Learning Targets: I can show my mathematical thinking in pictures, numbers and words.
(For teacher review, check out *the progression of multiplication*, from the *Making Sense Series* https://vimeo.com/149428217)

- using flexible computation strategies (e.g., decomposing, distributive principle, commutative principle, repeated addition, repeated subtraction)
- using multiplication and division in real-life contexts and problem-based situations
- whole-class number talks

Opening Number Talk: 13 X 8
Invite students to look at the equation, and without pencil and paper, figure out the answer. (Reminder to students to have their fists in a discreet position and put up a thumb when they think they know the answer). When most thumbs are up, invite willing students to share their answers. Gather several answers on the board. Next, invite students to describe how they solved it. Consider how best to record each way of seeing and solving. Paraphrase student responses, ask questions to clarify, and record students' thinking in pictures and numbers.

A Three Act Task: Super-Bear

http://mrmeyer.com/threeacts/superbear/

(Bring in gummy bears to share at the end of this lesson)

ACT ONE: Watch the 21 second clip. As a whole group, invite students to think about and share what they noticed in the clip and what they wonder, and record their ideas.

What did you notice?	What do you wonder?

If you wanted to eat enough Mini-Bears to match the Super-Bear, how many would it take? What if you ate the Regular-Bears? How many would it take to match the Super-Bear? Invite students to estimate how many Mini-Bears AND how many Regular-Bears they think they

would have to eat to match the Super-Bear and come up with a *too low estimate* and a *too high estimate* for each. Students write their estimates on two different coloured post-its and walk them to the chalkboard. Teacher arranges the post-its in an array.

A too low estimate:	A too high estimate:

Invite and record several estimates and collectively identify the range - the lowest estimate in the class and the highest of the estimates in the class.

Next, invite students to consider, "What information would help solve this problem? How would you get it? What tools would you use?" Record their ideas.

ACT TWO: Carefully viewing the videos, invite students to consider the mass of ten Mini-Bears, the mass of ten Regular-Bears, and the mass of one Super-Bear. What information do we need to put to use? And how?

Arrange Random Groupings - model using an array to randomly sort students into groups of three.

In groups of three, using the vertical nonpermanent surfaces, invite students to figure out "If you wanted to eat enough Mini-Bears to match the Super-Bear, how many would it take? What if you ate Regular-Bears?" Students are encouraged to show their thinking in pictures, numbers and words.

ACT THREE:
Bring the groups back together to share and reflect on their collaboration. What worked (What strategy did you use to work toward a solution)? What was difficult? What would you do differently next time?

Share the video clips - and their astonishing answers!

Mini-Bear answer - 1 791! Regular-Bear Answer - 962!