



Learning Trajectory for Subitizing

FACILITATOR GUIDE



Marsico Institute



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Subitizing: What Is It? Why Teach It? How to Teach It?

Three pictures hang in front of a six-month-old child. The first shows two dots, the others one dot and three dots. The infant hears three drumbeats. Her eyes move to the picture with three dots.

Before you read further, what do you make of this startling research finding? How in the world could such a young child do this? At some intuitive level, this infant has recognized number, and a change in number. When developed, and connected to verbal number names, this ability is called subitizing—recognizing the numerosity of a group quickly, from the Latin “to arrive suddenly.” In other words, people can see a small collection and almost instantly tell how many objects are in it. Research shows that this is one of the main abilities very young children should develop. Children from low-resource communities and those with special needs often lag in subitizing ability, harming their mathematical development. This is why the first learning trajectory we discuss involves children’s recognition of number and subitizing.

Types of Subitizing

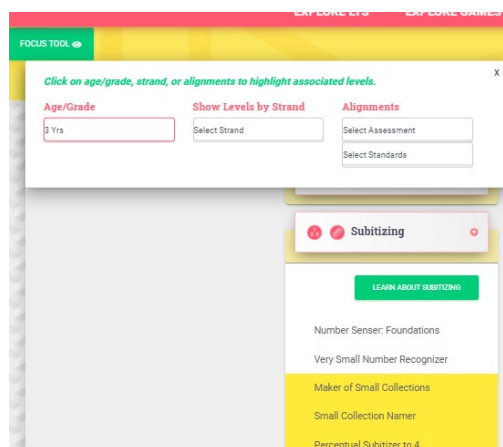
Subitizing differs from the ANS in that the goal is to determine the exact number of items in a set. When you “just see” how many objects in a very small collection, you are using perceptual subitizing. For example, you might see three dots on a die and quickly say “three.” You perceive the three dots intuitively and simultaneously. How is it you can see an eight-dot domino and “just know” the total number, when evidence indicates that this lies above the limits of perceptual subitizing? You are using conceptual subitizing—seeing the parts and putting together the whole. That is, you might see each side of the domino as composed of four individual dots and as “one four.” You see the domino as composed of two groups of four and as “one eight.” All of this can happen quickly—it is still subitizing—and often is not conscious. Another categorization involves the different types of things people can subitize. Spatial patterns such as those on dominoes are just one type. Other patterns are temporal and kinesthetic, including finger patterns, rhythmic patterns, and spatial-auditory patterns. Creating and using these patterns through conceptual subitizing helps children develop abstract number and arithmetic strategies. For example, children use temporal patterns when counting on. “I knew there were three more, so I just said, nine . . . ten, eleven, twelve” (rhythmically gesturing three times, one “beat” with each count). They use finger patterns to figure out addition problems. For example, for $3 + 2$, a child might put up a finger pattern they know as three, then put up two more (rhythmically—up, up) and then recognize the resulting finger pattern as “five.” Children who cannot subitize conceptually are handicapped in learning such arithmetic processes. Children who may be limited to subitize small numbers at first, but such actions are useful “stepping stones” to the construction of more sophisticated procedures with larger numbers.

Subitizing and Mathematics

The ideas and skills of subitizing start developing very early, but they, as every other area of mathematics, are not just “simple, basic skills.” Subitizing introduces basic ideas of cardinality—“how many,” ideas of “more” and “less,” ideas of parts and wholes and their relationships, beginning arithmetic, and, in general, ideas of quantity. Developed well, these are related, forming webs of connected ideas that are the building blocks of mathematics through elementary, middle, and high school and beyond. As we discuss the details of children’s initial learning of subitizing, let’s not lose the whole—the big picture—of children’s mathematical future. Let’s not lose the wonderment that children so young can think, profoundly, about mathematics.

Starting Out: Where Are My Children on the LT for Subitizing?

Where Are My Children on the LT for Subitizing?	
Objectives • Be able to identify where children are on the subitizing LT. • Be able to plan subitizing activities aligned with children’s developmental levels.	
Levels Addressed • Maker of Small Collections • Small Collection Namer • Perceptual Subitizer to 4 (and above)	Big Ideas • Subitizing tells how many in groups without counting • Groups can be named with numbers
Facilitation Materials	
• Manipulatives of various type for subitizing • Tricky Two PDF	



Directions

1. *Sign on* to [LT]² — <https://www.learningtrajectories.org/>
2. *Click* “Explore LTs” and then choose the age/grade level that represents most of the participants using the Focus Tool .

3. *Show video:* [Introduction to Subitizing](#) by clicking “Subitizing” or the video icon to the right of it.
4. *Ask* participants to go to the Learning Trajectories page on [LT]² and explore several of the levels, *starting with the first highlighted level*, reading the descriptions and examples and watching videos. Remind them that this is just a gentle introduction—we will study them carefully throughout our time together.
 - a. *What did you notice as you explored the levels of thinking for the subitizing LT? Where do you find them?*
 - b. *What is subitizing? Why is it important? Where do you think most of your children fall on the subitizing LT?*
5. *Ask* participants to find a level and then an activity (click on the “Activities” button or just scroll down) that you would like to try out in your classroom to build that level. Give participants time to explore the instructional activities and then share out.

When exploring this level, think about the purpose of the professional development session you are running and the aims that you want participants to walk away with at the end of the session. Below are different prompts to help you launch this activity. Choose and modify the prompts to best meet your session aims.

Ask participants to explore and discuss the information on this page.

Ask: What are children's behaviors and ways of thinking that characterize this level?

Ask: What else might one see as children operate at that level?

Discuss where this level appears in **GOLD**.

Maker of Small Collections

Definition: Makes a small collection (usually 1 - 2 and possibly 3) with the same number as another collection (via mental model; i.e., not necessarily by matching-for that process, see *Compare Number*). Might also be verbal but often is not.

This level sets the foundation for children to be able to perceptually subitize at later levels.

Example: When shown a collection of 3, makes another collection of 3.

Video: [Watch](#) a child performing at this level.

GOLD: Note: GOLD, and to a large extent the Common Core State Standards, are based on, or borrowed from, our learning trajectories. They are basic benchmarks, so of course they do not include all the levels of our learning trajectories. That is what makes our learning trajectories more useful for teaching. Seeing the connections between GOLD and our

Maker of Small Collections

Submitting

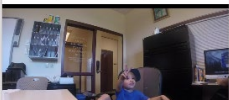
Maker of Small Collections

Makes a small collection (usually 1 - 2 and possibly 3) with the same number as another collection (via mental model; i.e., not necessarily by matching-for that process, see *Compare Number*). Might also be verbal but often is not. May not recognize spatial structures at first, and may count this (Iles, 2009).

ACOMPLETE

You may see this:

Some children use of successive three three objects. They remain silent to ensure no one is relying on a "three" to figure out how to make a collection of three.



Other Examples:

- When shown a collection of 3, a child makes another collection of 3 in the same arrangement.
- When shown one object and asked to give one to a friend, a child hands over one object.
- A child relies on use of a matching strategy on other model to make a small collection.

learning trajectories, however, is valuable.

Objective 20: Uses number concepts and operations

b. Quantifies															
Not Yet	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		Demonstrates understanding of the concepts of one, two, and more • Says, "More apple," to indicate he wants more pieces than given. • Takes two crackers when prompted, "Take two crackers."		Recognizes and names the number of items in a small set (up to five) instantly; combines and separates up to five objects and describes the parts • Looks at the sand table and says instantly, without counting, "There are three children at the table." • Says, "I have four cubes. Two are red, and two are blue." • Puts three bunnies in the box with the two bears. Counts and says, "Now I have five."		Makes sets of 6-10 objects and then describes the parts; identifies which part has more, less, or the same (equal); counts all or counts on to find out how many • Says, "I have eight big buttons, and you have eight little buttons. We have the same." • Tosses ten golf balls at the hoop. When three land outside she says, "More went inside." • Puts two dominos; together, says, "Five dots," and counts on "Six, seven, eight. Eight dots all together."		Solves simple equal share problems; makes sets of 11 – 20 objects and then describes then parts • Cuts a banana in half and says to a friend, "Now we each have a fair share because we each have the same." • Uses two-sided counters to determine different number combinations for fourteen. • Counts the students in the circle, and says, "There are 12 of us from Mrs. Holt's class and four more kids came. That means there are 13, 14, 15, 16 of us playing dodge ball."		Answers how much questions about wholes portioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole • Cuts a paper pizza into two equal parts; gives one part to a friend and says, "We have equal amounts. We each have half of the pizza" • Divides a clay lengths into four equal parts when asked by the teacher to make fourths, signs, "It's three fourths when asked what three pieces of the whole represent"		Answers how much questions about wholes portioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole • Divides a rectangle into two rows and two columns of equal size; colors in one part when asked to represent one fourth, colors in another part to show one half • Say, "When I put these four quarter pieces together, I have one whole. Four fourths equal a whole" • Provides the correct response when the teacher shows pictures representing two thirds, two fourths, one half, etc.		Compares fractions and explains them using physical models, pictorial representations, and number lines • Partitions the space on a number line from 0 to 1 into six equal parts. Puts a red dot to indicate $\frac{4}{6}$, a green dot to represent $\frac{2}{6}$, and a blue dot to indicate a whole, signs, "That's six sixths" • Given a plate divided into eighths, shows one piece for $\frac{1}{8}$, three pieces for $\frac{3}{8}$, and four pieces for $\frac{4}{8}$. Then says, "Hey, these $\frac{4}{8}$ are equal to one half because they are the same size!"	

Birth to 1 year
1 to 2 years
2 to 3 years
Preschool
Grade 1
Grade 2
Grade 3
Grade 4
Grade 5
Grade 6
Grade 7
Grade 8
Grade 9
Grade 10
Grade 11
Grade 12

Have participants explore the activity to understand what instruction looks like to help children achieve a Maker of Small Collections level.

Make Groups

Facilitation Options:

Ask: participants to read the [activity directions](#).

- *What is the main objective of Where's That Number?*

Watch: Have participants watch the [video](#).

- *What mathematical behaviors did the children demonstrate? What do you think the teacher may have learned about each child?*
- *How can the teacher adapt the activity for children at different levels of learning?*
- *What might you have done differently?*

Do: Have participants practice the activity in groups of three. Allow time for all participants to rotate as the "teacher."

- *What did you notice the "children" doing in this activity? What mathematical behaviors did they demonstrate?*
- *How do the teachers apply variations to this activity?*
- *What teaching ideas and strategies did you come up with?*

Reflect:

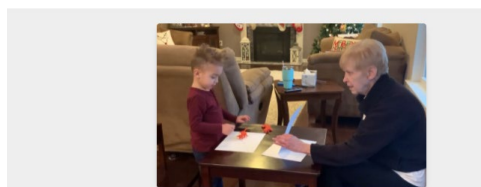
Make Groups

ACTIVITY TYPE: SMALL GROUP

Quick Description:

Children make a group of objects that matches another very small group.
Adapted from Building Blocks

MAKER OF SMALL COLLECTIONS



- *How and why do you think this activity would help children achieve the goal of Maker of Small Collections?*
- *What mathematical language might be used? What questions encourage subitizing? Remember, subitizing questions should not encourage counting.*
- *How will you implement this activity in your classroom? When and where could you ask children to make small groups?*

Small Collection Namer

When exploring this level, think about the purpose of the professional development session you are running and the aims that you want participants to walk away with at the end of the session. Below are different prompts to help you launch this activity. Choose and modify the prompts to best meet your session aims.

Ask participants to explore and discuss the information on this page.

Ask: What are children's behaviors and ways of thinking that characterize this level?

Ask: What else might one see as children operate at that level?

Discuss where this level appears in **GOLD**.

Definition: Names groups of 1, 2, and 3 with increasing accuracy. Most children of about 34-39 months of age can accurately name groups of 1, 2, and 3. Many children learn to recognize and name groups of 4 about 6 months later. The child is able to recognize small groups without relying on a model or matching strategy.

Example: Shown a pair of shoes, says, "Two shoes."

Video: [Watch](#) a child performing at this level.

Small Collection Namer

Subitizing

Small Collection Namer

Names groups of 1, 2, and 3 with increasing accuracy. Most children of about 34-39 months of age can accurately name groups of 1, 2, and 3. Many children learn to recognize and name groups of 4 about 6 months later. The child is able to recognize small groups without relying on a model or matching strategy.

ACTIVITY

You may see this:

1

The child uses recognition of number for sets of 1 and is counting for sets of 2 and 3. Below is an example of the child's behavior. The child is able to recognize the sets of 1, 2, and 3 without using a model or matching strategy.



Other Examples:

- Three dogs walk by, child says, "Three dogs!"
- Shown a set of shoes, a child says, "Two shoes."
- When asked, "How many children do you have?" a child shows a caregiver one block in each hand and says "Three."

GOLD: The location of the Small Collection Namer level is below.

Objective 20: Uses number concepts and operations

b. Quantifies

Birth to 1 year
1 to 2 years
2 to 3 years
Preschool 3
Preschool 4
Kindergarten
1st grade
2nd grade
3rd grade

Not Yet	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		Demonstrates understanding of the concepts of one, two, and more • Says, "More apple," to indicate he wants more pieces than given • Takes two crackers when prompted, "Take two crackers."		Recognizes and names the number of items in a small set (up to five) instantly; combines and separates up to five objects and describes the parts • Looks at the sand table and says instantly, without counting, "There are three children at the table." • Says, "I have four cubes. Two are red, and two are blue." • Puts three bunnies in the box with the two bears. Counts and says, "Now I have five."		Makes sets of 6-10 objects and then describes the parts; identifies which part has more, less, or the same (equal); counts all or counts on to find out how many • Says, "I have eight big buttons, and you have eight little buttons. We have the same." • Tosses ten puff balls at the hoop. When three land outside she says, "More went inside." • Puts two dominoes together, says, "Five dots," and counts on "Six, seven, eight. Eight dots all together."		Solves simple equal share problems; makes sets of 11 – 20 objects and then describes then parts • Cuts a banana in half and says to a friend, "Now we each have a fair share because we each have the same" • Uses two-sided counters to determine different number combinations for fourteen. • Counts the students in the circle, and says, "There are 12 of us from Mrs. Holt's class and four more kids came. That means there are 13, 14, 15, 16 of us playing dodge ball."		Answers how much questions about wholes portioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole • Cuts a paper pizza into two equal parts; gives one part to a friend and says, "We have equal amounts. We each have half of the pizza" • Divides a clay lengths into four equal parts when asked by the teacher to make fourths, signs, "It's three fourths when asked what three pieces of the whole represent"		Answers how much questions about wholes portioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole • Divides a rectangle into two rows and two columns of equal size; colors in one part when asked to represent one fourth, colors in another part to show one half • Say, "When I put these four quarter pieces together, I have one whole. Four fourths equal a whole" • Provides the correct response when the teacher shows pictures representing two thirds, two fourths, one half, etc.		Compares fractions and explains them using physical models, pictorial representations, and number lines • Partitions the space on a number line from 0 to 1 into six equal parts. Puts a red dot to indicate $\frac{4}{6}$, a green dot to represent $\frac{2}{6}$, and a blue dot to indicate a whole, signs, "That's six sixths" • Given a plate divided into eighths, shows one piece for $\frac{1}{8}$, three pieces for $\frac{3}{8}$, and four pieces for $\frac{4}{8}$. Then says, "Hey, those $\frac{4}{8}$ are equal to one half because they are the same size!"	

Have participants explore the activity to understand what instruction looks like to help children achieve a Small Collection Namer level.

Number Me

Facilitation Options

Ask participants to read the [activity directions](#).

- What is the main objective of Number Me?

Watch: Have participants watch the [video](#).

- What mathematical behaviors did the children demonstrate? What do you think the teacher may have learned about each child?
- What different questions does the teacher ask the children and how do the questions relate to Small Collection Namer?
- How does the teacher actively engage the children in the activity?
- What might you have done differently?

Do: Have participants practice the activity in groups of three. Allow time for all participants to rotate as the "teacher."

- What did you notice the "children" doing in this activity? What mathematical behaviors did they demonstrate?
- What teaching ideas and strategies did you come up with?

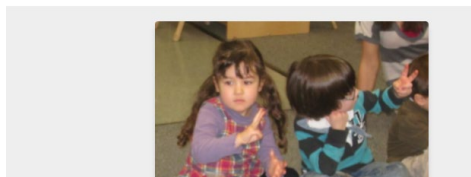
Number Me (Small Collection Namer)

SMALL COLLECTION NAMER

ACTIVITY TYPE: WHOLE GROUP

Quick Description

Children say and show numbers for their age and parts of their body.
Adapted from Building Blocks



- *What other questions could you ask the children and how would you actively engage them?*

Reflect:

- *How and why do you think this activity would help children achieve the goal of Small Collection Namer?*
- *What mathematical language might be used? What types of questions?*
- *In whole group subitizing activities, what strategies can you use to formatively assess each child? Can children respond in a non-verbal way?*
- *How will you implement this activity in your classroom? Would it work during transition times?*

Perceptual Subitizer to 4

When exploring this level, think about the purpose of the professional development session you are running and the aims that you want participants to walk away with at the end of the session. Below are different prompts to help you launch this activity. Choose and modify the prompts to best meet your session aims.

Ask participants to explore and discuss the information on this page.

Ask: What are children's behaviors and ways of thinking that characterize this level?

Ask: What else might one see as children operate at that level?

Discuss where this level appears in **GOLD**.

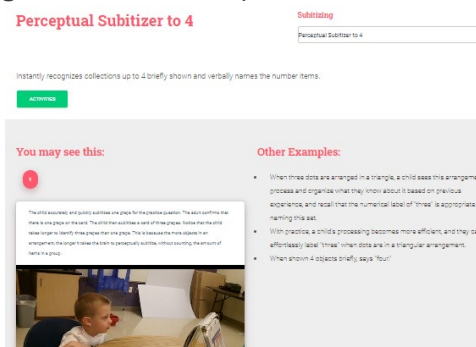
Definition: A child is able to instantly and effortlessly recognize collections up to 4 (without counting).

What separates this level from the previous levels (characterized by number recognition competences) is that a child will verbally name the number of a set that they have seen for ≤ 2 seconds. Thus, there is a time limit that is not present at previous levels, making this the first level where children are truly subitizing.

Example: When shown 4 objects briefly, says "four".

Video: [Watch](#) a child performing at this level.

GOLD: Note that is trajectory level captures some of the skills necessary between phase 2 and 3.



Objective 20: Uses number concepts and operations

b. Quantifies														
Not Yet	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		Demonstrates understanding of the concepts of one, two, and more	Recognizes and names the number of items in a small set (up to five) instantly; combines and separates up to five objects and describes the parts		Makes sets of 6-10 objects and then describes the parts; identifies which part has more, less, or the same (equal); counts all or counts on to find out how many		Solves simple equal share problems; makes sets of 11-20 objects and then describes then parts		Answers how much questions about wholes partitioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole		Answers how much questions about wholes partitioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole		Compares fractions and explains then using physical models, pictorial representations, and number lines	
		- Says, "More apple," to indicate he wants more pieces than given - Takes two crackers when prompted, "Take two crackers."	- Looks at the sand table and says instantly, without counting, "There are three children at the table." - Says, "I have four cubes. Two are red, and two are blue." - Puts three bunnies in the box with the two bears. Counts and says, "Now I have five."		- Says, "I have eight big buttons, and you have eight little buttons. We have the same." - Tosses ten push balls at the hoop. When three land outside she says, "More went inside." - Puts two dominos together, says, "Five dots," and counts on "Six, seven, eight. Eight dots all together."		- Cuts a banana in half and says to a friend, "Now we each have a fair share because we each have the same" - Uses two-sided counters to determine different number combinations for fourteen. - Counts the students in the circle, and says, "There are 12 of us from Mrs. Holt's class and four more kids came. That means there are 13, 14, 15, 16 of us playing dodge ball."		- Cuts a paper pizza into two equal parts; gives one part to a friend and says, "We have equal amounts. We each have half of the pizza" - Divides a clay lengths into four equal parts when asked by the teacher to make fourths, signs, "It's three fourths when asked what three pieces of the whole represent"		- Divides a rectangle into two rows and two columns of equal size; colors in one part when asked to represent one fourth, colors in another part to show one half - Says, "When I put these four quarter pieces together, I have one whole. Four fourths equal a whole" - Provides the correct response when the teacher shows pictures representing two thirds, one half, etc.		- Partitions the space on a number line from 0 to 1 into six equal parts. Puts a red dot to indicate 2/6, and a blue dot to indicate a whole, signs, "That's six sixths" - Given a plate divided into eighths, shows one piece for 1/8, three pieces for 3/8, and four pieces for 4/8. Then says, "Hey, these 4/8 are equal to one half because they are the same size!"	

Birth to 1 year
1 to 2 years
2 to 3 years
Preschool 3
Preschool 4
Kindergarten
1st grade
2nd grade

Have participants explore the activities to understand what instruction looks like to help children achieve a Perceptual Subitizer to 4 level.

Snapshots and Subitize! Planets

Facilitation Options

Ask participants to read the activity directions for [Snapshots](#) and give them time to try the computer activity – [Subitize Planets](#).

- *What is the main objectives of Snapshots and Subitize! Planets?*

Watch: Have participants watch the [video](#).

- *What mathematical behaviors did the children demonstrate? What do you think the teacher may have learned about each child?*
- *How does the teacher have the children respond to her questions?*
- *What follow up question does the teacher ask and why are they important?*
- *How are the children physically engaged with the activity?*
- *What might you have done differently?*

Do: Have participants practice the activity in groups of three. Allow time for all participants to rotate as the “teacher.”

- *What did you notice the “children” doing in this activity? What mathematical behaviors did they demonstrate?*
- *What teaching ideas and strategies did you come up with?*
- *What helped the “teacher” formatively assess children’s ability to subitize?*

Reflect:

- *How and why do you think this activity would help children achieve the goal of Perceptual Subitizer to 4?*
- *What times in your schedule could you incorporate Snapshots and Subitize?*
- *Why do the instructions ask you to place dots in a straight line?*
- *How can the computer activity be incorporated during a typical day?*
- *What mathematical language might be used while a child is participating in the activity and the computer game? What types of questions? Would you have children work alone or in pairs at the computer? Why or why not?*

Subitize! Planets: Perceptual Subitizer to 4

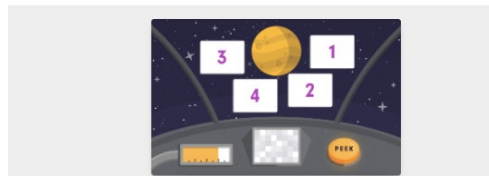
PERCEPTUAL SUBITIZER TO 4

ACTIVITY TYPE: COMPUTER ACTIVITY

Quick Description:

Students move their spaceship toward a planet by correctly identifying an amount of objects that they see for only a short time.

START GAME



When exploring this level, think about the purpose of the professional development session you are running and the aims that you want participants to walk away with at the end of the session. Below are different prompts to help you launch this activity. Choose and modify the prompts to best meet your session aims.

Ask participants to explore and discuss the information on this page.

Ask: What are children's behaviors and ways of thinking that characterize this level?

Ask: What else might one see as children operate at that level?

Discuss where this level appears in **GOLD**.

Perceptual Subitizer to 5

Definition: A child is able to instantly and effortlessly recognize collections up to 5 (without counting). What separates this level from the previous level (perceptual subitizer to 4) is that a child recognizes and uses spatial and numeric structures from past experiences to subitize.

Example: Shown 5 objects briefly, says "five".

Video: [Watch](#) a child performing at this level.

Perceptual Subitizer to 5

Subitizing

Perceptual Subitizer to 5

Instantly and effortlessly recognizes collections up to 5 (without counting) and verbally names the number of items. What separates this level from the previous level (perceptual subitizer to 4) is that a child recognizes and uses spatial and numeric structures from past experiences to subitize.

Attempts

You may see this:



The video in this level is perceptual subitizer to 5 (perceptual subitizer to 4). The video shows a child recognizing a collection of 5 items (5 dots) and saying "five".



Other Examples:

A child is shown the faces of a game die (6 sides) arranged as a square, with one dot in the middle. When asked "how many?" the child answers "five".

GOLD: Note this phase focuses on recognizing groups of items up to 5.

Objective 20: Uses number concepts and operations

b. Quantifies														
Not Yet	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		Demonstrates understanding of the concepts of one, two, and more - Says, "More apple," to indicate he wants more pieces than given - Takes two crackers when prompted, "Take two crackers."		Recognizes and names the number of items in a small set (up to five) instantly; combines and separates up to five objects and describes the parts - Looks at the sand table and says instantly, without counting, "There are three children at the table." - Says, "I have four cubes. Two are red, and two are blue." - Puts three bunnies in the box with the two bears. Counts and says, "Now I have five."		Makes sets of 6-10 objects and then describes the parts; identifies which part has more, less, or the same (equal); counts all or counts on to find out how many - Says, "I have eight big buttons, and you have eight little buttons. We have the same." - Tosses ten putt balls at the hoop. When three land outside she says, "More went inside." - Puts two dominoes together, says, "Five dots," and counts on "Six, seven, eight. Eight dots all together."		Solves simple equal share problems; makes sets of 11 – 20 objects and then describes then parts - Cuts a banana in half and says to a friend, "Now we each have a fair share, because we each have the same" - Uses two-sided counters to determine different number combinations for fourteen. - Counts the students in the circle, and says, "There are 12 of us from Mrs. Holt's class and four more kids came. That means there are 13, 14, 15, 16 of us playing dodge ball."		Answers how much questions about wholes portioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole - Cuts a paper pizza into two equal parts; gives one part to a friend and says, "We have equal amounts. We each have half of the pizza" - Divides a clay lengths into four equal parts when asked by the teacher to make fourths, signs, "It's three fourths when asked what three pieces of the whole represent"		Answers how much questions about wholes portioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole - Divides a rectangle into two rows and two columns of equal size; colors in one part when asked to represent one fourth, colors in another part to show one half - Say, "When I put these four quarter pieces together, I have one whole. Four fourths equal a whole" - Provides the correct response when the teacher shows pictures representing two thirds, two fourths, one half, etc.		Compares fractions and explains them using physical models, pictorial representations, and number lines - Partitions the space on a number line from 0 to 1 into six equal parts. Puts a red dot to indicate $\frac{4}{6}$, a green dot to indicate a whole, signs, "That's six sixths" - Given a plate divided into eighths, shows one piece for $\frac{1}{8}$, three pieces for $\frac{3}{8}$, and four pieces for $\frac{4}{8}$. Then says, "Hey, these $\frac{4}{8}$ are equal to one half because they are the same size!"

	Birth to 1 year
	1 to 2 years
	2 to 3 years
	Preschool 3
	Pre-K 4
	Kindergarten
	1st grade
	2nd grade
	3rd grade

Have participants explore the activities to understand what instruction looks like to help children achieve a Perceptual Subitizer to 5 level.

Fantastic Five (Tricky Two) and Subitize! Planets

Directions

Ask participants to read the [activity directions](#).

- What are the main objectives of Fantastic Five (Tricky Two) and Subitize! Planets?

Watch: Have participants watch the [video](#).

- What prompts did the teacher use to facilitate subitizing? What do you think the teacher may have learned about each child?
- What follow up questions does the teacher ask and how they relate to perceptual subitizing?
- What might you have done differently?

Fantastic Five (Tricky Two)

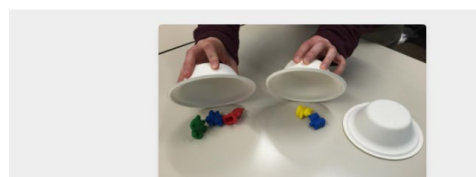
PERCEPTUAL SUBITIZER TO 5

ACTIVITY TYPE: SMALL GROUP

Quick Description:

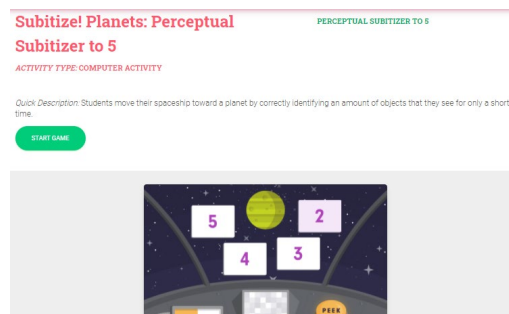
Children subitize the number of counters hidden under a moving container.

Adapted from Building Blocks, Concepts



Do: Have participants practice the activity in groups of three. Allow time for all participants to rotate as the "teacher."

- *What did you notice the "children" doing in this activity? What mathematical behaviors did they demonstrate?*
- *How could you modify this activity to keep it engaging for the children?*
- *What teaching ideas and strategies did you come up with?*



Reflect:

- *How and why do you think this activity would help children achieve the goal level of Perceptual Subitizer to 5?*
- *What mathematical language might be used? What types of questions?*
- *If children count, what is an appropriate reaction? How do you ask questions that do not encourage counting?*
- *How will you implement this activity in your classroom? Would this be appropriate for the math center during free choice time?*

When exploring this level, think about the purpose of the professional development session you are running and the aims that you want participants to walk away with at the end of the session. Below are different prompts to help you launch this activity. Choose and modify the prompts to best meet your session aims.

Ask participants to explore and discuss the information on this page.

Ask: What are children's behaviors and ways of thinking that characterize this level?

Ask: What else might one see as children operate at that level?

Discuss where this level appears in **GOLD**.

Conceptual Subitizer to 5

For example, a child might roll a die and know it's 5 because they see a 2 and a 3.

Example: "Five! I saw 3 and 2 and I said five." (Child's response when shown briefly five objects)

Video: [Watch](#) a child performing at this level.

Conceptual Subitizer to 5

Subitizing

Conceptual Subitizer to 5

Activate

Verbally labels all arrangements to about 5, shown only briefly, by seeing the parts and quickly knowing the whole. Conceptual subitizing refers to the ability of children to identify a whole quantity as a result of composing smaller quantities (recognized through perceptual subitizing) that make up the whole.

You may see this:

1 2 3 4

This video shows a child who can quickly subitize when shown five objects.

Other Examples:

- A child rolls a pair of dice and knows there are 5 dots because they see a 2 and a 3.
- The child says, "I rolled a five: I saw 3 and 2 and so it's five!"

GOLD: Note this phase focuses on recognizing groups of items up to 5.

Birth to 1 year
1 to 2 years
2 to 3 years
Preschool 3
Preschool 4
Kindergarten
1st grade
2nd grade
3rd grade

Objective 20: Uses number concepts and operations

b. Quantifies														
Not Yet	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		Demonstrates understanding of the concepts of one, two, and more - Says, "More apple," to indicate he wants more pieces than given - Takes two crackers when prompted, "Take two crackers."		Recognizes and names the number of items in a small set (up to five) instantly; combines and separates up to five objects and describes the parts - Looks at the sand table and says instantly, without counting, "There are three children at the table." - Says, "I have four cubes. Two are red, and two are blue." - Puts three bunnies in the box with the two bears. Counts and says, "Now I have five."	Makes sets of 6-10 objects and then describes the parts; identifies which part has more, less, or the same (equal); counts all or counts on to find out how many Says, "I have eight big buttons, and you have eight little buttons. We have the same." Tosses ten putt balls at the hoop. When three land outside she says, "More went inside." Puts two dominos, together, says, "Five dots," and counts on "Six, seven, eight. Eight dots all together."		Solves simple equal share problems; makes sets of 11-20 objects and then describes then parts - Cuts a banana in half and says to a friend, "Now we each have a fair share because we each have the same" - Uses two-sided counters to determine different number combinations for fourteen. - Counts the students in the circle, and says, "There are 12 of us from Mrs. Holt's class and four more kids came. That means there are 13, 14, 15, 16 of us playing dodge ball."		Answers how much questions about wholes portioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole - Cuts a paper pizza into two equal parts; gives one part to a friend and says, "We have equal amounts. We each have half of the pizza" - Divides a clay lengths into four equal parts when asked by the teacher to make fourths, signs, "It's three fourths when asked what three pieces of the whole represent"		Answers how much questions about wholes portioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole - Divides a rectangle into two rows and two columns of equal size; colors in one part when asked to represent one fourth, colors in another part to show one half - Say, "When I put these four quarter pieces together, I have one whole. Four fourths equal a whole" - Provides the correct response when the teacher shows pictures representing two thirds, two fourths, one half, etc.		Compares fractions and explains them using physical models, pictorial representations, and number lines - Partitions the space on a number line from 0 to 1 into six equal parts. Puts a red dot to indicate $\frac{2}{6}$, a green dot to indicate a whole, signs, "That's six sixths" - Given a plate divided into eighths, shows one piece for $\frac{1}{8}$, three pieces for $\frac{3}{8}$, and four pieces for $\frac{4}{8}$. Then says, "Hey, these $\frac{4}{8}$ are equal to one half because they are the same size!"	

Have participants explore the activities to understand what instruction looks like to help children achieve a Conceptual Subitizer to 5 level.

Snapshots and Subitize! Planets

Facilitation Options:

Ask participants to read the [activity directions](#).

- What is the main objective of Snapshots?

Watch: Have participants watch the [video](#).

- What mathematical behaviors did the children demonstrate? How does the teacher instruct the children in regards to conceptual subitizing? How does conceptual subitizing differ from perceptual subitizing?
- What might you have done differently?

Do: Have participants practice the activity in groups of three. Allow time for all participants to rotate as the "teacher."

- What did you notice the "children" doing during this activity? What mathematical behaviors did they demonstrate?
- What teaching ideas and strategies did you come up with?

Reflect:

Snapshots (Conceptual Subitizer to 5)

CONCEPTUAL SUBITIZER TO 5

ACTIVITY TYPE: SMALL GROUP

Quick Description:

Children tell how many there are in collections of up to 5 objects after seeing them for two seconds or less. (Adapted From: Building Blocks)



Subitize! Planets: Conceptual Subitizer to 5

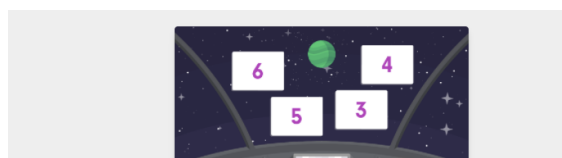
CONCEPTUAL SUBITIZER TO 5

ACTIVITY TYPE: COMPUTER ACTIVITY

Quick Description:

Students move their spaceship toward a planet by correctly identifying an amount of objects that they see for only a short time.

START GAME



- *How and why do you think this activity would help children achieve the goal level of Conceptual Subitizer to 5?*
- *What types of dot arrangements could be used with this activity? Would the differing arrangements allow for both perceptual and conceptual subitizing concurrently?*
- *How will you implement this activity in your classroom? Would subitizing work in a free choice center? How? What materials are needed?*

When exploring this level, think about the purpose of the professional development session you are running and the aims that you want participants to walk away with at the end of the session. Below are different prompts to help you launch this activity. Choose and modify the prompts to best meet your session aims.

Ask participants to explore and discuss the information on this page.

Ask: What are children's behaviors and ways of thinking that characterize this level?

Ask: What else might one see as children operate at that level?

Discuss where this level appears in **GOLD**.

Conceptual Subitizer to 7

Definition: Verbally labels all arrangements to 6, then 7, when shown only briefly.

Example: A child rolls a pair of dice and knows there are 7 dots because they see a 2 and a 5.

Video: [Watch](#) a child performing at this level.

Conceptual Subitizer to 7

Subitizing

Conceptual Subitizer to 7

Verbally labels all arrangements to 6, then 7, when shown only briefly.

achieve

You may see this:

1

A second grade student correctly identifies all dot arrangements to 6 and 7 using the dots arranged in a 2x3 grid. The student is asked to identify the number of dots in the grid. The student correctly identifies the number of dots in the grid as 7. The student is then asked to identify the number of dots in the grid as 7. The student correctly identifies the number of dots in the grid as 7.

Other Examples:

- A child rolls a pair of dice and knows there are 7 dots because they see a 2 and a 5.
- The child says, "I rolled a 6 and a 1, so that's 7."

When exploring this level, think about the purpose of the professional development session you are running and the aims that you want participants to walk away with at the end of the session. Below are different prompts to help you launch this activity. Choose and modify the prompts to best meet your session aims.

Ask participants to explore and discuss the information on this page.

Ask: What are children's behaviors and ways of thinking that characterize this level?

Ask: What else might one see as children operate at that level?

Discuss where this level appears in **GOLD**.

Conceptual Subitizer to 10

Definition: A child verbally labels arrangements up to 6, then up to 10, using groups.

The ten-frame is a powerful arrangement, presented as two (horizontal or vertical) rows of five. This organization is referred to as the base-10 system. These frames provide a simple visual image children can associate with each number. These images, which can be mentally represented with practice and experience, are also useful for children as they learn to partition numbers into smaller quantities (e.g., you can make 10 with 5 and 5 as well as 6 and 4).

It should be noted that the tens-frame may play a special role in supporting children's abilities to conceptually subitize numerals 6 through 9. For example, we can compose 9 with one five-frame and 4 out of 5 grids filled in. Alternatively, 9 can also be represented as a ten-frame with one grid empty.

Example: "In my mind, I made two groups of 3 and 1 more, so seven"

Video: [Watch](#) a child performing at this level.

GOLD:

Conceptual Subitizer to 10

Submitting

Conceptual Subitizer to 10

Verbally labels most briefly shown arrangements of all numbers 2 to 10. Children may know some familiar ones (5 and 5 make 10 is common) early, but this level is reached when most all combinations of all numbers up to 10 are recognized (e.g., 7 and 3 seem as 10, 3 and 7 seem as 10, etc.).

Uses structures such as ten-frames to recognize larger quantities.

Activities

You may see this:

Other Examples:

- A child explains, "In my mind, I made a group of 8 and then a group of 2 more, so make 10"
- Child says, "You can make 10 with 5 and 5" or "I can 6 and 4, which is 10"

Objective 20: Uses number concepts and operations

b. Quantifies															
Not Yet	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		Demonstrates understanding of the concepts of one, two, and more. • Says, "More apple," to indicate he wants more pieces than given. • Takes two crackers when prompted, "Take two crackers."		Recognizes and names the number of items in a small set (up to five) instantly; combines and separates up to five objects and describes the parts. • Looks at the sand table and says instantly, without counting, "There are three children at the table." • Says, "I have four cubes. Two are red, and two are blue." • Puts three bunnies in the box with the two bears. Counts and says, "Now I have five."		Makes sets of 6-10 objects and then describes the parts; identifies which part has more, less, or the same (equal); counts all or counts on to find out how many. • Says, "I have eight big buttons, and you have eight little buttons. We have the same." • Tosses ten puffed balls at the hoop. When three land outside she says, "More went inside." • Puts two dominos; together, says, "Five dots," and counts on "Six, seven, eight. Eight dots all together."		Solves simple equal share problems; makes sets of 11-20 objects and then describes then parts. • Cuts a banana in half and says to a friend, "Now we each have a fair share because we each have the same." • Uses two-sided counters to determine different number combinations for fourteen. • Counts the students in the circle, and says, "There are 12 of us from Mrs. Holt's class and four more kids came. That means there are 13, 14, 15, 16 of us playing dodge ball."		Answers how much questions about wholes partitioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole. • Cuts a paper pizza into two equal parts; gives one part to a friend and says, "We have equal amounts. We each have half of the pizza." • Divides a day lengths into four equal parts when asked by the teacher to make fourths, signs, "It's three fourths when asked what three pieces of the whole represent."		Answers how much questions about wholes partitioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole. • Divides a rectangle into two rows and two columns of equal size; colors in one part when asked to represent one fourth, colors in another part to show one half. • Say, "When I put these four quarter pieces together, I have one whole. Four fourths equal a whole!" • Provides the correct response when the teacher shows pictures representing two thirds, two fourths, one half, etc.		Compares fractions and explains them using physical models, pictorial representations, and number lines. • Partitions the space on a number line from 0 to 1 into six equal parts. Puts a red dot to indicate $\frac{4}{6}$, a green dot to represent $\frac{2}{6}$, and a blue dot to indicate a whole, signs, "That's six sixths!" • Given a plate divided into eighths, shows one piece for $\frac{1}{8}$, three pieces for $\frac{3}{8}$, and four pieces for $\frac{4}{8}$. Then says, "Hey, these $\frac{4}{8}$ are equal to one half because they are the same size!"	

Birth to 1 year
1 to 2 years
2 to 3 years
Preschool 3
Preschool 4
Kindergarten
1st grade
2nd grade
3rd grade

Have participants explore the activities to understand what instruction looks like to help children achieve a Conceptual Subitizer to 10 level.

Subitizing Song and Subitize! Planets

Facilitation Options:

Ask participants to read the activity directions.

- What is the main objective of Subitizing Song?

Watch: Have participants watch the video.

- When would this activity be good to use in your classroom? What activity could be used with this song activity?
- What did you learn about presenting subitizing to your children?
- What important mathematical does the activity include?

Reflect:

- How and why do you think this activity would help children achieve the goal level of Conceptual Subitizer to 10?
- What mathematical language might be used? What types of questions?
- How did this activity change your thinking about 5 Frame cards or the use of fingers when subitizing?

The Subitize Song

ACTIVITY TYPE: PLAY

Quick Description:

This song includes quick presentations of sets of dots for children to practice subitizing with fun musical background.



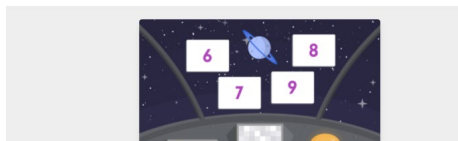
Subitize! Planets: Conceptual Subitizer to 10

ACTIVITY TYPE: COMPUTER ACTIVITY

Quick Description:

Students move their spaceship toward a planet by correctly identifying an amount of objects that they see for only a short time.

START GAME



- *How will you implement this activity in your classroom? What materials could you add to your math center when it is organized as a subitizing center?*

When exploring this level, think about the purpose of the professional development session you are running and the aims that you want participants to walk away with at the end of the session. Below are different prompts to help you launch this activity. Choose and modify the prompts to best meet your session aims.

Ask participants to explore and discuss the information on this page.

Ask: What are children's behaviors and ways of thinking that characterize this level?

Ask: What else might one see as children operate at that level?

Discuss where this level appears in **GOLD** (see below).

Conceptual Subitizer to 20

Definition: A child verbally labels arrangements up to 10, then up to 20, using groups. At this point, a child is building proficiency with the base-10 system using a tens-frame and may even recognize that two tens-frames is 20. However, at this level children find it easier to subitize numbers up to 20 when at least one tens-frame is filled. For example, a 10 and a 2. They are still working to conceptually subitize more difficult arrangements; for example, two sets of unfilled tens-frame, such as an 8 and a 7.

Example: "In my mind, I made two groups of 3 and 1 more, so seven"

Video: [Watch](#) a child performing at this level.

Conceptual Subitizer to 20

Subitizing
Conceptual Subitizer to 20

Verbally labels structured arrangements up to 20 (shown only briefly) by seeing the parts and subitizing the whole. Conceptually makes use of a top-down strategy to subitizing large quantities. Verbally labels arrangements up to 10, then up to 20, using groups. Children may know some familiar ones ("10 and 10 make 20" is common) early, but this level is reached when most all combinations of numbers from 1 to 10 are recognized (e.g., 7 and 9 is seen as 16).

Attended

You may see this:



Other Examples:

- "I saw three fives, so ten and five... 15"
- "When shown two rods of 10 units, a child says 'That's 20'."
- "A child instantly recognizes '12' as a full tens-frame and 2 additional units filled, but has more difficulty with two unfilled tens-frames, such as an 8 and a 7."
- "A child sees '7 and 3 as 9."

GOLD: Note this level aligns with standard 8 and starts to develop standard 10.

Objective 20: Uses number concepts and operations

b. Quantifies															
Not Yet	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		Demonstrates understanding of the concepts of one, two, and more • Says, "More apple," to indicate he wants more pieces than given • Takes two crackers when prompted, "Take two crackers."		Recognizes and names the number of items in a small set (up to five) instantly; combines and separates up to five objects and describes the parts • Looks at the sand table and says instantly, without counting, "There are three children at the table." • Says, "I have four cubes. Two are red, and two are blue." • Puts three bunnies in the box with the two bears. Counts and says, "Now I have five."		Makes sets of 6-10 objects and then describes the parts; identifies which part has more, less, or the same (equal); counts all or counts on to find out how many • Says, "I have eight big buttons, and you have eight little buttons. We have the same." • Tosses ten putt balls at the hoop. When three land outside she says, "More went inside." • Puts two dominoes together, says, "Five dots," and counts on "Six, seven, eight. Eight dots all together."		Solves simple equal share problems; makes sets of 11 – 20 objects and then describes then parts • Cuts a banana in half and says to a friend, "Now we each have a fair share because we each have the same" • Uses two-sided counters to determine different number combinations for fourteen. • Counts the students in the circle, and says, "There are 12 of us from Mrs. Holt's class and four more kids came. That means there are 13, 14, 15, 16 of us playing dodge ball."		Answers how much questions about wholes portioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole • Cuts a paper pizza into two equal parts; gives one part to a friend and says, "We have equal amounts. We each have half of the pizza" • Divides a clay lengths into four equal parts when asked by the teacher to make fourths, signs, "It's three fourths when asked what three pieces of the whole represent"		Answers how much questions about wholes portioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole • Divides a rectangle into two rows and two columns of equal size; colors in one part when asked to represent one fourth, colors in another part to show one half • Says, "When I put these four quarter pieces together, I have one whole. Four fourths equal a whole" • Provides the correct response when the teacher shows pictures representing two thirds, two fourths, one half, etc.		Compares fractions and explains them using physical models, pictorial representations, and number lines • Partitions the space on a number line from 0 to 1 into six equal parts. Puts a red dot to indicate $\frac{2}{6}$, and a blue dot to indicate $\frac{4}{6}$, and says, "That's six sixths" • Given a plate divided into eighths, shows one piece for $\frac{1}{8}$, three pieces for $\frac{3}{8}$, and four pieces for $\frac{4}{8}$. Then says, "Hey, these $\frac{4}{8}$ are equal to one half because they are the same size!"	

Birth to 1 year
1 to 2 years
2 to 3 years
Preschool 3
Preschool 4
Kindergarten
1st grade
2nd grade
3rd grade

Have participants explore the activities to understand what instruction looks like to help children achieve a Conceptual Subitizer to 20 level.

Subitize Dots to 20 and Concentrate: Match Sums

Facilitation Options:

Subitize Dots to 20

ACTIVITY TYPE: SMALL GROUP

CONCEPTUAL SUBITIZER TO 20

Quick Description:

Children tell how many dots they see on cards or plates with totals of 11 to 20 after seeing the arrangements of dots for about two seconds and explain how they knew. (Adapted From: Building Blocks)



You may see this:

Directions:

- Prepare sheets of paper or paper plates with dots that include groups of 5 or 10 in representative arrangements (e.g., lined up in a row arranged in

Ask participants to read the [activity directions](#).

- What is the main objective of Subitize Dots to 20?

Watch: Have participants watch the [video](#).

- What mathematical behaviors did the children demonstrate? What did notice about the difference each child's responses?
- What might you have done differently?

Do: Have participants practice the activity in groups of three. Allow time for all participants to rotate as the "teacher."

- What did you notice the "children" doing in this activity? What mathematical behaviors did they demonstrate?
- What teaching ideas and strategies did you come up with?

Reflect:

- *How and why do you think this activity would help children achieve the goal level of Conceptual Subitizing to 20?*
- *What types of dot arrangements appear easier? More difficult? Why? Does everyone agree?*

Concentration: Match Sums

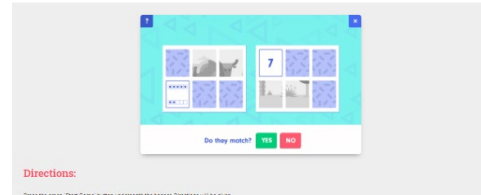
CONCEPTUAL SUBITIZING TO 20
COUNTER AND PRODUCER (30s)

ACTIVITY TYPE: COMPUTER ACTIVITY

Quick Description:

Students match cards with separate five frames (determining the sum) to cards with the same number in a ten frame within the framework of a "Concentration" card game.

START GAME



When exploring this level, think about the purpose of the professional development session you are running and the aims that you want participants to walk away with at the end of the session. Below are different prompts to help you launch this activity. Choose and modify the prompts to best meet your session aims.

Ask participants to explore and discuss the information on this page.

Ask: What are children's behaviors and ways of thinking that characterize this level?

Ask: What else might one see as children operate at that level?

Discuss where this level appears in GOLD (see below).

Conceptual Subitizer with Place Value

Definition: Verbally labels structured arrangements, shown only briefly, using groups, skip counting, and place value.

To understand place value children need to understand part-whole concepts. In other words, can a child compose and decompose numbers up to 10? Thus, children who have not yet acquired an understanding of place value do not equate ten ones and ten. Children who have can decompose ten into ones.

Conceptual Subitizer with Place Value

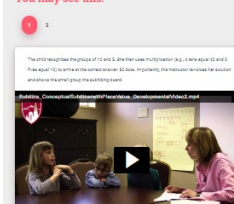
Subitizing

Conceptual Subitizer with Place Value

Verbally labels structured arrangements, shown only briefly, using groups, skip counting, and place value.

Activities

You may see this:



Other Examples:

- A child figures how many with this thinking: "I saw groups of tens and twos, so 10, 20, 30, 40, 42, 44, 46, 48!"
- A child decomposes by saying, "I have a 10-rod, so it has 10 units of one."

Example: "I saw groups of tens and twos, so 10, 20, 30, 40, 41, 44, 46...46!"

Video: [Watch](#) a child performing at this level.

GOLD:

Objective 20: Uses number concepts and operations

b. Quantifies

Not Yet	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		Demonstrates understanding of the concepts of one, two, and more		Recognizes and names the number of items in a small set (up to five) instantly; combines and separates up to five objects and describes the parts		Makes sets of 6-10 objects and then describes the parts; identifies which part has more, less, or the same (equal); counts all or counts on to find out how many		Solves simple equal share problems; makes sets of 11-20 objects and then describes then parts		Answers how much questions about wholes partitioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole		Answers how much questions about wholes partitioned into equal size shares of two and four; verbally labels each part and describes its relationship to the whole		Compares fractions and explains them using physical models, pictorial representations, and number lines	
		- Says, "More apple," to indicate he wants more pieces than given - Takes two crackers when prompted, "Take two crackers."		- Looks at the sand table and says instantly, without counting, "There are three children at the table." - Says, "I have four cubes. Two are red, and two are blue." - Puts three burnies in the box with the two bears. Counts and says, "Now I have five."		- Says, "I have eight big buttons, and you have eight little buttons. We have the same." - Tosses ten puff balls at the hoop. When three land outside she says, "More went inside." - Puts two dominos together, says, "Five dots," and counts on "Six, seven, eight. Eight dots all together."		- Cuts a banana in half and says to a friend, "Now we each have a fair share because we each have the same" - Uses two-sided counters to determine different number combinations for fourteen. - Counts the students in the circle, and says, "There are 12 of us from Mrs. Holt's class and four more kids came. That means there are 13, 14, 15, 16 of us playing dodge ball."		- Cuts a paper pizza into two equal parts; gives one part to a friend and says, "We have equal amounts. We each have half of the pizza" - Divides a clay lengths into four equal parts when asked by the teacher to make fourths, signs, "It's three fourths when asked what three pieces of the whole represent"		- Divides a rectangle into two rows and two columns of equal size; colors in one part when asked to represent one fourth, colors in another part to show one half - Says, "When I put these four quarter pieces together, I have one whole. Four fourths equal a whole" - Provides the correct response when the teacher shows pictures representing two thirds, two fourths, one half, etc.		- Partitions the space on a number line from 0 to 1 into six equal parts. Puts a red dot to indicate $\frac{4}{6}$; a green dot to represent $\frac{2}{6}$; and a blue dot to indicate a whole, signs, "That's six sixths" - Given a plate divided into eighths, shows one piece for $\frac{1}{8}$, three pieces for $\frac{3}{8}$, and four pieces for $\frac{4}{8}$. Then says, "Hey, these $\frac{4}{8}$ are equal to one half because they are the same size!"	

Birth to 1 year
1 to 2 years
2 to 3 years
Preschool 3
Preschool 4
Kindergarten
1st grade
2nd grade
3rd grade

Have participants explore the activities to understand what instruction looks like to help children achieve a Conceptual Subitizer with Place Value level.

Snapshots to 50

Facilitation Options:

Ask participants to read the [activity directions](#).

- *What is the main objective of Subitize Dots to 20?*

Watch: Have participants watch the [video](#).

- *What mathematical behaviors did the children demonstrate? What did notice about the difference each child's responses?*
- *What might you have done differently?*

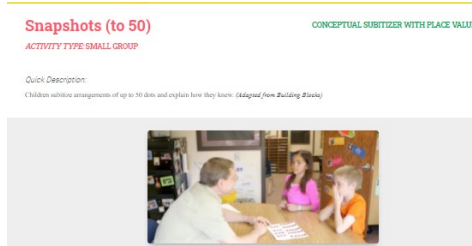
Do: Have participants practice the activity in groups of three. Allow time for all participants to rotate as the "teacher."

- *What did you notice the children doing in this activity? What mathematical behaviors did they demonstrate?*
- *What teaching ideas and strategies did you come up with?*

Reflect:

- *How and why do you think this activity would help children achieve the goal of Conceptual Subitizing with Place Value and Skip Counting?*
- *How do you know when children are ready for this activity? Does readiness vary with the skip counting groups of 2, 3, 4, or 5?*

How will you implement this activity in your classroom? How can this activity be differentiated so each child can be challenged just beyond their own level?



Summary and Classroom Applications.

Directions

Ask participants to summarize what they have learned about subitizing.

Work together to select a level and then an assessment to have all participants try (possibly with just a couple of children) in their own classes/at home.

Work together to select a level and then an activity to have all participants try in their own classes/at home with their own children.