DISTRICT OF COLUMBIA
PUBLIC SCHOOLS

Creating Strong and Rigorous Math Tasks

Welcome!

Rate your comfort level with math tasks using the following statements.

Statement 1: I am familiar with math tasks.

Statement 2: I know how to create and incorporate math tasks in my classroom.

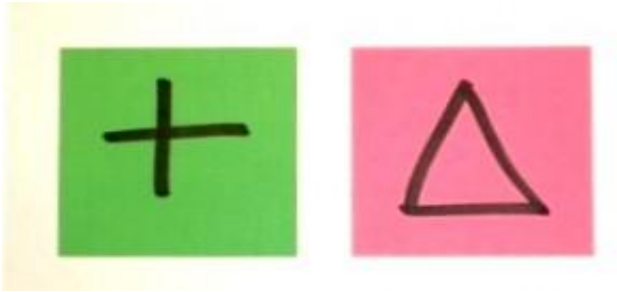
Agenda

1. **Introductions**
   - Who we are and the purpose of today's session
2. **Discussion**
   - Differentiating between a math task and independent math
3. **Overview**
   - What is a math task?
4. **Strong Math Tasks**
   - Math task components and rubric
5. **Create**
   - Creating a relevant math task
6. **Discussion**
   - Evaluating and sharing teacher created math tasks
7. **Wrap Up**
   - Revisiting session objectives
   - Evaluating of session

Session Objectives

- Differentiate between a math task and independent math
- Understand how to design a strong math task
- Create a relevant math task for your classroom

Math Task vs. Independent Work



- Turn and Talk - Observe both assignments, when would it be most appropriate to use Sample A and Sample B ?
- What would be the advantages of using each ?

Part 1
What is a math task?

A Math Task is...

- “for students to make problem solving a process whereby the solver keeps a mental "check" of the progress, and corrects himself if progress is not made. You may go one route, notice it won't work, go backwards a bit, and take another route.”

A Math Task has...

- a well defined purpose
- a reasonable chance of fulfilling its purpose for the teacher as well as the student
- students pull from multiple strategies to successfully find a solution and evaluation to prove their answer

Independent Math

- challenges students with mathematical skills and reasoning
- is current or review mathematical skills for students to practice
- is completed by students without support

Part 2
How to create a strong math task

Content

The problem…

- requires higher-level thinking and problem solving.
- contributes to the conceptual development of students.
- creates an opportunity for the teacher to assess student knowledge.
- has various solutions or allows different decisions or positions to be taken and defended.
- encourages student engagement and discourse.
- connects to other important mathematical ideas.
- promotes the skillful use of mathematics.

Engagement

The problem…

- Encourages curiosity
- Start small, then expand
- Keep the problem clear
- Use REAL photo or video
- Set low floor for entry, high ceiling for exit
- Progressive disclosure
- Have students hypothesize
- Use tasks to challenge current knowledge

Format

Step 1: Engaging opening questions almost all students can access.

Step 2: Use initial response to answer target question(s) for the selected standard and skill that is just-right for most students.

Step 3: Students explain mathematical thinking in a written response.

Step 4: Challenge question(s) that push student thinking.

Task Evaluation Checklist

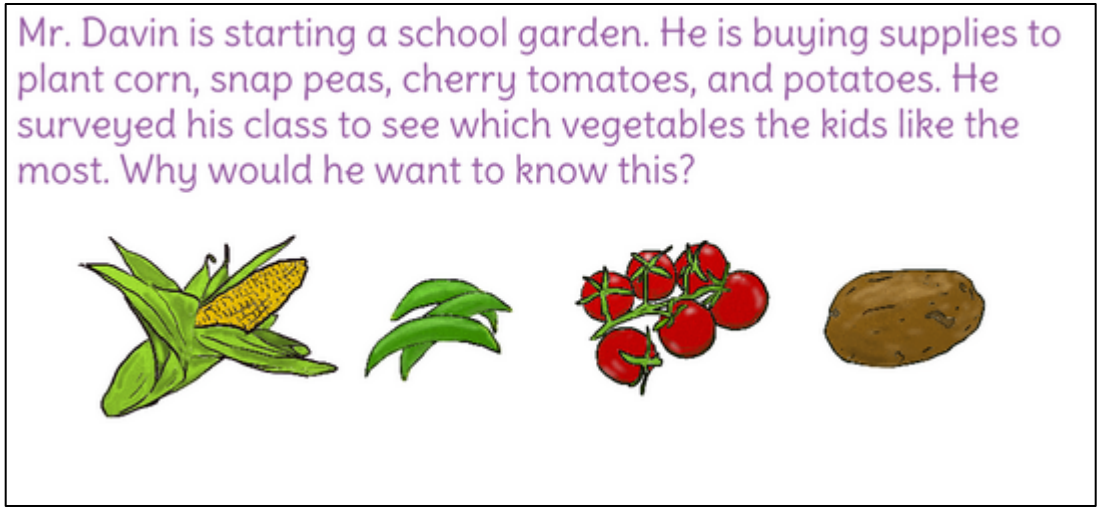
Criteria	Comments
Involves standards-based mathematics	
Requires higher level thinking and problem solving	
Contributes to conceptual development of students	
Multiple solution strategies are possible	
Encourages student engagement	
Low floor of entry, high ceiling for exit	
Has connections to real life	
Question wording/structure/format is only as complex as necessary	
Students are able explain their thinking in writing	
Formatting allows for students to understand and complete the task	

Resources

Utah Core Academy in Mathematics

Resources

Inspiration from Learnzillion Lesson



Format

Math Mission

Ms. Tiffany is letting students choose what's for lunch on Friday. She takes a vote with some students to see what they want to eat for lunch that day - chicken nuggets, spaghetti and meatballs, or pizza.



Math Mission

Help Ms. Tiffany by completing her tally chart and turning the information into a pictograph so she can determine what to make for lunch on Friday.

Format

Your Math Mission! Name: _____

I can use problem solving skills and my knowledge of data and graphing to solve a problem.

Students will get to pick what's for lunch on Friday. Here is the tally chart of student votes.

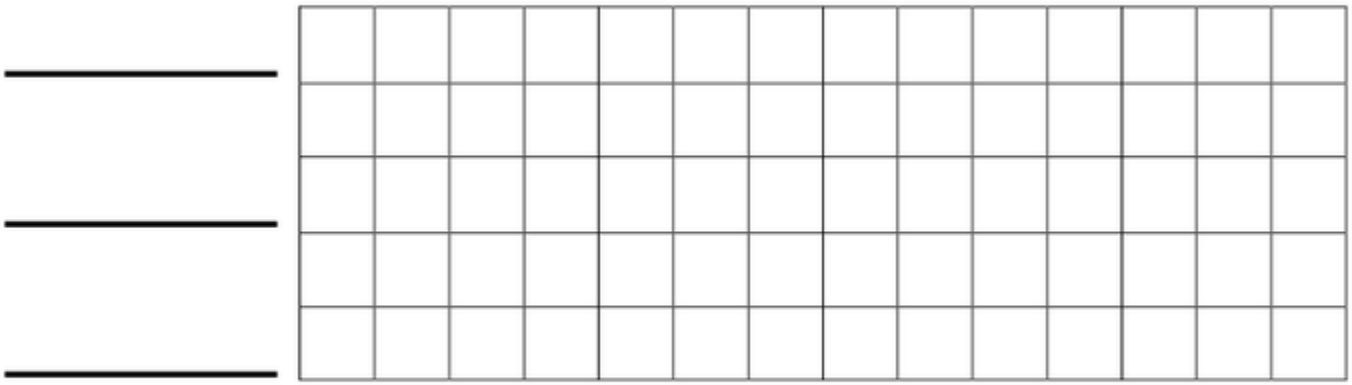
Food	Tally	Total
Chicken Nuggets	𝍸 𝍸 ||	_____
Spaghetti and Meatballs	𝍸 |||	_____
Pizza	𝍸 𝍸 ||||	_____

Step 1: Find the total number of students that voted for each food. Record the totals in the tally chart.

Format

Step 2: Use the tally chart to create your own picture graph. Remember to include a title, labels, and a key.

Title: _____



Legend: _____

Format

Step 3: Answer questions about your chart.

1.Which food did the most students vote for? _____

2. How many more students voted for pizza than spaghetti and meatballs? _____

3. How many students voted for chicken nuggets and pizza? _____

4. How many students voted all together? _____

Format

5. How did the tally chart help you create your graph?

6. What was the title of your pictograph? Why did you give it that title?

Part 3
Create a math task

Creating a Math Task

Activity: Create a math task that can be implemented in your classroom. Choose a grade level standard/skill to which students have been exposed. Your task should include the standard/skill, illustrations, a real life problem and written component.

- Split up into grade level groups of 3 - 4 people.
- Materials: Common Core State Standards, Math Task computer websites, Math Task Checklist handout, Chart paper

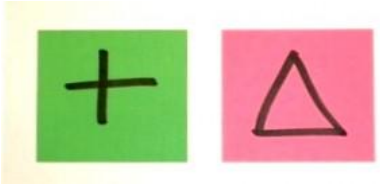
Early Finishers

- Create another math task
- Visit the student work table and make observations

Creating a Math Task Share Out

1. Swap teacher created math task and solve. (5 min)

2. Use the Math Task checklist to evaluate created math tasks. (5 min)

3. Share out: Math Task  (3 min per group)

Wrapping up

- Differentiate between a math task and independent math
- Understand how to design a strong math task
- Create a relevant math task for your classroom

Contact Information
Liana Ponce
email:liana.ponce@dc.gov

Fatou Thiam
email: mame-fatou.thiam@dc.gov

Elizabeth Thompson
email:tsitsi.baird-thompson@dc.gov