

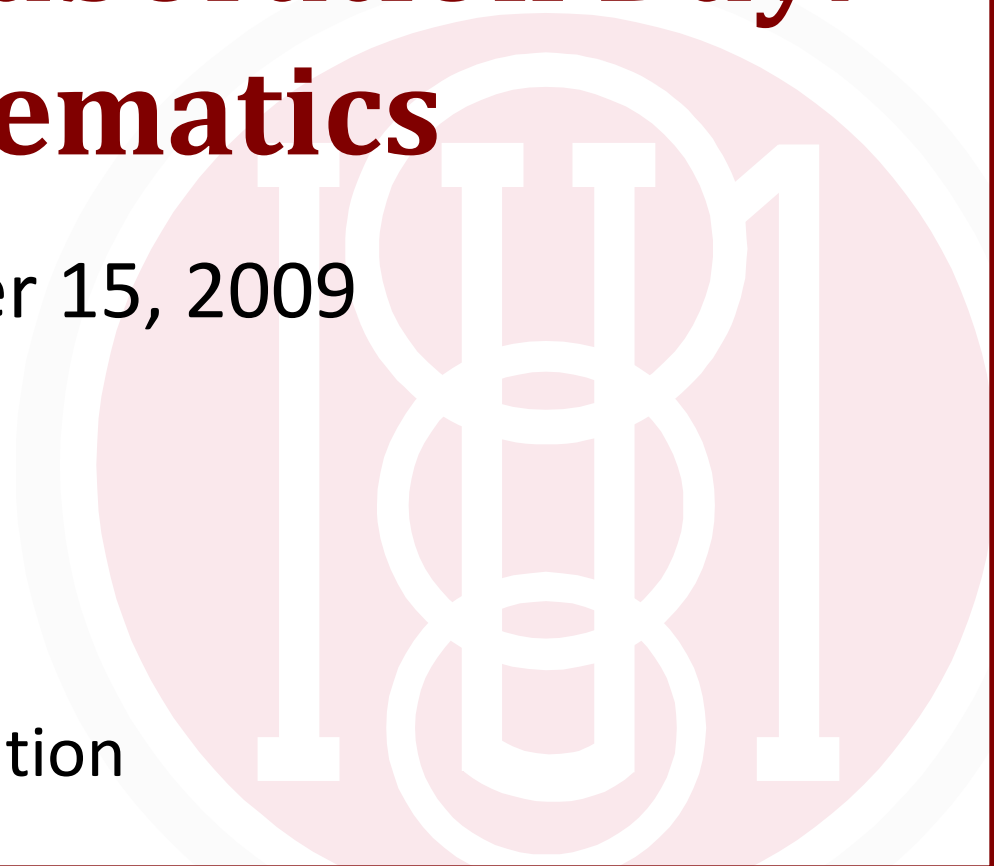
Content Collaboration Day: Mathematics

October 15, 2009

Amy Lewis

Math Specialist

IU1 Center for STEM Education



Using Calculators in the Elementary Classroom

- Agenda
 - Examples
 - Counting
 - Operations
 - Place Value
 - Rationale for using calculators at this level
 - Resources
 - Q & A



Calculator Up and Back

- Press the following buttons on your calculator:

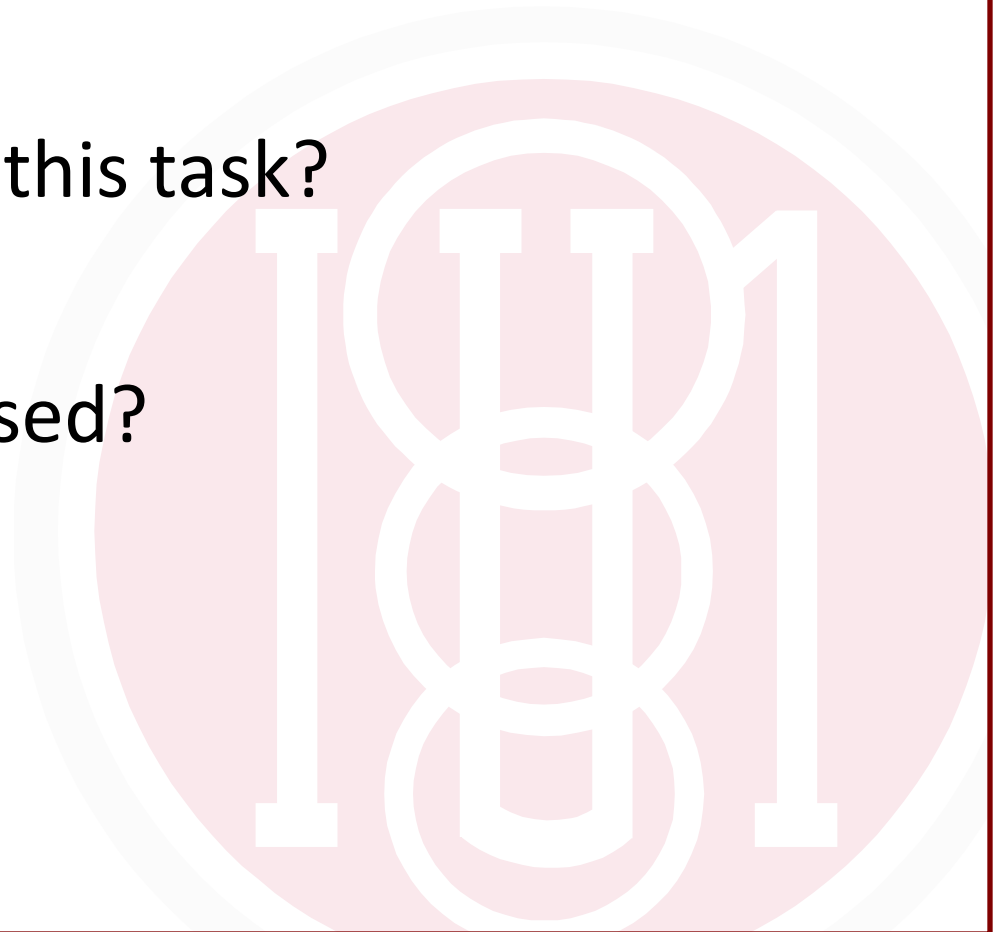


- Let's try working backwards!






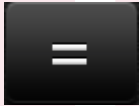
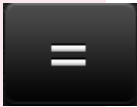


Calculator Up and Back



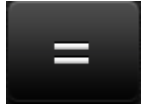
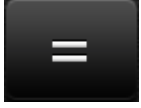
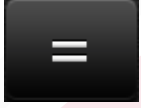
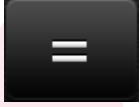
- What mathematics is involved in this task?
- What is the value of this task?
- When should it be used?



A Two-More-Than Machine

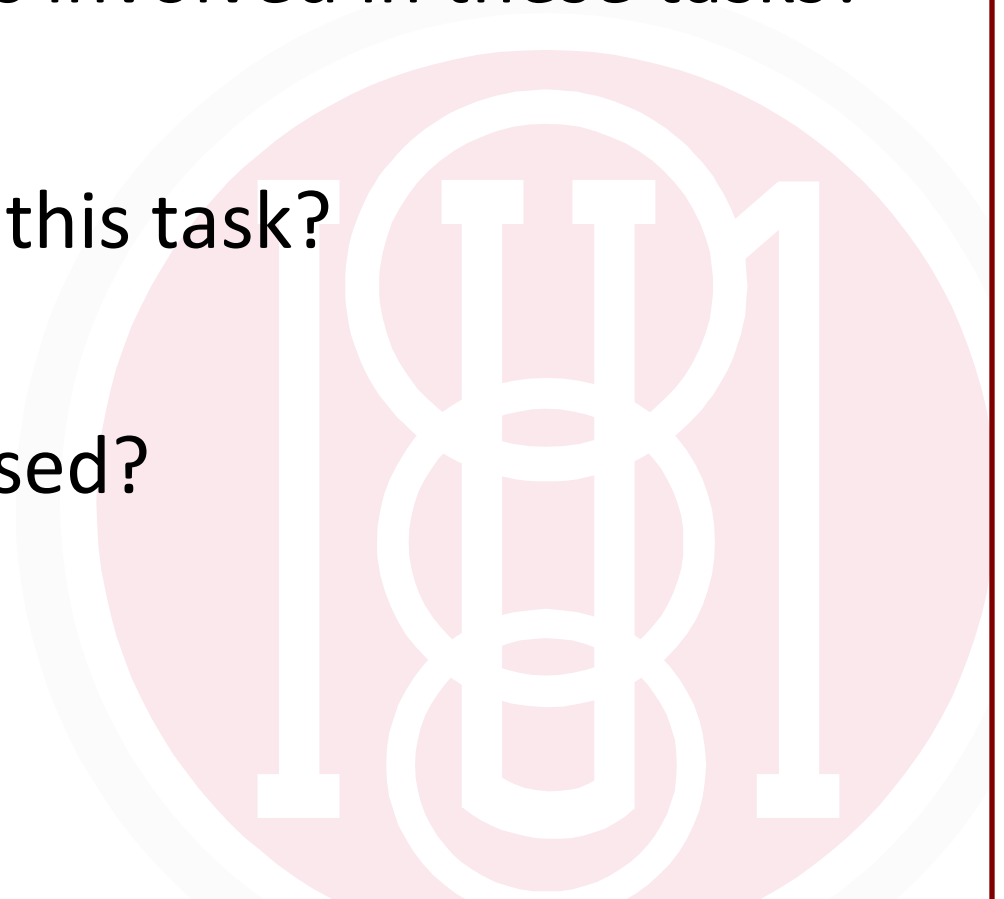
- Press    
- What comes next?
- Press  .
- Hold your finger over the  and think what comes next.
- When you know, hit the  . Were you correct?
- Continue with your Two-More-Than Machine.

A Doubling Machine

- Press   
- What comes next? Press  .
- Hold your finger over the  and think what comes next.
- When you know, hit the  . Were you correct?
- Continue with your Doubling Machine.
- Start with another number.
- Create a tripling machine.

Two-More-Than & Doubling Machines



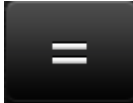
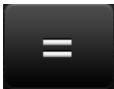
- What mathematics is involved in these tasks?
- What is the value of this task?
- When should it be used?



Calculator Challenge Counting

or

Calculator Skip Counting

- Press any number on your calculator.
- Press   .
- Continue to add 8 mentally
 - Challenge yourself to say the number before you press .
- See how far you can go before making a mistake!

Calculator Challenge Counting

or

Calculator Skip Counting

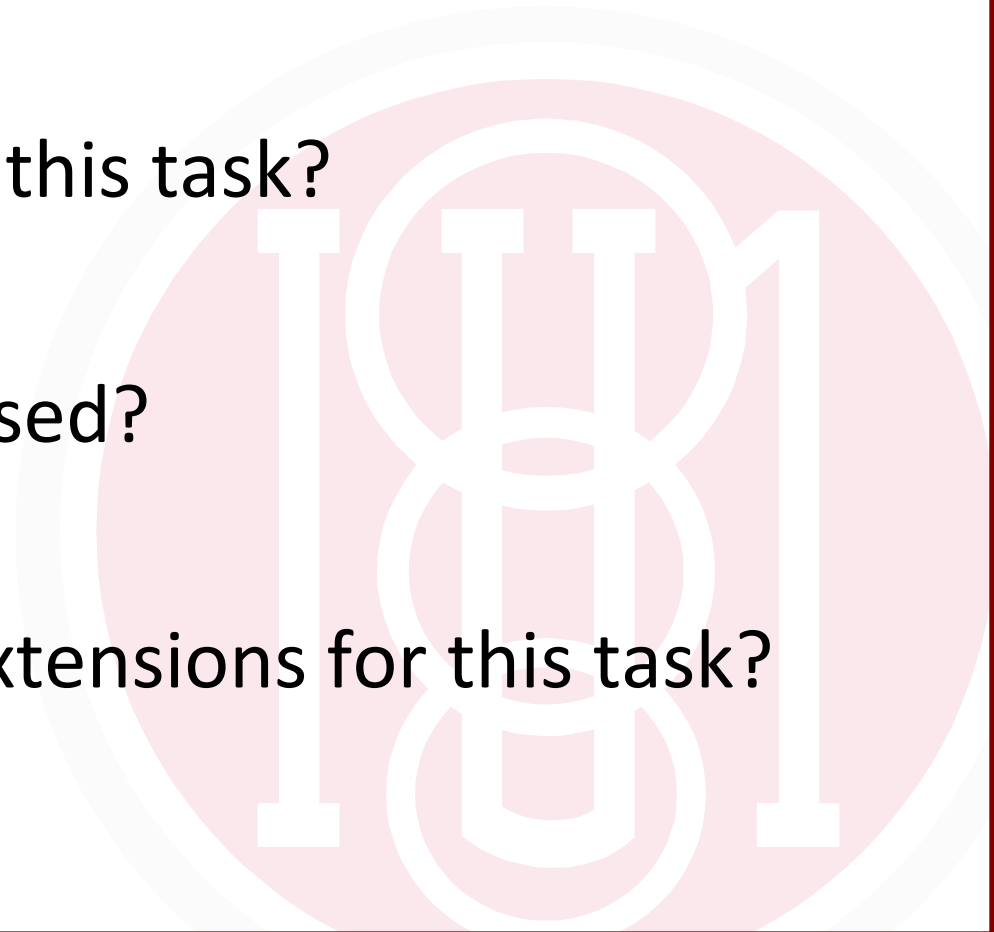
- What mathematics is involved in this task?
- What is the value of this task?
- When should it be used?
- What are possible extensions for this task?

Calculator Decimal Counting

- We now know how to make our calculators count by whatever number we want.
- So, let's count by 0.1!
 - Stop when your calculator gets to 0.9.
 - What's next?
 - How many presses does it take to get from 1 to 2?
- How about 0.01? 0.001?
 - How many presses does it take to get from 1 to 2?

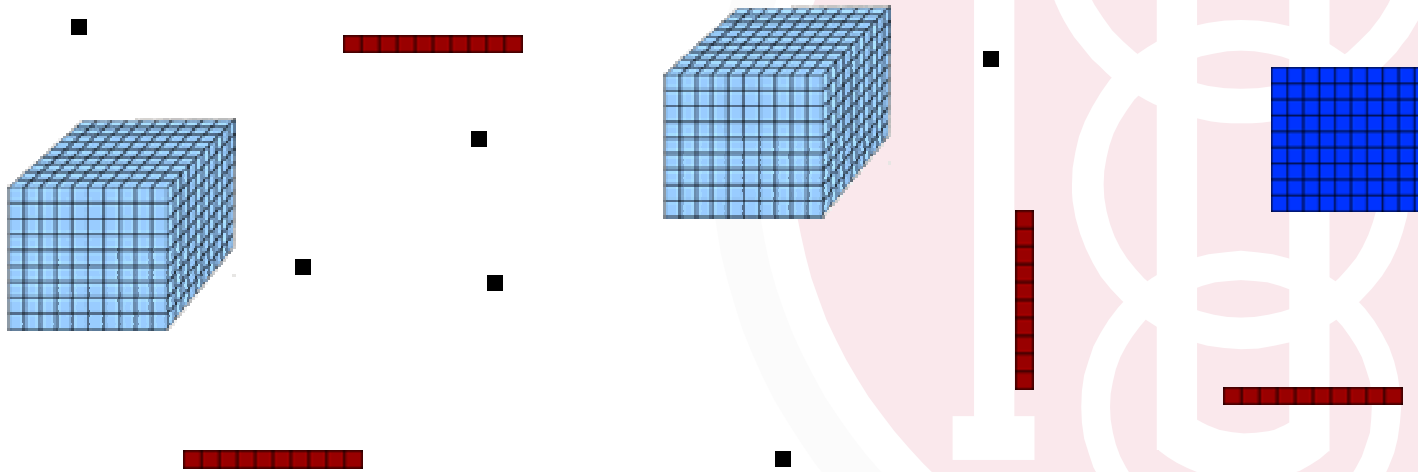
Calculator Decimal Counting

- What mathematics is involved in this task?
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- When should it be used?
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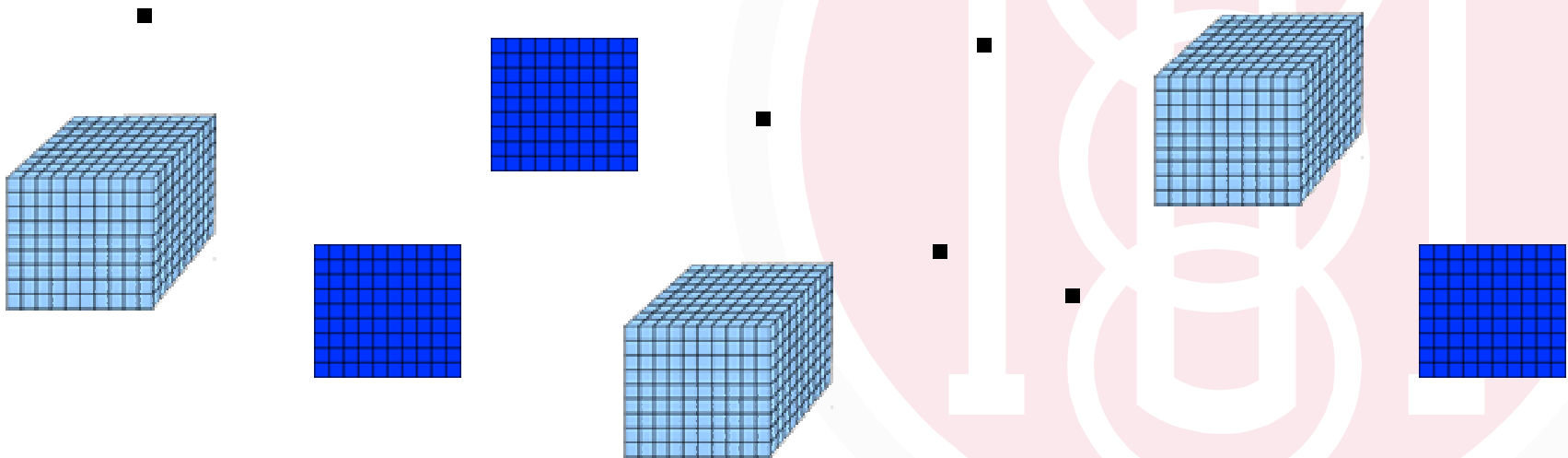
Say It/Press It

- Directions:
 - Say the number in base-10 language.
 - Say the number in standard language.
 - Enter the number into your calculator.



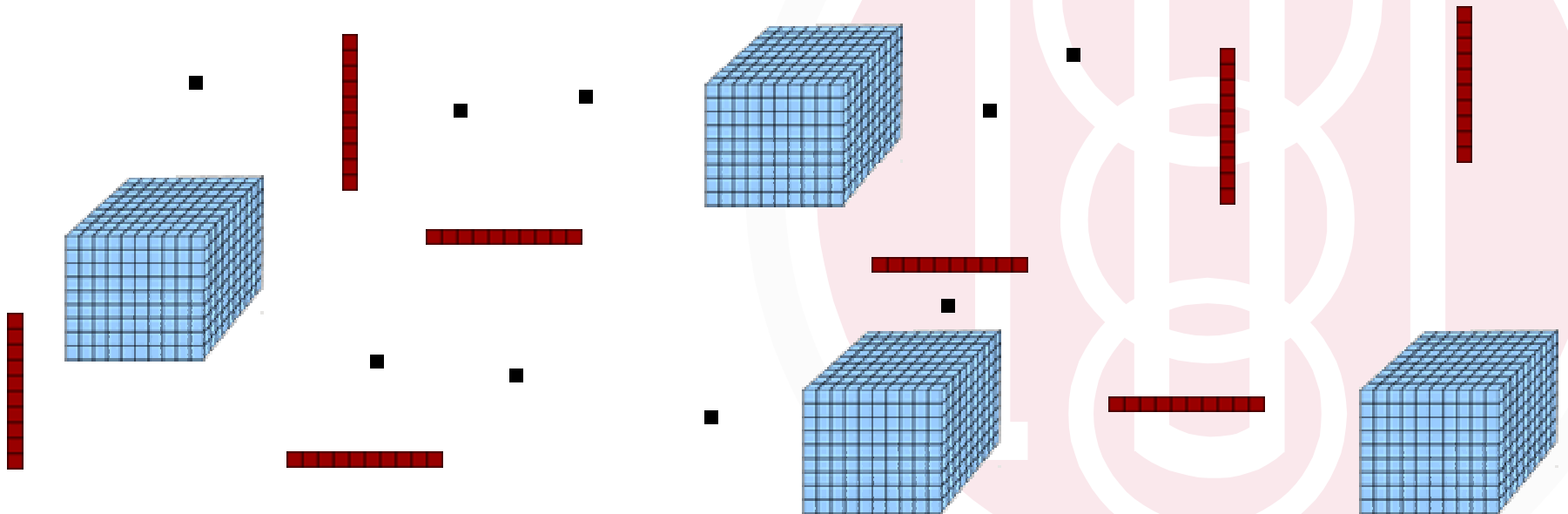
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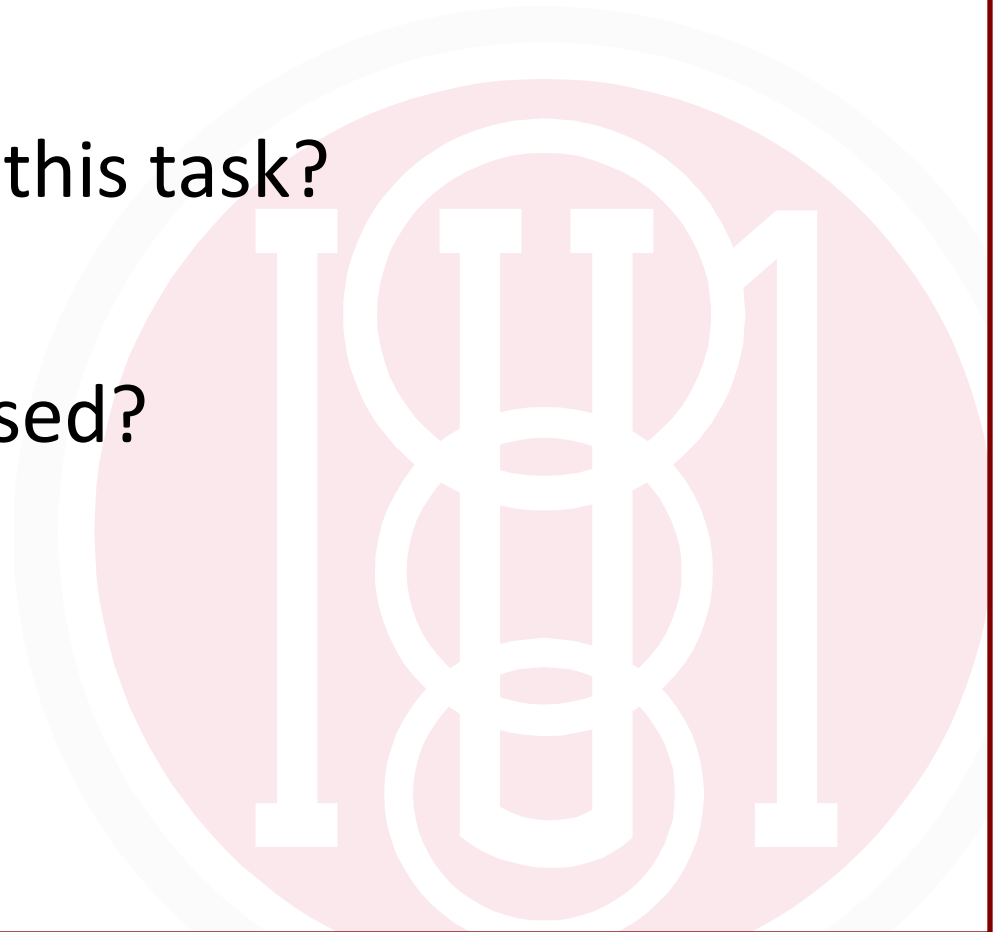
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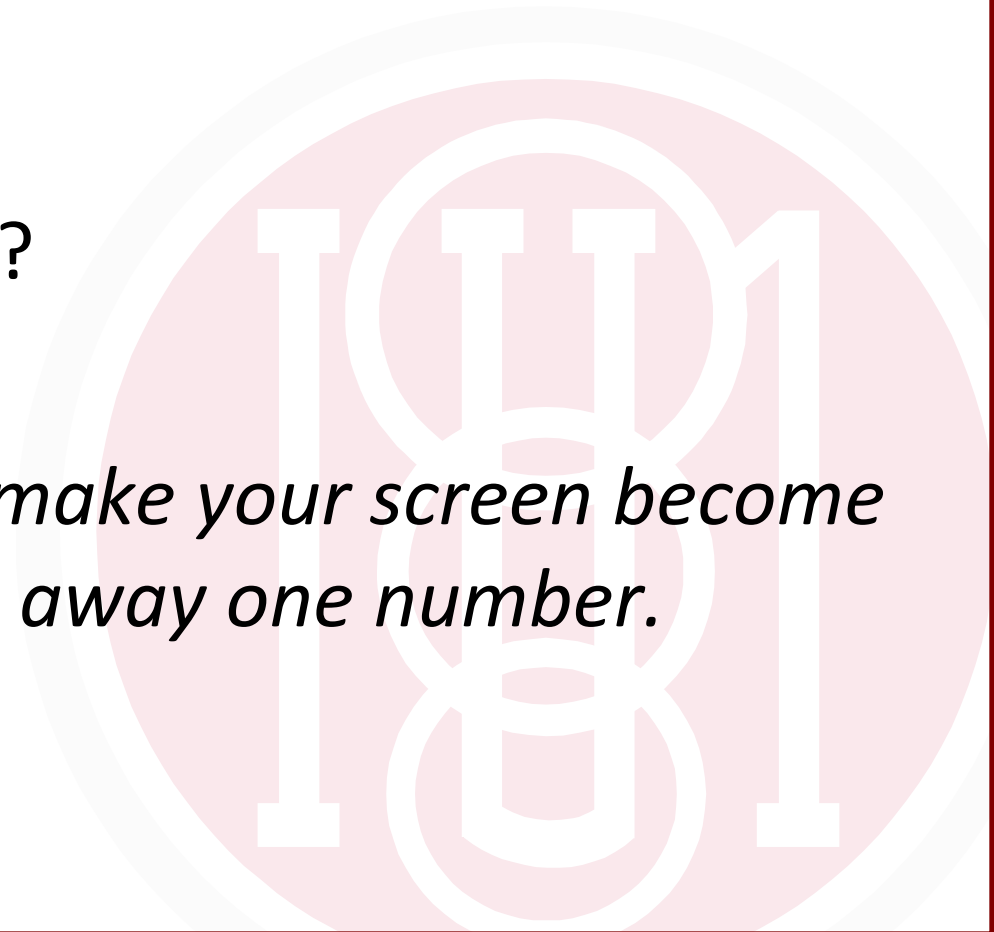
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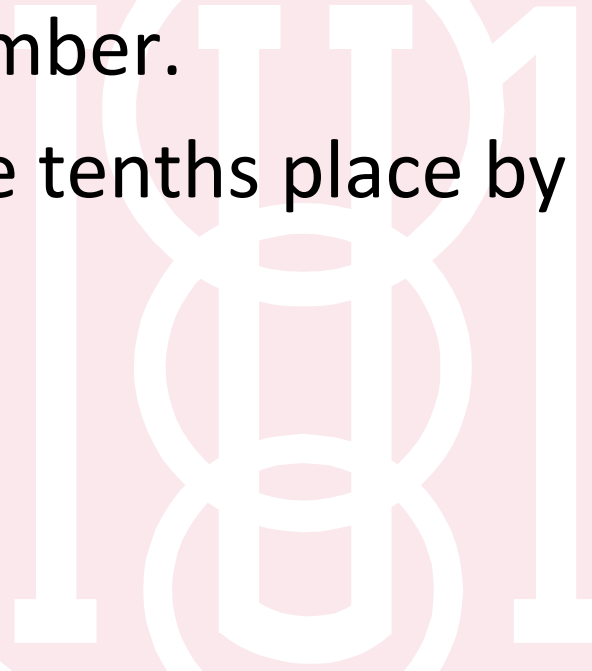
Wipe Out

- Enter the number 45673.189 into your calculator.
- What is this number?
- *Your challenge is to make your screen become 40673.189 by taking away one number.*



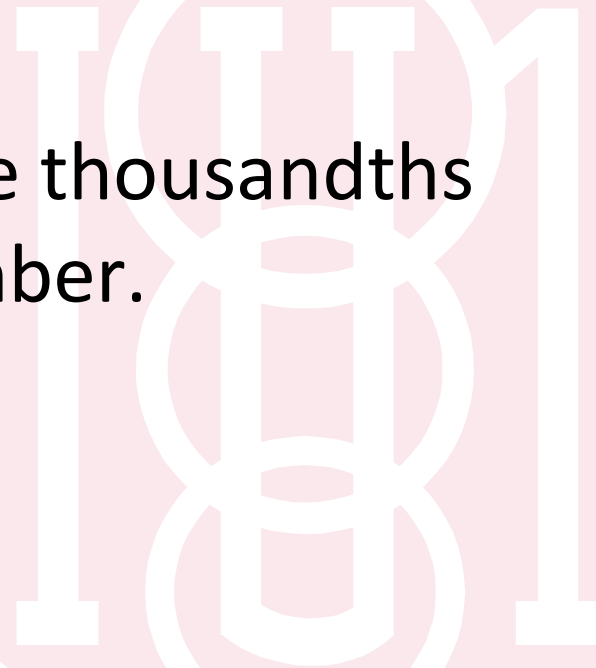
Wipe Out

- Wipe out the number in the tens place by taking away a number.
- Change the number in the ten-thousands place to a 6 by adding a number.
- Wipe out the number in the tenths place by taking away a number.



Wipe Out

- Wipe out the number in the hundreds place by taking away a number.
- Change the hundredths digit to a 7 by subtracting a number.
- Wipe out the number in the thousandths place by taking away a number.



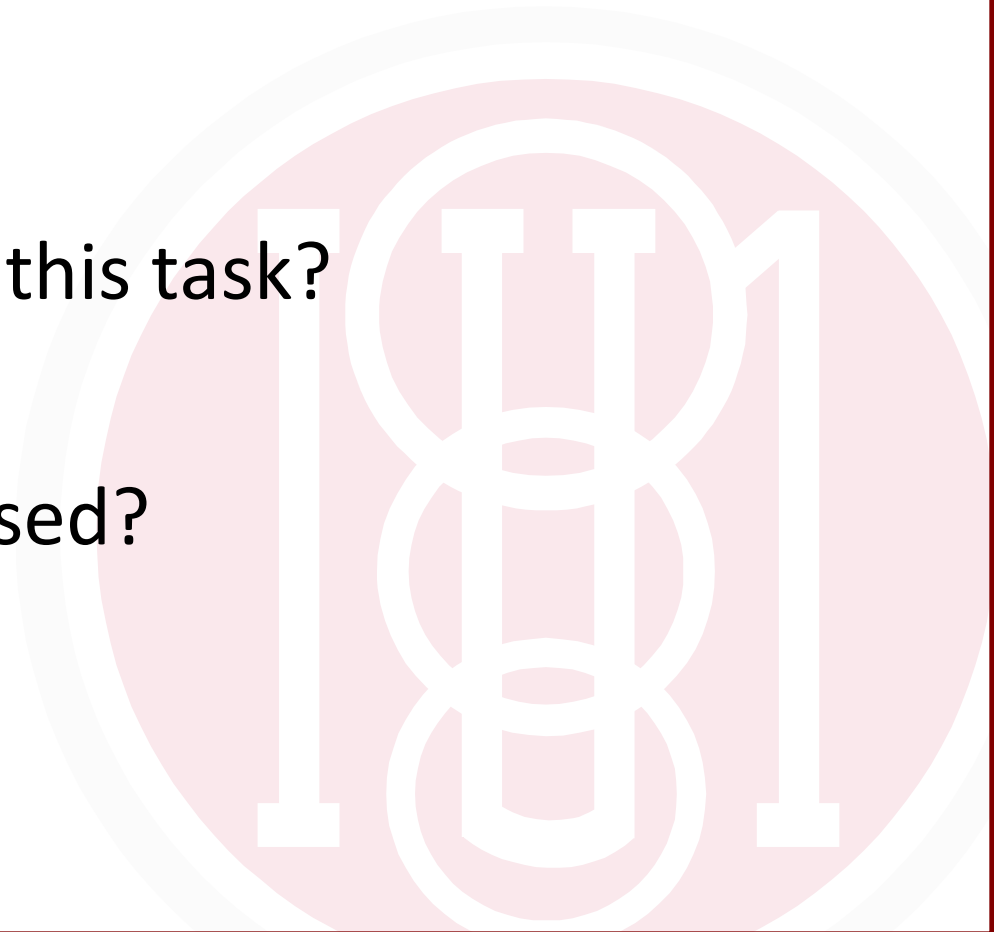
Wipe Out

- Wipe out the number in the ten thousands place.
- Wipe out the ones.
- Wipe out the hundredths place.
- Are you wiped out?



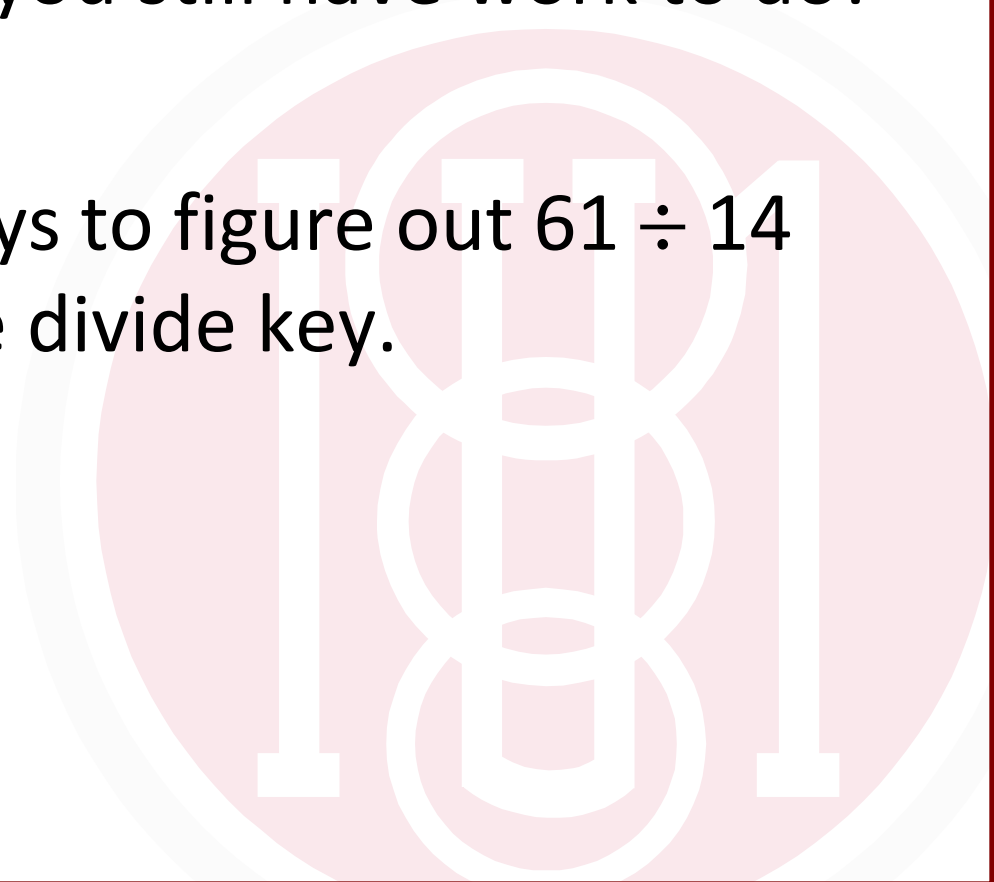
Wipe Out

- What big ideas of the base-ten system did you use in Wipe Out?
- What is the value of this task?
- When should it be used?



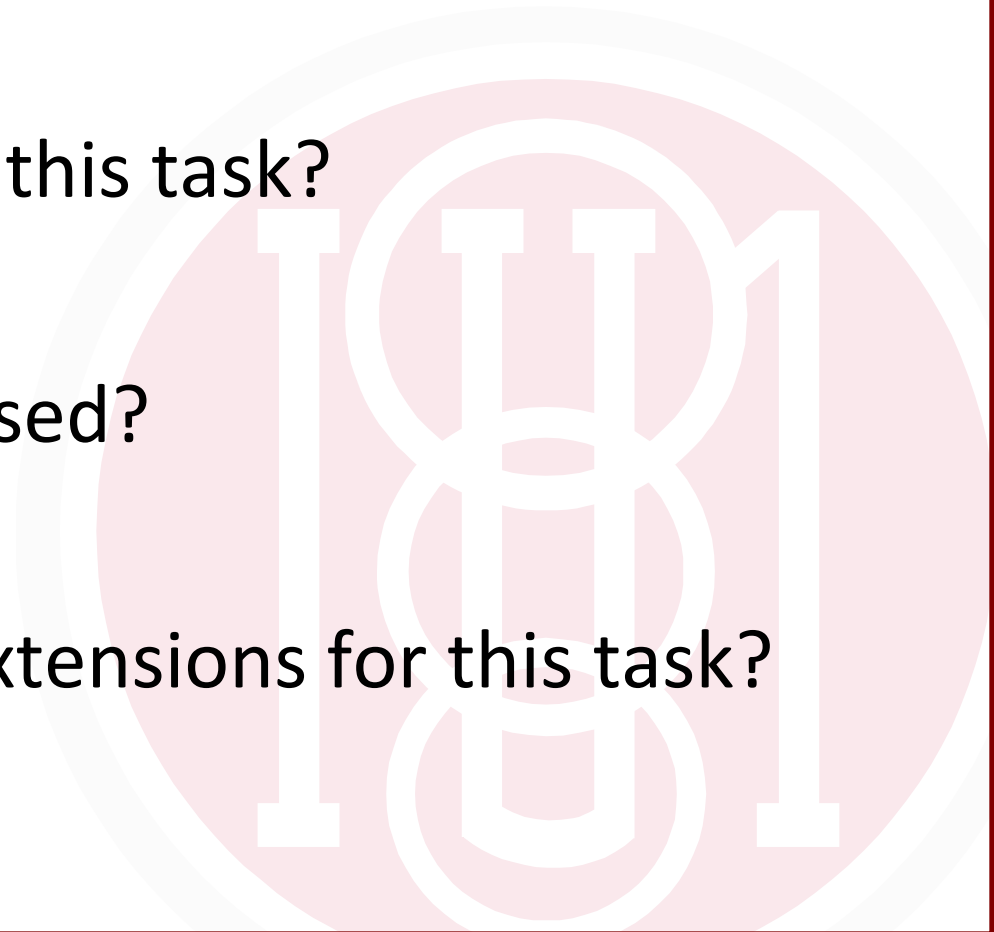
The Broken Division Key

- Oh, no! The division key no longer works on your calculator, but you still have work to do!
- Find at least two ways to figure out $61 \div 14$ without pressing the divide key.



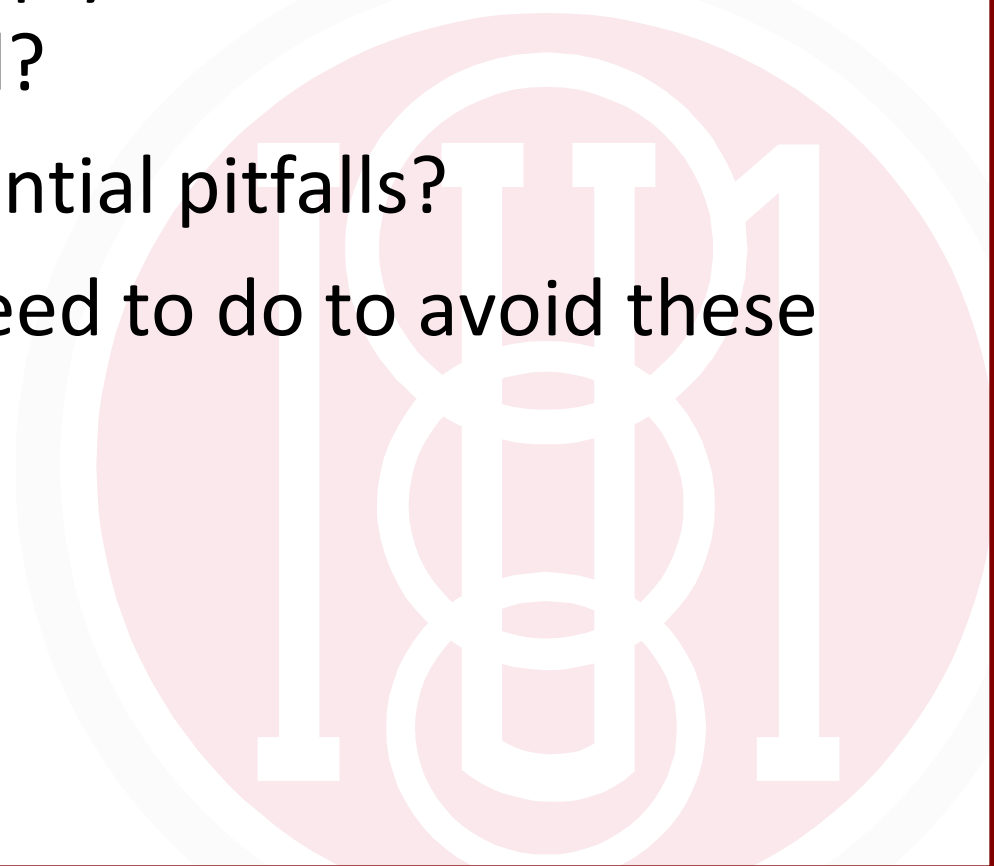
The Broken Division Key

- What mathematics is involved in this task?
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“They’ll never learn their facts!”

- How can the use of calculators *assist* students in thinking more deeply about mathematics at the elementary level?
- What are some potential pitfalls?
- What do teachers need to do to avoid these pitfalls?



Resources

- Texas Instruments: Classroom Activities

<http://education.ti.com/educationportal/sites/US/sectionHome/classroomactivities.html>

- *Teaching Student-Centered Mathematics* Series, John A. Van de Walle

<http://www.allynbaconmerrill.com/authors/bio.aspx?a=496bc376-e400-40f2-8d90-fa1b61237aa4>

- National Library of Virtual Manipulatives

<http://nlvm.usu.edu/en/nav/vLibrary.html>

Q & A



Thanks!

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Materials can be found at

<http://makingsenseofmath.iu1.wikispaces.net>