ALL LEARNERS NETWORK

Getting Started with Launch

Ready to bring number sense routines to your classroom? At All Learners Network we encourage teachers to spend the first 5-15 minutes of their math lesson on Launch. We have identified four categories of launches and chosen our very favorite by grade band to help you get started. On the following pages you can read short descriptions of each category of number sense routine.

Grades K-2

Visual Images	Estimation
Number Talk Images (small quantities or how many?)	K-2 Estimation
Reasoning Routines	**Number Strings (Number Talks)**
Same But Different (Early numeracy or addition/subtraction)	Number String examples: Addition and Subtraction

Grades 3-5

Visual Images	Estimation
Number Talk Images (start with arrays)	Estimation 180
Reasoning Routines	**Number Strings (Number Talks)**
Would You Rather Math	Number Strings (multiplication)

Grades 6-8

Visual Images	Estimation
Visual Patterns	Between Two Numbers
Reasoning Routines	**Number Strings (Number Talks)**
Which One Doesn't Belong?	Number Strings (rational numbers)

Ready for more launch routines? Check out our complete list of online launch resources or learn more about All Learners Online.

Visual Images

Visual images are powerful tools. Research suggests that there are parts of our brain that thinks about finger patterns when we do calculations. Providing images for students to think about when they are doing complex math can help them better hold the math in their heads. Visual images and models are essential in helping students to build their own conceptual understanding of important math concepts. Images also help create context, beauty, and enjoyment in the math that students are doing.

Notice/Wonder
This simple yet powerful routine starts with asking the questions: *"What do you notice? What do you wonder?"* There are no right or wrong answers - just space for students to observe and ask questions. This prompt is great to use with visual images, but is applicable across so many settings. It can be a great way to start a discussion in a way that is inclusive of all learners and all ideas. You can find many great images to get started in the "Visual Image" section of our Launch Library.

How Many? How Do You Know?
When using a visual image that particularly lends itself toward a quantity, this can be a helpful prompt to elicit different counting or additive strategies. It is inclusive of many different strategies such as counting by ones, subitizing, combining groups, skip counting, and more. The question "How do you know?" is the critical piece in asking students to consider different ways to get to a total number of objects. You can find many great images to get started in the "Visual Image" section of our Launch Library.

Estimation

Estimating is a skill connected to Number Sense that students must spend time developing. Often when asked to estimate students try to find the exact answer first or give wild guesses. Like many concepts and ideas, in order to help grow student use of estimation they must have multiple opportunities to estimate as well as opportunities to figure out a referent and be able to edit and change their estimates based on new information. As students grow their abilities to estimate their number sense is also strengthened.

Estimation tasks can take a number of different forms. Some helpful prompts when asking students to estimate include asking them to think about a number/quantity that is "way too high" or "way too low" and using those as book ends to help students come to a reasonable estimate. We want to help students use number sense and reasoning to estimate, rather than making wild guesses. During this process, however, it is important to validate all student estimates and use questioning and ongoing experience to help them build more reasonable and confident estimates. In our Library, you can find these tasks under "Estimation."

Reasoning

Tasks that focus on reasoning typically have more than one answer or MANY answers. Often the answer is dependent upon the individuals reasoning about why they arrived at their solution. The focus is on the individual to provide appropriate reasoning for their thinking - convincing others of their ideas or thoughts. Like most things, reasoning must be developed through multiple exposures over time.

Which One Doesn't Belong?
In this routine, students typically look at four objects (or groups, numbers, shapes, etc.) and justify which one is the outlier. There is no right or wrong answer - there can be valid reasons to choose any of the four as the one that "doesn't belong." The emphasis should be on students justifying their reasoning why the other three share a common attribute that the fourth one does not. In our Library, you can find these tasks under "Reasoning." To learn more about the origins of this routine, you can visit http://wodb.ca/.

Would You Rather...
This is another reasoning routine that presents two related options. Students use math, logic, and reasoning to justify their choice of which option they would prefer. Again - not about finding a correct answer, but rather focus the discussion on justification and discussion about each option. In our Library, you can find these tasks under "Reasoning." To learn more about the origins of this routine, you can visit https://www.wouldyourathermath.com/.

Number Talks & Number Strings

Number Strings/Problem Strings are powerful learning opportunities for students. Strings help students discover patterns and relationships as well as engage with the properties of operations in a way that helps them to understand the properties (even if they can't name them).

Typically strings start with an easier problem and build towards harder problems. In Number Talks these strings are done mentally. In Number Strings or Problem Strings students often are recording their thinking in a math journal. Mixing both types of strings throughout your instruction will help students become well rounded in their calculation skills. Discussing strategies for solving strings is a great way to expose students to different ways of thinking and sometimes new models for recording thinking.

In this routine, the teacher presents a problem or series of related problems for students to solve mentally. These are often equations, but could also be visual images or models such as ten frames or dot cards. Students take some time to think about the problem and hold up a thumb when they are ready to share. It can be helpful to give students a chance to turn and talk about their strategy with a peer before beginning to call on students to share strategies aloud. As students share, record their thinking on the board (even if their answer is incorrect or they make a mistake!). All thinking and strategies should be validated. If students get different answers, you can use this as an opportunity to have students double check or try solving another way. The teacher can also help students make connections by asking how various strategies are similar or different, or by recording a strategy using multiple models (i.e. equations AND an open number line). In our Library, you can find these tasks under "Number Strings." A great resource for learning more about this routine is Number Talks by Sherry Parish.

Note: This is NOT an exhaustive list of number sense routines! This document is intended to get you started with some types of number sense routines you can use as you get started with Launch. There are many other ways to build number sense (including counting routines such as choral counting or counting around the circle).