Define Fluency

What does fluency mean to you?
WRITE DOWN YOUR IDEAS.
SHARE

TELL US ALL WHAT YOU FOUND
Your ideas
Fluency from the Publishers Criteria

“Fluently”

Methods are based on mathematical principles, not mnemonics or tricks

Quickly and accurate, to work with flow. It isn’t halting, stumbling, or reversing oneself.
Fluency from Principles to Action

Fluency is not a simple idea. Being fluent means that students are able to choose flexibly among methods and strategies to solve contextual and mathematical problems, they understand and are able to explain their approaches, and they are able to produce accurate answers efficiently. Fluency builds from initial exploration and discussion of number concepts to the eventual use of general methods as tools in solving problems.
Fluency Without Fear

https://www.youcubed.org/evidence/fluency-without-fear/
What were your takeaways from the article?
Games

What games do you play with your students?
Math Talks

1. Teacher poses a purposeful problem
2. Students signal when they are ready to give a solution
3. Teacher collects answers orally
4. Students explain or defend their answer
5. Teacher records student strategies
6. Teacher asks questions to facilitate Mathematical Discourse
7. Class comes to consensus
Math Talks

18 \times 5

Jo Boaler Video about Number Talks
\[3(x + 2) = 21\]
This website was created by ISBE Math Content Specialists and Illinois Math Educators to provide a deep understanding of specific Content.
Open Problems

Open refers to a problem which has more than one correct answer and/or more than one strategy to obtain an answer.
Grade 2 -

Arrange the digits 1-9 into three 3-digit whole numbers. How close can you get to 1000?

http://www.openmiddle.com/close-to-1000/
Grade 4 -

You have $1.00 in your pocket. You only have pennies, nickels, and dimes. What coins are in your pocket?
TWO TASKS

WHAT IS SIMILAR...WHAT IS DIFFERENT?
Fluency

- Write a simplified expression for the following:
  \[ 7r + 2(r + 3) \]

- Fill in the blanks below to make the equation true for every value of \( x \). Explain the steps you took, as well as any math properties you used.

\[ \underline{\phantom{0}} (2x + 2) - 4 = 10x + \underline{\phantom{0}} \]
Fractions, Fluency and Fun

• To build fluency we should find ways for students to practice from repeated use through motivational activities...

--Joan Barrett
Roll a Fraction

• Play this game with a shoulder partner.
• Take turns rolling a die and placing the rolled number in one of the three boxes on your side of the recording sheet.
• Once the boxes are filled, decide which player built the greatest fraction and place the appropriate symbol between the fractions.
• Play at least 4 rounds. How can you build the greatest fraction?

Player 1_________________

Player 2_________________

Reject
Differentiate the Game

How could you change the game to align to a content standard at your grade level?
Fluency

F.IF.3 Fluency in translating between recursive definitions and closed forms, helpful when dealing with many problems involving sequences and series, with applications ranging from fitting functions to tables to problems in finance.
PARCC’s Equality Game Formative Task

The Equality Game - Student Exit Slip

Directions: Place a number in each blank to make each equation true.

<table>
<thead>
<tr>
<th>a)</th>
<th>b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 + 2 = ______ + 3</td>
<td>11 = _____</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>c)</th>
<th>d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 = ______ - 2</td>
<td>7 + 8 = ______</td>
</tr>
</tbody>
</table>

BRAINSTORM
QUESTIONS