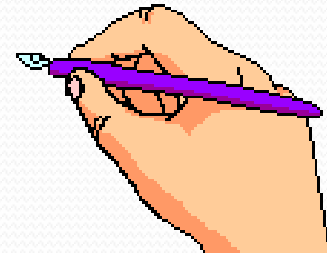# **Welcome Teachers!**

While you are waiting, please write on the index card:

- what you expect to get out of today.
- any questions you might have .

Common Core Math Practices

- Using a Thinking Map, brainstorm the Common Core Math Practices

Math Practices

- Make sense of problems and persevere in solving them
- Reason abstractly and quantitatively
- Construct viable arguments and critique the reasoning of others
- Model with mathematics
- Use appropriate tools strategically
- Attend to precision
- Look for and make use of structure
- Look for and express regularity in repeated reasoning

STEM Crisis and Workforce Needs

Local, State, and National STEM Initiatives

Race to the Top

- Maryland Common Core State Curriculum
- Online Toolkit
- STEM Innovation Network
- STEM Teaching Force

Governor's STEM Task Force

- Seven recommendations
- Areas include curriculum alignment, teacher workforce and training, student experiences, an increase in STEM college graduates, and global competitiveness
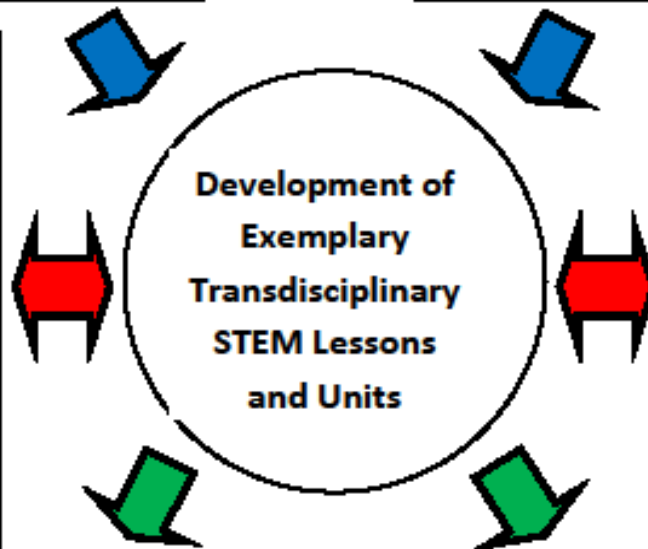
What?

Maryland Common Core State Curriculum

- Standards for mathematical practices
- Literacy Standards for Science and Technical Subjects

Maryland State Standards

- Science
- Technology and Engineering

Development of Exemplary Transdisciplinary STEM Lessons and Units

How?

- Inquiry Based Learning Techniques
- Universal Design for Learning (UDL) Principles
- Educator Effectiveness Academies Professional Development
- STEM Professional Learning Community

Why?

Maryland's vision is to be a leader in STEM education, preparing and inspiring generations of learners to meet the challenges of the global society through innovation, collaboration, and creative problem solving.

STEM Lessons engage students in:

- inquiry-based learning
- transdisciplinary approaches
- collaboration
- relevant content
- project-based activities
- innovation
- creativity

Acme Toy Company

Where your imagination becomes reality!

5E: Engagement

Goal: *You will be able to earn the position as head of the Research and Development department by creating and marketing the next "hot" game.*

Engagement

Job Opening

- After 40 years as head of the Research and Development department , W. E. Coyote is retiring.

- We are looking for the new head of Research and Development.

- This is your opportunity to demonstrate that you should be the new leader of the department.

- Interested candidates will be judged on their leadership abilities during the challenges.

5E: Engagement

Challenge Number One

We are launching a new game built around this toy.

As members of the toy department Research and Development Team, your first challenge is to create a name for the toy.

- Test the toy.

- Using a Circle Map, brainstorm characteristics of the toy.

- Create a name for the toy.

- Present the name to the other members of the toy department.

- The toy department will vote on a name.

Which math practices did you use?

Challenge Number Two

Modify the design of the toy to accomplish one of the tasks listed below or a task of your creation.

Possible tasks: The toy that …

- flies the highest.
- spins the fastest.
- travels the farthest.
- floats the longest.

5E: Explore

Be sure to:

- Keep accurate records of how you tested your toy.

- Gather and record the results in a data table.

- Analyze your results.

- Explain how you arrived at your final desi

Which math practices did you use?
Did you use any literacy standards?

5E: Explain

Challenge Number Three

- Develop a new game using the toy.

- Create a short commercial (60 seconds or less) to present your claim advertising why your game is the best. Provide evidence why it should be selected for development.

5E: Extend

Competition for Resources

- Resources in the company are very limited. Not only do you need to support your claim, you also need to effectively critique the other claims from competing groups.

Which math practices did you use?
Did you use any literacy standards?

5E: Extend

Cast Your Vote!

- Select the next "hot" new game.

- Explain why you voted for this game. Use evidence from the presentations to support your answer.
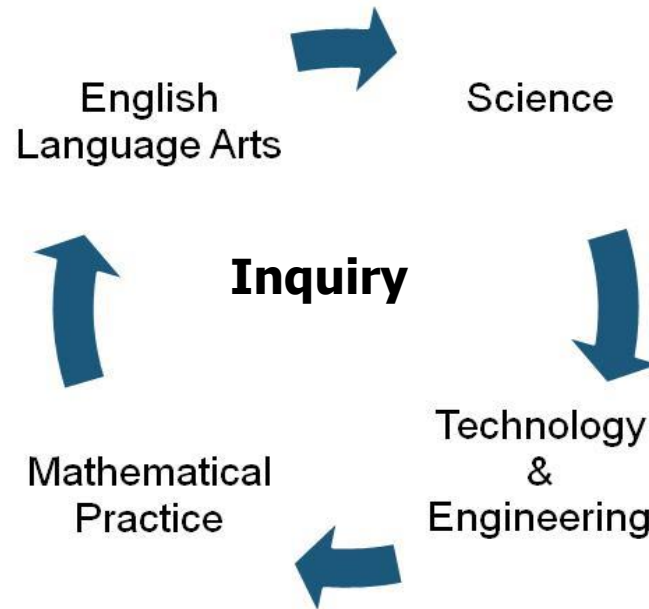
5E: Evaluate

And the Winner is…

5E: Evaluate

Transdisciplinary Approach

The organization of curriculum and instruction around student questions, where concepts and skills are developed through real-life context

Think-Pair-Share

How does STEM fit in your curriculum?

Components of a 5 E Lesson

- **Students** are constructing knowledge.

- **Students** are thinking and analyzing.

- **Students** are understanding and applying knowledge.

- **Teachers** are *facilitating* and *guiding* instruction