



## Math Instructional Framework

### Focus Lesson to Develop Conceptual Understanding (15-25 minutes)

#### *Rich Mathematical Task*

**Students** construct meaning with authentic mathematical problems using a variety of strategies. Through mathematical discussions students justify and explain their thinking. Students are using manipulatives as tools to solve problems and represent thinking. They may use math journals to represent through models and record thinking.

**Teachers** pose questions that stimulate students' curiosity and encourage them to investigate further. Problem-based interactive learning with rich mathematical tasks should be the foundation to develop students' understanding of concepts. Conceptual understanding precedes the students' use of procedural strategies.

Resources:

- PH curriculum (one way..., another way...)
- enVision 2020 Solve and Share (*formerly PBIL*), VLB, and Guided Practice
- enVision 2020 Problem Solving Lessons

#### *Application of Learning to Novel Problem(s)*

**Students** demonstrate conceptual understanding, procedural fluency, and strategic competence of the primary learning target, which was experienced during the "Rich Mathematical Task."

**Teachers** provide interesting mathematical problems, which allow students to make connections between mathematical concepts and procedures.

Resources:

- enVision 2020 Independent Practice
- enVision 2020 Problem Solving in Each Lesson

### Personalized Practice and Application (20-30 minutes)

**Students** work individually or in small groups on engaging tasks that will personally increase their learning of specific content standards.

**Teachers** use formative assessment data to provide mathematical experiences, which match student need. Teachers work with individuals and/or small groups to check for understanding and provide feedback.

#### *Small groups, stations, assessments, problem-based activities, fluency practice*

Allows for students to be given time to receive additional instruction, remediation or enrichment opportunities.

Resources: enVision 2020

- Practice, reteach, enrichment
- Pick a Project
- Intervention Activity
- Technology Center Games
- Practice Buddy
- Other
- Fact Fluency Games
- Eureka Sprints (?)

### Closure (5 minutes)

**Students** articulate their thinking (this can be done verbally or in writing)

**Teachers** provide time for students to share prior knowledge, reflect on new learning and make connections. Teacher may also use this time for quick formative assessment.

### Math Review (5-10 minutes)

**Students** solve 1 or more problems reviewing skills from previous units. Students work independently then check with a partner.

**Teacher** reviews key problem(s) and monitors for skill retention.

Resources:

- enVision 2020 Math Anytime (*Formerly Daily Common Core Review*)
- enVision 2020 Today's Challenge (new)
- Teacher created based on assessment data
- Practice for Automaticity and Procedural Fluency (dot flash cards, fact flash cards)
- Eureka Math Sprints (?)

This can be completed as morning work, homework or during independent work time. Since it is review, students should be able to complete without assistance.

### Number Routines (5-10 minutes; at least 3 times a week)

**Students** create, modify, and evaluate strategies that build number sense and establish fluency, efficiency and flexibility with numbers.

**Teachers** pose questions which lead students to build, connect and formulate meaningful mathematical strategies. Teachers listen and focus questions around "how" students arrive at their answers and "why."

Resources:

- Number Talks
  - Quick Images- open or targeted share
  - Number Strings- targeted share
  - Mental Math-open share
- Number Sense Routines: John SanGiovanni- Howard County Schools

**References:**

- Five Easy Steps to a Balanced Math Program for Primary and Intermediate Grades
- Adding It Up: Helping Children Learn Mathematics
- Number Talks

# PRINCIPLES TO ACTIONS

## Ensuring Mathematical Success for All

### Mathematics Teaching Practices

- » Establish mathematics goals to focus learning.
- » Implement tasks that promote reasoning and problem solving.
- » Use and connect mathematical representations.
- » Facilitate meaningful mathematical discourse.
- » Pose purposeful questions.
- » Build procedural fluency from conceptual understanding.
- » Support productive struggle in learning mathematics.
- » Elicit and use evidence of student thinking.

### Standards for Mathematical Practice

1. Students will make sense of problems and persevere in solving them.
2. Students will reason abstractly and quantitatively.
3. Students will construct viable arguments and critique the reasoning of others.
4. Students will model with mathematics.
5. Students will use appropriate tools strategically, including technology tools.
6. Students will attend to precision.
7. Students will look for and make use of structure.
8. Students will look for and express regularity in repeated reasoning.



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### References:

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- Number Talks