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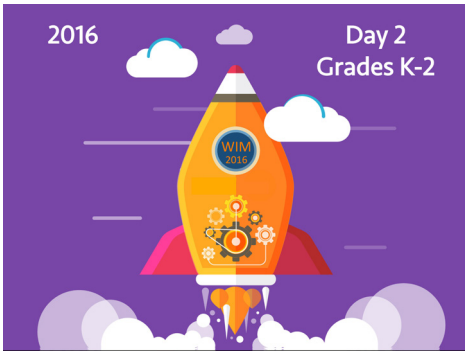
at Stanford University



Introduction:

This gives students the opportunities to see numbers, to consider how numbers are made up, and to engage with numbers flexibly. Some students can also start to think about factors and multiples.

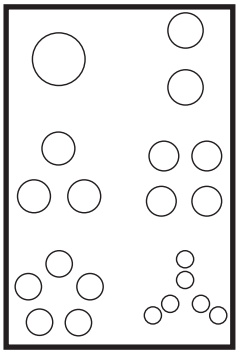
Agenda for the day:

Activity	Time	Description/Prompt	Materials
Mindset Video	5 min	Play the mindset video, *Mistakes are Powerful* https://www.youcubed.org/wim2-day-2/	Mindset Video day 2, *Mistakes are Powerful*
Seeing Numbers Visually	5 min	Introduce the activity. • Kindergarten • Grades 1 -2	1 copy of the Number Visual handout for display, page 3 grade K, page 4 grades 1, 2.
Investigate	20 min	Ask students to explore the number visuals. What they notice, what do they wonder?	1 copy of the Number Visual handout for each student.
Class Discussion	5 min	Ask students to share and discuss their observations.	
Closing	5 min	Mistakes. You may like to end the lesson by reminding students of the video they watched and of the value of struggles they went through, or mistakes they made. If they struggled or made mistakes in this lesson point out to students that their brains will probably have grown and new pathways may have formed.	

Activity:

This activity helps students realize the different and creative ways we can express numbers. Students will discover patterns in the number visual design and see different ways of combining other numbers to make a number. Number flexibility is important for all students.

Give each student a copy of the number diagram. For kindergarten students we have included the first 6 numbers, for grades 1 and 2 we have included a diagram with the numbers 1 through 20.



Grade K

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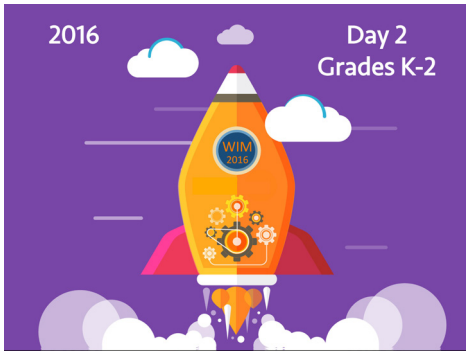
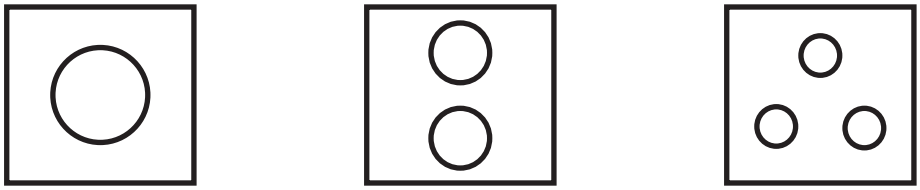
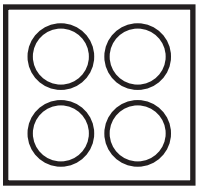


For Kindergarten:
Introduce the activity by telling students that we sometimes write numbers like this, 1, 2, 3. Sometimes we show them like this,

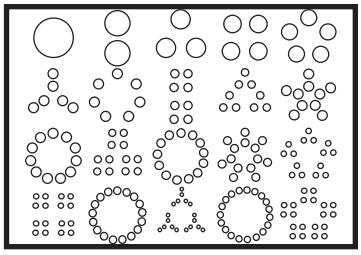


Some numbers have other numbers inside of them.
For example, this number visual for 4 is made up of 4 single circles. But do you see a two inside of the four diagram?



Ask students to spend time with their numbers and show different numbers inside them with colors. For example, a student may show a 2 and a 1 inside 3, and show these with different colors. With a 4, they may see two 2's or a 3 and a 1. Giving students time with the visuals just to see and explore the numbers is important. They may need more than one copy of the numbers, so that they can show the different ways numbers can be broken down.

For grades 1 and 2:
Ask the students to study the number visual patterns, at first on their own. What do they notice? What patterns do they see? After students have a few minutes to look for patterns on their own ask them to share what they notice with their group. Ask each group to share something that they see.


Grades 1, 2

Ask students to write the number that each group represents on their paper, near the number visual. Tell students that there are different ways to express number. Some ways are very visual, like this sheet. Visual representations of number can help us see what makes up the number. For example, the number visual for 4 shows 4 individual circles. Can you also see the number 2 inside of 4? How many different ways can you see numbers inside of 4?

Ask students to explore the number visuals and record the different ways they see each number visual made up of other numbers. Ask students to share their discoveries with the class.