
Intermediate Numeracy Routines: Part Two - Cambridge Elementary

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What are Number Routines?

Number routines are a collection of easy to prep, 5 to 10 minute routines that you can use daily as warm-ups, mini lessons, with the whole class or in small groups. They focus on the big ideas in Mathematics.

Why Use Numeracy Routines?

- Builds a Math community where students feel safe to take risks and can learn from one and other
- Provides daily number sense experiences that assist students in developing mental math skills and computational fluency
- Fosters discussions about numbers and their relationships
- Responsive to students' understandings
- Allows for spiralling through concepts and helps students make connections to the big ideas in mathematics
- Emphasizes the core and curricular competencies in relation to mathematical content.
- Provides opportunities for students to clarify their thinking, consider strategies, and build a repertoire of efficient strategies

Which Curricular Competencies Are Developed?

Reasoning and Analyzing

- estimate reasonably
- develop mental math strategies and abilities to make sense of quantities

Understanding and Solving

- use multiple strategies to engage in problem solving

Communicating and Representing

- communicate in many ways including orally, concretely, pictorially, symbolically

Connecting and Reflecting

- visualize and describe mathematical concepts
- connect mathematical concepts to each other
- share and reflect upon mathematical thinking

Tell Me Everything:

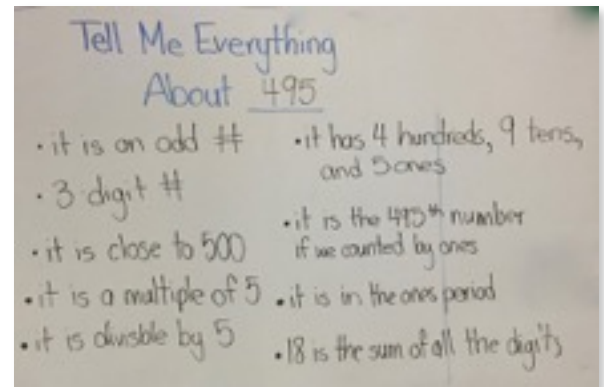
In this routine, the teacher selects a number/image/symbol and asks the students to share everything they know.

Potential content learning intentions:

- depending on the number the teacher selects and how he/she records the students' thinking, different mathematical concepts can be highlighted. Teacher could also select an image or a symbol and ask the students to share what they know.

Guiding Questions:

What do you know about the number? Shape?
How many thousands? Hundreds? Tens? Ones?
What benchmark number is it closest to?
What numbers is it a multiple of? What is it divisible by?
What would _____ be a lot of?
Is it even/odd? How do you know?
How much more would you need to get to 1000?



Would You Rather?

This routine asks students to break down each option, then compare the two scenarios, and chose the one they would rather have. Then they must justify their explanation.

Potential content learning intentions:

- depending on the options selected by the teacher, you could focus on any content area.

Guiding Questions:

What's going on here?
What are you noticing?
Tell me something about this problem.
What do you estimate your answer might be?
Stop there for a second. We're in the details, but can you remind us why you were figuring that out in the first place?
Before you calculate that, can you tell us why you'd want to?
Were you working off a hunch? Did it work? Why or why not?
What was going on through your head when you noticed that?
What tipped you off that something wasn't right?
Does anything strike you as unreasonable here, or does it hold together?
What would convince you?

Which would you rather purchase jeans from?

Store A		Store B
30% off one pair		\$30 dollars off
\$70		

Supporting Website:
<http://www.wouldyourathermath.com/>

101 Questions

In this routine, students are shown images and asked to share their questions. The emphasis is on asking questions and delaying answers in order to highlight student wondering.

The potential learning intentions:

- develop curious students with a positive disposition towards mathematics

Guiding Questions:

What question do you think most people will ask?

What question would you really want to answer?

What question would you never want to have to figure out?

Why?

Share your questions at your table. Did anyone else's question inspire you to think of a new question, or add to theirs?

What's a question you heard today that was surprising/interesting/thought provoking to you?

Did you ask any questions we could figure out using mathematics, if we wanted to?



Supporting Website: <http://www.101qs.com/index.php>

My Favourite No

In this routine the teacher asks the students a question and passes out index cards for them to do their work on. The teacher collects the cards and does a quick sort into yeses and nos. Then the teacher chooses their favourite mistake, rewrites it so the student's identity is anonymous, and has the class analyze it. The teacher begins by asking the students what they like about what the student did.



Guiding Questions:

Who can tell me something this student did well?

What else did this student do that was right?

Talk at your tables. Where did this student go wrong?

What would you suggest to this student?

Supporting video: <https://www.youtube.com/watch?v=srJWx7P6uLE>

Same/Different

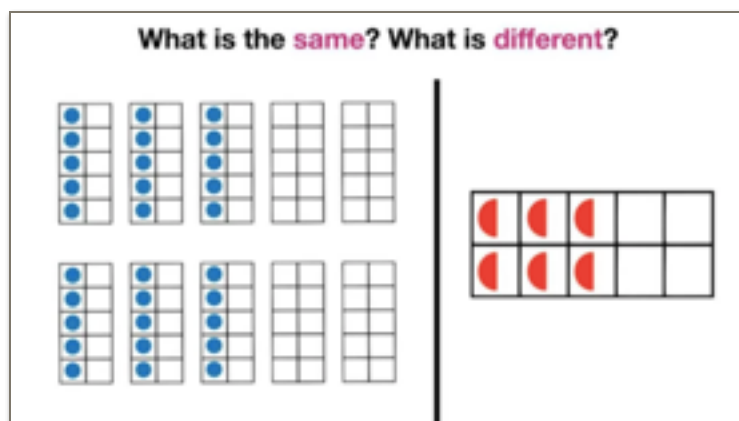
The True/False Equations activity engages students in considering the meaning of equality and developing relational thinking. In this activity, the teacher poses an equation, asks students to decide whether the equation is true or false, and facilitates a discussion around how they might prove whether it is true or false. True/false equations provide a context in which students develop understanding of the equal sign to mean “the same as.” By providing opportunities for students to develop a robust understanding of equality and strategies for thinking relationally we can support their development of algebraic reasoning from an early age.

The potential content learning intentions:

- identifying relationships between objects, shapes, and numbers

Supporting websites/videos:

- <https://samedifferentimages.wordpress.com>
- Twitter Hashtag #samedifferent or #samedifferentmath



Between Two Numbers

Created by Fawn Nyguen, a middle school teacher in California, this site asks students to apply their understanding of ratios and proportional reasoning to comparing interesting items.

It would take about ___ dump trucks to haul away the volume of Mt. Everest.

- 1 million
- 50 million
- 1 billion
- 5 billion

The potential content learning intentions:

- ratios and proportional reasoning
- depending on the question, other mathematical concepts can also be explored.

Supporting Website: <http://www.between2numbers.com/>

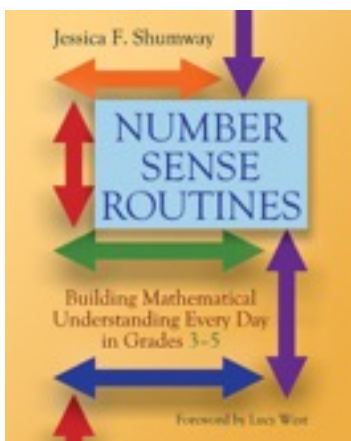
Talk Moves

When facilitating a number routines, it will take time for all of your students to feel comfortable sharing their thinking aloud with the class. In some cases, students may not ever become comfortable sharing out loud. We as teacher, can use 'talk moves' to provide opportunities to hear more voices, outside of the students who always volunteer.

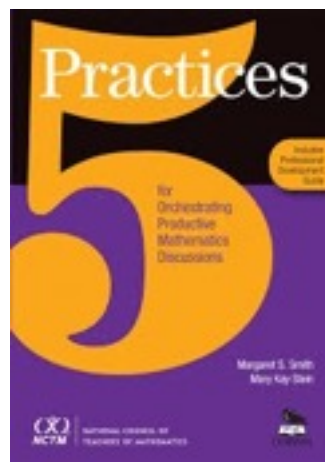
Please see other handouts and bookmark for specific suggestions.

Supporting Video Example: <https://www.teachingchannel.org/videos/student-participation-strategy>

NOTES:



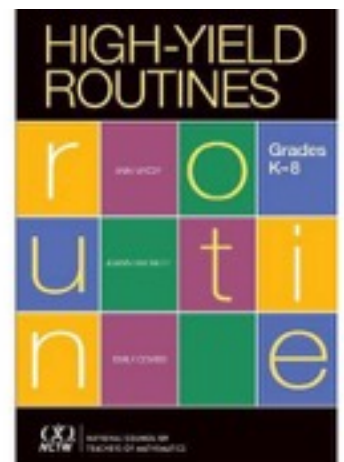
Coming to
LRS soon



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