## ANTICIPATION GUIDE

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Where's Poly?
WHERE’S POLY

• WHAT DO YOU NOTICE?
WHERE'S POLY

- EACH DOT IS A VERTEX.

- WHAT DO YOU NOTICE?
WHERE’S POLY

WHAT DO YOU NOTICE?
WHERE’S POLY

• WHAT DO YOU NOTICE?
AGENDA

• DEFINING PROBLEM BASED LEARNING
• BENEFITS OF PBL
• TASKS THAT SUPPORT PBL
• CHALLENGES IN PBL
• PBL RESOURCES EXPLORATION
OBJECTIVES

› CONNECT PROBLEM BASED LEARNING TO THE INSTRUCTIONAL SHIFTS IN MATHEMATICS
› DEFINE PROBLEM-BASED LEARNING (PBL)
› EXPLAIN THE BENEFITS AND CHALLENGES OF PBL
› IDENTIFY LEARNING TASKS THAT PROMOTE PBL
› UTILIZE RESOURCES THAT SUPPORT PLANNING FOR PBL
NORMS

› PARTICIPATE ACTIVELY
› PAY ATTENTION TO WHAT HAS MEANING FOR YOU
› ASK QUESTIONS
› APPLY THE LEARNING TO YOUR OWN SITUATION
› SUPPORT OTHERS’ LEARNING
IT’S TIME TO CHANGE THIS MESSAGE!

STAND UP IF YOU ARE NOT GOOD AT MATH

Stand up if you have a difficult time sharing information.

Stand up if you have a difficult time reading.
PBL ENGAGES STUDENTS IN EXPLORATIONS OF SCIENTIFIC PHENOMENA BY CHALLENGING THEM WITH REAL-WORLD TASKS REQUIRING THEM TO PLAN, CONDUCT, AND REVISE SOLUTIONS, COLLECT EVIDENCE, CITE THEIR FINDINGS, AND SUPPORT THEIR ARGUMENTS. THIS FUNDAMENTAL SHIFT IN SCIENCE EDUCATION IS SUPPORTED WITH INQUIRY-BASED INSTRUCTION AND MOVES AWAY FROM THE TRADITIONAL MEMORIZATION OF SCIENCE KNOWLEDGE, THUS CHANGING THE FOCUS FROM TEACHING TO A FOCUS ON STUDENT-CENTERED LEARNING.

How can we define PBL?

- Use your cell phone or laptop and research a definition.
- Consider the types of learning tasks that students would do.
- Share your definition with a colleague.
### Benefits of PBL Bingo

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<th>Problem-Based Learning Benefits BINGO</th>
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<tr>
<td><strong>Collaboration</strong></td>
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<td><strong>ELA/Literacy</strong></td>
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<td><strong>Use of Media</strong></td>
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<td><strong>Leadership</strong></td>
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<td><strong>Civic Responsibility</strong></td>
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COMPARE/CONTRAST LEARNING TASKS

Candy Jar vs. Missing Values
https://tinyurl.com/ydhhlkduf
Which is more important: the task or the teacher’s role in supporting the task?
DISCUSSION:

WHAT IS THE ROLE OF THE TEACHER IN A PROBLEM-BASED LEARNING CLASSROOM?

WHAT IS THE ROLE OF STUDENTS IN A PROBLEM-BASED LEARNING CLASSROOM?

WILL IT BE DIFFICULT TO BALANCE CLASSROOM ROLES SO THAT THERE IS ENOUGH STRUCTURE AND EXPLORATION?
“TO COPE WITH THE DEMANDS OF THE 21ST CENTURY, PEOPLE NEED TO KNOW MORE THAN CORE SUBJECTS. THEY NEED TO KNOW HOW TO USE THEIR KNOWLEDGE AND SKILLS – BY THINKING CRITICALLY, APPLYING KNOWLEDGE TO NEW SITUATIONS, ANALYZING INFORMATION, COMPREHENDING NEW IDEAS, COMMUNICATING, COLLABORATING, SOLVING PROBLEMS, MAKING DECISIONS.”

(PARTNERSHIP FOR 21ST CENTURY SKILLS, 2002, PAGE 11)
CHALLENGES IN PROBLEM-BASED LEARNING

- Changing Teacher Role
- Scaffolding for Student Success
- Management Skills
- Training and Support
- Risk Taking
- Learning from Mistakes
- Collaboration
- Confidence with Tools and Resources
- Time Management
- Assessment
- Identifying a Task
- Content/Standards Knowledge
WHAT SHOULD MATH DOERS DO?

YOUCUBED AT STANFORD
PUBLISHED ON JUL 17, 2015

And this fella in my group had a cool idea too.
MATHEMATICAL PRACTICES

- EIGHT PRACTICES
- INTERWOVEN
- MEANS USED BY STUDENTS TO EXPLORE THE ABSTRACT, BIG IDEAS IN MATH

Taken from http://www.ascd.org/ascd-express/vol8/805-parker.aspx on 3/23/19
ASCD Express: Common Core: Now What? December 6, 2012 | Volume 8 | Issue 5
ASSESSING THE PRACTICES

Navigate to: https://tinyurl.com/ycleduf

Develop a list of Look-Fors for your assigned practice based on the descriptions of the mathematical practices located on the Padlet.
RESOURCES FOR PBL

- Take time to explore some resources from the list located on the Padlet.

- Be prepared to share out your oh’s and ah’s.
COMMON CORE/NJSL/JSLS KEY SHIFTS IN MATHEMATICS

- **FOCUS** - IS THE LESSON FOCUSED ON THE CONTENT OF THE STANDARD?
- **COHERENCE** - HOW DOES THE TEACHER ACTIVATE PRIOR KNOWLEDGE FROM THE COURSE OR GRADE BAND TO THE CURRENT TOPIC?
- **RIGOR** - WHAT DOES THE TEACHER DO TO PROMOTE PRODUCTIVE STRUGGLE?
PLANNING FOR PROBLEM BASED LEARNING

• IS PBL ENOUGH TO DEVELOP MATH PROFICIENCY?

• WHAT LEARNING ACTIVITIES DO TEACHERS NEED TO PROVIDE FOR STUDENTS TO BECOME PROFICIENT?
REFLECTION

THINK OF YOUR FAVORITE ACTIVITY

COMPLETE THIS ANALOGY

PBL IS LIKE (INSERT YOUR FAVORITE ACTIVITY)

BECAUSE
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THANK YOU!

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