Encourage 'Thinkering' in Problem Solving

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Rob Nickerson
r_nickerson@origomath.com

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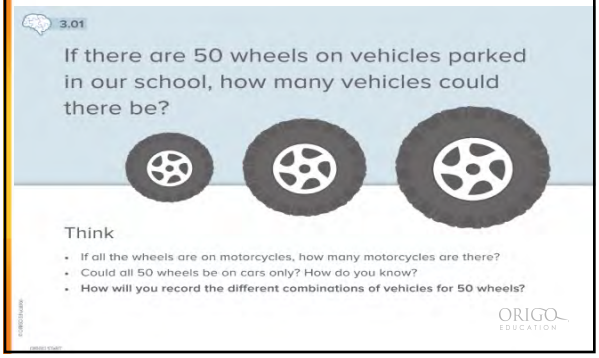
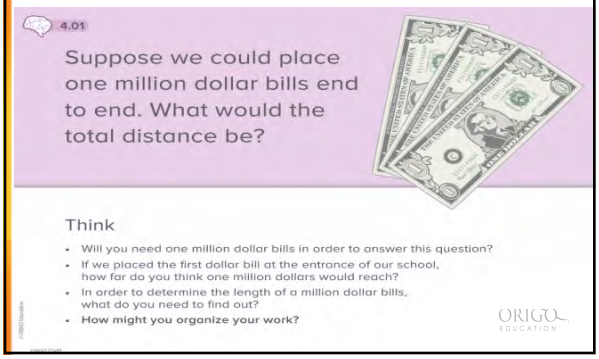
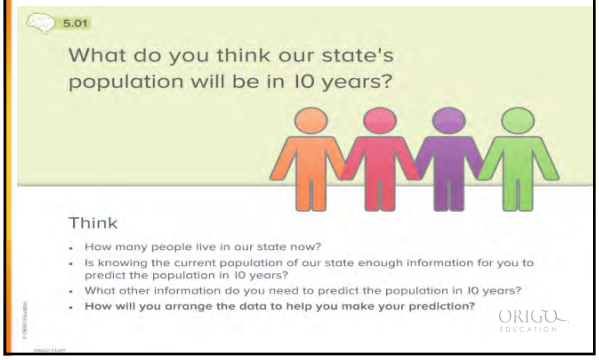
Grade 3-Watching Wheels-3.01



Grade 4-Making a Million-4.01



Grade 5-State Populations-5.01



Warm Up

A new tunnel will be exactly one kilometer long. The machine bores 1/3 meter every 6 hours. If they work 24 hours a day, how many days will it take to bore the tunnel?

ORIGO Stepping Stones

A Question or a Problem

"What do I know?"

"What am I trying to figure out?"

Encouraging Reflection and Justification

Making the Mathematics Visible

"Can I do this mentally?"

"Do I need to draw it out or use a model?"

"Do I need some other tool to show my thinking?"

Aha!

"I think this will work!"

"I understand what to do next!"

"I got it!"

Stumped!

"I don't get it!"

"Do I understand the question?" "Argh! I want to give up!"

Gathering Information

"Hmmm... I notice..."

"I wonder if..."

Tinkering

"Let me try..."

"I think I know where I can start..."

Problem Thinking

"Now that I've seen a pattern, let me keep trying... "

Adapted from: C. Charney and J. Maxfield

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How do we create a good problem-solving environment?

- Be a model problem solver
- Allow for risk taking and mistake making
- Ask good questions
- Require students to justify their thinking
- Understand that it is not a straight path to the solution