Welcome to Choice Matters!

Using Math Menus to Reach All Students

Meghan Alcorn
Essential Questions

- How can we provide students with meaningful choices in their learning?
- In what ways do math menus allow teachers to reach the unique needs of all students?
What comes to mind when you think about student choice in your classroom?
“An excellent mathematics program requires effective teaching that engages students in meaningful learning through individual and collaborative experiences that promote their abilities to make sense of mathematical ideas and reason mathematically.”

NCTM’s Principals to Actions: Ensuring Mathematical Success For All (2014)
Math Menus

A purposeful assortment of mathematical tasks designed to provide choice, accessibility, and meaningful experiences to students.
Activating your Knowledge

• What do you know about math menus?
• Have you ever used one in your classroom?
  – If yes, tell about your experience.
  – If no, explain why you haven’t tried them yet.
The Power of Menus

Allow for flexible and focused learning

Work in varied classroom structures and schedules

Provide a structure to stay connected to content and practice standards

Build motivation, confidence, independence, and engagement

Math Menus
Menus in a Nutshell…

• List It
• Think Tac Toe
• Dining Out ★
• Pick your Points
• Multiple Intelligence
• Tiered Learning Level
• Cognitive Progression
• Acronym (L-E-A-R-N) ★
3 Critical Considerations

1. Purpose and Classroom Needs
   - Logistics, Content, Practices

2. Task Decisions
   - Timeline, Types, Student Outcomes

3. Formative Assessment
   - Design, Processing, Conferencing
### Dining Out Menu

<table>
<thead>
<tr>
<th>Appetizers (choose 2)</th>
<th>Entrée (choose 1)</th>
<th>Side Dish (choose 1)</th>
<th>Dessert (choose 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Stars in 1 Minute</td>
<td>- Trace and Compare</td>
<td>- Game of More</td>
<td>- Complete an Anchor Activity.</td>
</tr>
<tr>
<td>- Pinch a 10</td>
<td>- Five-Tower Game</td>
<td>- Card Wars</td>
<td>- Act out this week's Numberless Word Problems.</td>
</tr>
<tr>
<td>- Build a Stack</td>
<td></td>
<td></td>
<td>- Create a Journal Entry summarizing your favorite activity from this week.</td>
</tr>
</tbody>
</table>

**What I learned:**

**Questions I have:**

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*Menu adapted from Math Workshop (Lempp 2017)*
Prepare your Technology

Handouts are available inside the NCTM Conference App.

1. Go to the schedule.
2. Search for Session 370.
3. Click on Choice Matters!
4. Click on the files under “Resources.”
Dining Out Menu (K-2)

**Math Menu: Dining Out—Comparing Numbers**

- **Appetizers (choose 2)**
  - Rock, Paper, Scissors, Compare
  - Stars in 1 Minute
  - Pinch a 10
  - Build a Stack

- **Entrée (choose 1)**
  - Grab, Compare, and Share
  - Trace and Compare
  - Five-Tower Game

- **Side Dish (choose 1)**
  - More or Less
  - Game of More
  - Card Wars

- **Dessert (choose 1)**
  - Lead a Number Talk
  - Complete an Anchor Activity
  - Act out this week’s Numberless Word Problems
  - Create a Journal Entry summarizing your favorite activity from this week

**Due:**

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**K-2 Dining Out Menu Item Descriptions**

1. **Rock, Paper, Scissors, Compare**
   - Students play Rock, Paper, Scissors with a partner, but instead of showing a rock, paper, or scissors, the partners show a quantity with 0-10 fingers. Partners then verbalize the quantity each partner shows and decides who has more and how much more.
   - To extend this activity, students can record their comparisons for each round with >, <, or = symbols. Points could also be given in each round to the partner with the higher value (giving the difference of the two partners hands to the winner of the round) and then summed at the end of 10 rounds to determine an overall winner.

2. **Stars in 1 Minute**
   - Students time each other to see how many stars they can draw in 1 minute. When each partner has had a turn to draw, students count their stars and determine who has more and how much more. Students record their comparisons each round with >, <, or = symbols.
   - To extend this activity, students can use different colors to group their stars in fives and then tens and compare those amounts with comparison symbols as well (e.g., 5 groups of five is greater than 4 groups of five; 10 > 5).

3. **Pinch a 10**
   - Students take a pinch of beans, beads, etc. and then count them. Then they classify their items in a chart with three columns labeled Fewer than 10, 10, Greater than 10, using tally marks to record their quantities. Students repeat 5 times.
   - To extend this activity, students can write a summary statement about their results, including any strategies they used to get better at pinching 10.

4. **Build a Stack**
   - Students take turns with a partner drawing cards that contain directions on how to build a stack of cubes. Example: Build a stack that has one more than four. Build a stack that has one less than seven. While one partner builds the stack, the other watches and checks its accuracy. If the other partner disagrees with the build, the partners discuss what changes need to be made to match the directions on the card.
   - Once an agreement has been reached, the stack is left on the table. Each partner should then make a cube stack, determined by drawing the direction cards. When six correct stacks are created, the partners should work together to order the stacks from least to greatest.
   - To extend this activity, teachers can create cards with place value clues as directions.

Purpose and Classroom Needs

**MATH MENU: DINING OUT—Comparing Numbers**

<table>
<thead>
<tr>
<th>Appetizers (choose 2)</th>
<th>What I learned:</th>
</tr>
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<tbody>
<tr>
<td>□ Rock, Paper, Scissors, Compare</td>
<td></td>
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<td>□ Build a Stack</td>
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<tr>
<th>Questions I have:</th>
</tr>
</thead>
</table>

Do I need or want categories for students to choose from?

Is it manageable to create?

Do I want this many choices?

Do I have activities that are more critical than others?

What are my time constraints?

Is my classroom set up for this? Do I need to change anything to make this work?
## Task Decisions

**MATH MENU: DINING OUT—Comparing Numbers**

<table>
<thead>
<tr>
<th>Entrée (choose 1)</th>
<th>What I learned:</th>
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<tbody>
<tr>
<td>□ <em>Grab, Compare, and Share</em></td>
<td>Questions I have:</td>
</tr>
<tr>
<td>□ <em>Trace and Compare</em></td>
<td></td>
</tr>
<tr>
<td>□ <em>Five-Tower Game</em></td>
<td></td>
</tr>
</tbody>
</table>

**Student Name:**

**Due:**

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Do my activities meet and balance the content and practice standards?

How will I introduce the menu tasks to my students?

Do these tasks allow my students to work independently of me?

Do I have options for the different learning levels and styles of my students?

Do these activities help my students reason through and make sense of the math?

Will I use premade tasks or create my own?
# Formative Assessment

**MATH MENU: DINING OUT—Comparing Numbers**

<table>
<thead>
<tr>
<th>Dessert (choose 1)</th>
<th>Lead a <em>Number Talk</em>.</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Complete an <em>Anchor Activity</em>.</td>
</tr>
<tr>
<td></td>
<td>Act out this week’s <em>Numberless Word Problems</em>.</td>
</tr>
<tr>
<td></td>
<td>Create a <em>Journal Entry</em> summarizing your favorite activity from this week.</td>
</tr>
</tbody>
</table>

| What I learned: |
| Questions I have: |

| How are students communicating their learning with peers and me during the tasks? |
| How will I close out this menu and the learning with my students? |
| How will I close out this menu and the learning with my students? |

| What will I use for students to reflect on their overall learning? |
| Are there certain tasks I want to observe or discuss during conferences with students? |
| What does my process for monitoring students look the menu time? |
| Does the menu set up/recording/submittal help me record and measure progress? |

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Math Solutions.
Working within a Math Menu
Processing the Dining Out Menu

• How would this type of menu work in your classroom?
• What adjustments would you make to meet your needs?
• Discuss ideas for an upcoming unit using the Dining Out menu

https://padlet.com/meghanbalcorn1/cmdo
## Acronym “LEARN” Menu

**MATH MENU: L-E-A-R-N**

<table>
<thead>
<tr>
<th>L</th>
<th>Looking Back</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHOICE 1</strong></td>
<td>Roll two dice to create a proper fraction. Record your fraction and repeat 4 times, creating 5 different fractions. Order your fractions from least to greatest on a number line.</td>
</tr>
<tr>
<td><strong>CHOICE 2</strong></td>
<td>Which is larger 5/6 or 7/8? Explain your reasoning using number lines.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E</th>
<th>Engaging Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHOICE 1</strong></td>
<td>Play Flip It, Plot it using playing cards and grid paper. Directions for the game are in Box E.</td>
</tr>
<tr>
<td><strong>CHOICE 2</strong></td>
<td>Play Cotton Toss and Plot, a measurement game where you will practice creating line plots. Directions for the game are in Box E.</td>
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</table>

<table>
<thead>
<tr>
<th>A</th>
<th>Analyzing Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHOICE 1</strong></td>
<td>Examine the line plot posted in the room. If the total height of the flowers doubled, what could the line plot look like?</td>
</tr>
<tr>
<td><strong>CHOICE 2</strong></td>
<td>Find a real-world example of a line plot that includes fractions. Develop 2 questions that could be asked about the line plot and then answer the questions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>R</th>
<th>Representing Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHOICE 1</strong></td>
<td>Measure the diameter of ten circles to the nearest eighth of an inch. Make a line plot to represent the data. Develop 2 questions that could be asked about this line plot and solve.</td>
</tr>
<tr>
<td><strong>CHOICE 2</strong></td>
<td>Examine the line plot posted in the room. Develop a presentation to describe what the data is telling us mathematically.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N</th>
<th>Navigating Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHOICE 1</strong></td>
<td>Investigate and record all the ways you can make the number 1 by adding fractions.</td>
</tr>
<tr>
<td><strong>CHOICE 2</strong></td>
<td>Play Fraction War: Closer to 1 with a partner. Directions are in Box N.</td>
</tr>
</tbody>
</table>

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*Something new I learned...*

*Something I found interesting was...*

*Something I understood now...*

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*Learning Log: RECORD YOUR REFLECTIONS BELOW.*

*Reviewing this concept, I remembered...*

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*Record your work in your math journal.*

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*Student Name:___________________________*

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*Due:___________________________*

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*Created by Meghan Alcorn, Math Solutions 2018*
Prepare your Technology

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## What’s in the L-E-A-R-N?  

| **Engaging Practice** | 1. Spiraled content  
2. Prior knowledge  
3. Entry points |
|-----------------------|---------------------------------------------------|
| **Analyzing Problems** | 1. Procedural fluency  
2. Game-based practice  
3. High interest tasks  
|---------------------------------------------------|
| **Representing Concepts** | 1. Multiple representations  
2. Models and manipulatives  
3. Contextual problems  
|---------------------------------------------------|
| **Navigating Numbers** | 1. Number sense  
2. Multiple strategies  
3. Fluency games  
|---------------------------------------------------|

**Discourse**

**Thinking**

**Reasoning**
Looking Back

Roll two dice to create a proper fraction. Record your fraction and repeat 4 times, creating 5 different fractions. Order your fractions from least to greatest on a number line.

Which is larger 5/6 or 7/8? Explain your reasoning using number lines.
### Engaging Practice

**REPRESENT AND INTERPRET DATA, INCLUDING DATA WITH FRACTIONS**

<table>
<thead>
<tr>
<th>Learning Stations</th>
<th>Learning Log</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHOICE 1</strong></td>
<td>RECORD YOUR REFLECTIONS BELOW.</td>
</tr>
<tr>
<td><strong>CHOICE 2</strong></td>
<td>RECORD YOUR WORK IN YOUR MATH JOURNAL.</td>
</tr>
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#### Engaging Practice

Play *Flip It, Plot It* using playing cards and grid paper. Directions for the game are in Box E.

Play *Cotton Toss and Plot*, a measurement game where you will practice creating line plots. Directions for the game are in Box E.

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**Play *Cotton Toss and Plot*, a measurement game where you will practice creating line plots. Directions for the game are in Box E.**
Examine the line plot posted in the room. If the total height of the flowers doubled, what could the line plot look like?

Find a real-world example of a line plot that includes fractions. Develop 2 questions that could be asked about the line plot and then answer the questions.
Representing Concepts

Measure the diameter of ten circles to the nearest eighth of an inch. Make a line plot to represent the data. Develop 2 questions that could be asked about this line plot and solve.

Examine the line plot posted in the room. Develop a presentation to describe what the data is telling us mathematically.
Navigating Numbers

Investigate and record the ways you can make the number 1 by adding fractions.

Play *Fraction War: Closer to 1* with a partner. Directions are in Box N.
Processing the LEARN Menu

• How would this type of menu work in your classroom?

• What adjustments would you make to meet your needs?

• Discuss ideas for an upcoming unit using the LEARN menu.


https://padlet.com/meghanbalcorn1/learn
Additional Considerations

Math Workshop

Technology

Grades

INDIVIDUAL NEEDS OF YOUR STUDENTS

https://www.flickr.com/photos/54617291@N08/8164553806/

https://www.flickr.com/photos/cookiejan/2957381474/
Options for Getting Started

Try using a menu..
– With a certain group of students
– For spiraling only
– Just one day a week
– With limited choices
– With tasks/games you have already taught
– For review
– For extension activities
Menus are...

- As simple or complex as you make them
- A structured way to provide choice and differentiation
- Focused on supporting thinking, reasoning, communicating, and making sense of the math
- About YOUR unique classroom

Resources

- Math Workshop
- Math Games for Number and Operations and Algebraic Thinking
- How to Differentiate Your Math Instruction
- Teaching Mathematics
THANK YOU!

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Presentation at:
http://mathsolutions.com/contact-us/speaker-presentations/

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Math-Solutions
MathSolutions