cleaning up equal-length sections.

1. Find the length of a road section for each volunteer if there are the following numbers of volunteers. Be prepared to explain or show your reasoning.

   a. 8 volunteers
   b. 10 volunteers
   c. 25 volunteers
   d. 36 volunteers

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http://muralsdcproject.com/

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Adaptation Process

~~**Introduce** the history of Graffiti and discuss how it can be a beautiful form of art or considered vandalism. Possibly by showing this 4 minute TedEd Video~~

Introduce the art form of murals and how they can be used to empower and celebrate a city and it's residents.https://vimeo.com/31400969

Activity 1: ~~Graffiti~~ Murals

~~Graffiti is considered one of the four elements of hip-hop (along with emceeing, DJing, and B-Boying). Graffiti is a central part of this subculture. The origins of all of these can be traced to the Bronx, in New York City. (source)~~

Below is a mural ~~Graffiti art~~ titled "Bloom" by Artist Osiris Rain. It can be found at the corner of N. Davidson and 35th Street in Historic NoDa. This piece of street art covers 460 square feet of the building (46 feet x 10 feet) (source).

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Trailblazers Mural with Mural Artist Kiara Sanders

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Original

The group decides to divide the length of the road so that each volunteer is responsible for cleaning up equal-length sections.

1. Find the length of a road section for each volunteer if there are the following numbers of volunteers. Be prepared to explain or show your reasoning.
   a. 8 volunteers
   b. 10 volunteers
   c. 25 volunteers
   d. 36 volunteers

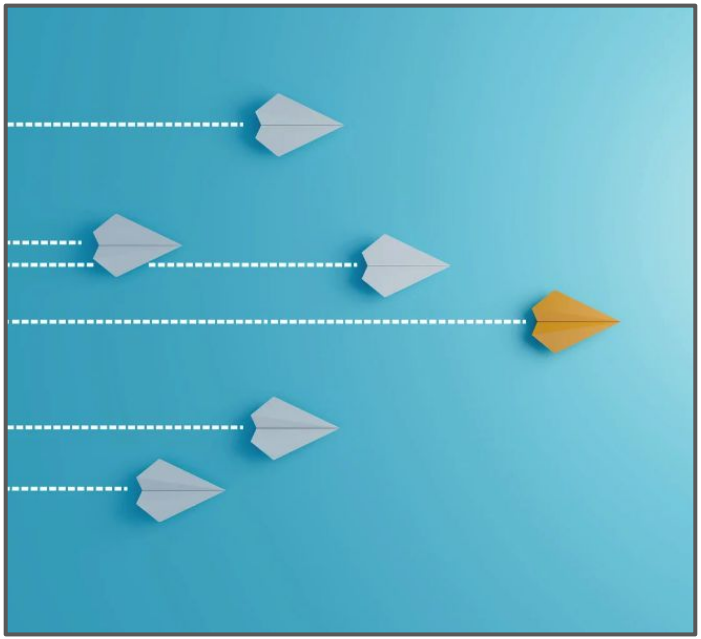
Updated

Imagine a scenario where Osiris needed to have the 460 square foot mural completed in eight days. He decided to divide the area of the building into equal parts so that he could be sure to have it done in time. However, what if Osiris broke his ankle before starting the job and now needed help to finish the mural.

1. Determine the area of the building each artist would paint each day to have it complete in time if there were:
   a. 2 artists
   b. 3 artists
   c. 5 artists
   d. 8 artists

Let's Take Action!

1. Analyze an upcoming unit
2. What math task could be improved to…
    - be more cognitively demanding?
    - include cultural inquiry?
    - empower students?



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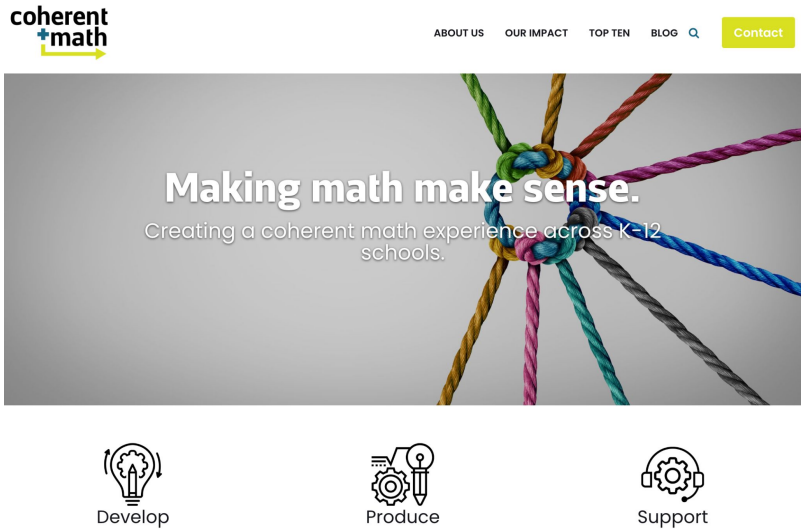
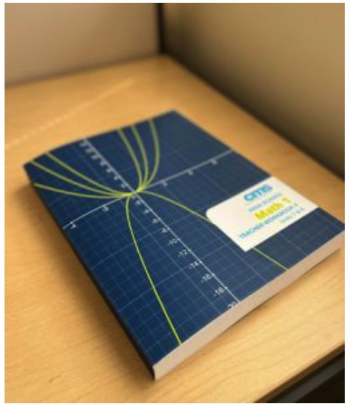
Resources & Open Sourced Material

www.coherentmath.com



The Charlotte-Mecklenburg Integrated Math Series



Charlotte-Mecklenburg Schools (CMS) contracted with Coherent Math Consulting, LLC to write and produce a three year high school math curriculum that aligns to North Carolina integrated math standards, builds off of Illustrative Mathematics' traditional pathway curriculum, and elevates the mission and values of teaching and learning mathematics in CMS that includes being equity-driven, student-centered, and culturally relevant.

Charlotte-Mecklenburg Schools has graciously chosen to share these resources as open-sourced under Creative Commons Attribution-Noncommercial 4.0 International License. To view a copy of this license, visit https://creativecommons.org/licenses/by-nc/4.0/.
Access the Teacher and Student Workbooks here.

Want to learn more about professional learning to support this curriculum or how to personalize it for your district? Please reach out to learnmore@coherentmath.com.

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