

Math for Love
Kindergarten Teacher's Guide

Introduction

Welcome to the Math For Love Supplemental Curriculum! We are thrilled that you will be using this curriculum with your students. Like the lesson plans, we'll make this introduction quick, easy to read, and useful.

We are [Math For Love](#), an organization dedicated to transforming how math is taught and learned. Our passion is connecting students and teachers with opportunities to experience excellent mathematics, deepening everyone's skill and enjoyment in the process.

The Math For Love Supplemental Curriculum is built on our belief that *play* and *rigor* go hand in hand, and that the best of mathematics is accessible to students and teachers who are ready to work hard and have fun. You and your students will learn a lot of math over the next 80 lessons, and by the end we hope you'll see why we think math is one of the best parts of the day.

The Big Picture

We built this curriculum with a few key principles in mind.

Principle 1.

Every student can participate in rigorous mathematical thinking.

Rigorous mathematical thinkers want to understand *why*, not just get the answer. They make connections and seek underlying structure and coherence. They develop powerful tools to solve problems, including fact fluency and procedural efficiency. Rigorous mathematical thinkers ask questions, make conjectures and predictions, test out their ideas relentlessly, and expect to be surprised.

Principle 2.

Play is the engine of learning.

Mathematicians engage in play constantly: exploring, wondering, noticing, and being led by curiosity. Play can transform math class from tedious to joyful, from shallow to deep, from mundane into fascinating. Students at play are more likely to persist, to build tenacity, to remember, and to learn. Play is the secret sauce that helps students come to love and succeed in mathematics.

Principle 3.

Without rigor, mathematical play is formless.

Without play, mathematical rigor is unsustainable.

We need both, together, to get the most out of mathematics.

In this introduction, we'll discuss some specific teacher moves that can help encourage rigorous mathematical play.

But first, some details.

The Details

The Math For Love Supplemental Curriculum is built to provide eighty days of 1-hour (or longer) classes, intended to complement a standard curriculum. It can be used for small groups, enrichment, remediation, after school programs, and summer programs. Every lesson is written to accommodate a wide range of student skill level, making it easy and enjoyable to differentiate and support each individual's learning. Our belief is that beautiful and interesting math problems — when designed to be appropriately accessible — should be offered to everyone, no matter where they are in their math journey.

Materials included with curriculum:

- Teacher Guide
- Student Workbooks
- Manipulative Kit
- Math Games

The Lessons

Each lesson follows a standard format with four sections:

- Opener
- Main Activity
- Closer
- Choice Time

We sometimes provide a sketch of how a lesson might unfold, with prompts and questions to help you respond organically to what your students bring to the conversation. Any sample dialog is never meant to be a script, and precisely how the lesson goes will depend on you and your students.

We include guidelines for how long we expect each part of the day will take; however, times will vary depending on student engagement and your decisions.

When preparing for a lesson, review all sections of the lesson in advance. This will help you make decisions on how to group students, how to arrange materials, and what images to project. Even a little bit of preparation will help you be ready to emphasize what's important in the lesson and respond naturally to your students' ideas.

Choice Time Days

Occasionally a full lesson - after the Opener - is devoted to Choice Time. These Choice Time Days are intended to give students a chance to dig deeper into any lessons, or relax with some extra time to play the games they already know. As with normal Choice Time, you can use the suggestions we provide, or substitute in other options.

See the sample lesson templates on the next pages for more details about the lesson plans.

SAMPLE DAY

Opener

Main Activity

Closer

Choice Time

Overview

Focus Standards

This is where we highlight the main standards we're focusing on for the day, particularly in the main activity. We usually highlight one practice standard and one content standard.

Materials: This section will mention everything you need for the day. The main activity will also include a materials list.

Opener	We'll say what the opener is here	10 – 15 minutes
Main Activity	We'll say what the main activity is here	20 – 30 minutes
Closer	We'll summarize what's happening in the Closer here	5 – 10 minutes
Choice Time	<ul style="list-style-type: none"> We'll provide a short list of good options for Choice Time here. You're always welcome to choose different options! 	5 – 25 minutes

Standards Connections

These are additional standards that are connected (or could connect) to today's lesson.

SAMPLE DAY**Opener****Main Activity****Closer****Choice Time**

Opener

The lessons cycle through a short collection of our favorite opening routines. The first time you see a particular Opener, there will typically be more detail included. Later, these writeups will become shorter and more succinct. Don't be surprised to see the Opener instructions look almost identical on different days - once you're confident with a given opener, it should take very little time to prep for using it with class.

Here are the main Openers we use in this grade.

→ Dot Talks

Project an image of dots, or build it with the magnetic ten frame. Students figure the number of dots in as many ways as they can..

→ Choral Counting

Count or skip count with the class, then look for patterns.

→ Same and Different

Project a picture containing two images.
Prompt: "What's the same? What's different?"

→ Guess My Number

A simple guessing game, played with a twist to encourage students to improve their strategies.

→ Rolly Poly

A physical counting game. Roll the die, draw an action, and everyone does the action that many times.

Tips for the Classroom

1. Look here for some specific ideas for increasing student interaction, adjusting challenge, and more.
2. If there's an image to project for an opener, it's typically on the next page.

Prompts and Questions

- Look here for useful things to say to students to help them get started or push deeper in their thinking.

SAMPLE DAY

Opener

Main Activity

Closer

Choice Time

Main Activity

Materials and Prep

Here's where we describe what students will need for the main activity (doesn't include choice time materials). You'll need to read the lesson to make some decisions about how to arrange the materials for the day. In general, keep this simple – offer containers of manipulatives rather than exact amounts.

Motivating Question (OR How to Play)

To begin working or playing on their own, students should either have a question that frames the day's exploration— along with the knowledge and skill to begin thinking about it – or know the rules of the game they're about to play. We essentialize that question (or summarize those rules) here.

Launch

This is how to introduce the motivating question and get students excited and curious to think about it, or to teach the game in a way students will understand and find irresistible. In the case of games, demonstrating with a student volunteer is almost always the most powerful way to communicate how the game is played.

In general, the Launch should be as thorough as necessary *and* as short as possible. The goal should always be to have the students spending as much time as possible doing the thinking during math class. Whenever you are speaking to the whole class, pose questions and look for opportunities to ask for student ideas, questions, and contributions.

Work

As soon as they're ready, students go to work on their own or in pairs or small groups. This section will have some ideas of what to look for, the lesson flow, extensions, good hints, and (occasionally) solutions.

While students work, circulate in the room, offering help, prompts, hints, asking questions, making connections between ideas, and getting a sense of your students' strengths and where they could benefit from greater support.

Tips for the Classroom

1. Look here for additional ideas on how to implement this activity.
2. We'll often include extensions or simplifications to help with differentiation.
3. Student workbook pages will typically be included on the page right after the Tips for the Classroom.

Launch Key Points

- We try to include some key points for how to help the launch succeed in getting students excited to work.
- Points about the essential knowledge or skills might be here too.

Prompts and Questions

- This section gives ideas for what you might say to students during the "Work" section of the lesson, when they're working on their own or in small groups.
- Sometimes a prompt, hint, or nudge to talk to someone else is all students need.

SAMPLE DAY

Opener

Main Activity

Closer

Choice Time

Closer

Gather the students together for a whole-class discussion when the Main Activity is done. This is where students reflect, consolidate their learning, and potentially try an extension or variation of the Main Activity. To make sure the engaged thinking continues during this part of the day, rather than just summing up what everyone should have learned, take the opportunity to pose questions, invite student comments, and use partner sharing to give everyone a chance to participate.

Choice Time

Choice Time is when students get a chance to revisit games, puzzles, and other material they want to spend more time with. Getting to choose their activity helps with buy-in and self-regulation, and is a chance for students to reflect on what they want to think about more.

Choice Time works like this:

1. Present students with a short list of suggested activities.
2. Students choose the game, worksheet, challenge problem, block set, or other activity they'd like to pursue and commit to sticking with it for at least 5 - 10 minutes.
3. If time permits, students can try more than one activity.

The suggestions for Choice Time are only suggestions. If there is another activity from the curriculum that you think would be a better fit here, or if a student has a strong preference for something not on the suggested list, feel free to make a swap.

You may need to print some materials in advance to prepare for Choice Time. Since the final Choice options are up to you, we don't give a list of materials you'll need for them.

Here are some options that can be freely offered any Choice Time:

- Challenge Problems
- Free Block Play
- Addition by Heart (once students know how to play it)
- Tiny Polka Dot games (once students know how to play them)
- Work on problems from an earlier lesson

Prompts and Questions

- These prompts are for the Closer.
- They might be useful things to say to the class as a whole.
- They also might be helpful replies to anticipated student contributions to a closing discussion.

Teacher Moves

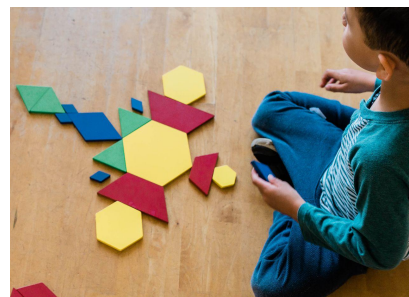
Here are some useful ways to support your students during these lessons.

- **Model enthusiasm and curiosity.** Ask questions. Statements like “I wonder if...” and “I notice that...” go a long way. If students see you enjoying the work, they’ll be much more likely to enjoy it too.
- **Keep instructions and launches as brief as possible** (but as long as necessary) and look for places to invite student questions or ideas. As much and as often as possible, we want students to be spending classroom time doing mathematics and thinking mathematically.
- When launching games, **play a demo game with a volunteer** to help students learn the rules. When students play games against each other during work time, try these ways of grouping students:
 - Students play one against one and switch opponents often.
 - Students play in groups of three. Two play while one watches as a referee. When the game is over, the referee position rotates.
 - Students play two against two, and have to agree on moves with their teammate.
 - Students play collaboratively with a partner, and try to get the highest score they can, rather than beat an opponent.
- **Resist solving students’ problems for them.** While working on hard problems, it’s natural to feel stuck, or unsure of what to do next. Sometimes a key insight requires a lot of exploration first. Give students the time they need.
- **On the other hand, support students when they need it.** There’s no use in leaving students feeling dispirited or unsuccessful, and the goal is for students to be productive, even if stuck. We provide ideas for questions, prompts, and hints to keep students motivated and engaged. Even when students are playing or exploring, understand your job as looking for opportunities to help students develop greater efficiency, organization, and power in their methods.
- **Have a plan for how to respond to wrong ideas and answers.** One of the strongest ways to handle these moments is to turn them back to the students by treating the idea seriously and asking for counterexamples or supporting arguments. A very good phrase to keep in your back pocket is: “Convince me.”
- **Be willing to be the slowest person in the room.** This means asking for elaboration and clarification if you think there is even one student in the room who doesn’t understand an argument yet.
- **Care and respect.** Show students you care about them, respect their thoughts, and that it matters to you that they learn, and enjoy, mathematics.

Materials

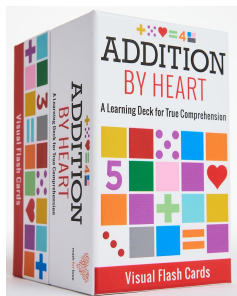
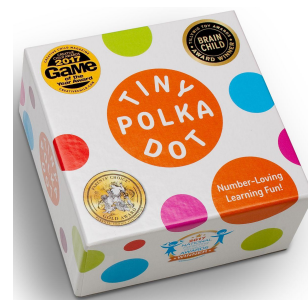
We provide just about everything you need to use this curriculum with a classroom of 25 (or more) students. The only extras you'll need are scratch paper, pencils, and crayons or colored pencils. You may occasionally need to make some additional photocopies for Choice Time, though students can often turn to earlier pages in their Student Workbook and find what they need. In addition to this Teacher's Guide and the student workbooks, manipulatives and games include:

Upscale Pattern Blocks. These blocks include the class 4 pattern block shapes in three different sizes, small, medium, and large. We'll use these for arithmetic and geometry. They are also great for students to explore with during Choice Time.



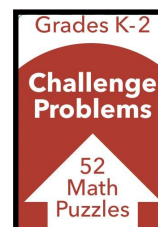
Number Rods. Another excellent tool for understanding arithmetic operations, fractions, measurement, and more. Rods go from 1 cm to 10 cm long, in the colors named to the left.

Tiny Polka Dot. A math-enriched card deck with 6 suits, each with a different representation of number. Useful for a huge array of math games, puzzles, and explorations. Videos and more at mathforlove.com/dot.



Addition by Heart. A visual flash card deck with three subdecks. Great in the classroom for small group fact practice and for simple fluency games. Ideas for play available at mathforlove.com/add.

Challenge Problems Deck. These extra puzzles and problems are great options for Choice Time. These generally get harder the higher the number.



Rolly Poly. An action-based counting and adding game. Used as an Opener.

Also included: Square Tiles, 6-sided and 10-sided Dice, Connecting Cubes, Ten Frames, 2-Color Counters, and one Magnetic Ten Frame.

Note: the Magnetic Ten Frame is an excellent tool for Dot Talks and 2-Color Dot Talks.

The book *Pattern Breakers* is included in Kindergarten as well.

Other Stuff

- Email errata@mathforlove.com if you notice an error that should be fixed.
- **Additional Material:** We'll gather corrections and additional material at mathforlove.com/curriculum/kindergarten.
Password: M4LCurriculum
- Problem with access? Email info@mathforlove.com.

Thanks and Acknowledgements

These lesson plans were built from the lessons we developed over our years working with teachers and students of all ages. However, putting together this more ambitious curriculum required a team, and we were lucky to have an amazing one.

Our curriculum writers were Karen Gallagher, Mark Goldstein, Tara Hofmann, Becky Holden, and Chase Orton. Our editors were Hana Murray and Jen Moffett. We had help with images from Bella Christianne and Hana Murray. Hana Murray also made the cover image using Upscale Pattern Blocks.

This team of writers and editors worked with incredible focus and skill to build the teacher's edition you're holding now — big thanks to all of them for their dedication and contributions to this project.

Finally, thanks to all the teachers, coaches, students, and staff who have used versions of our materials over the years, and welcomed us into their classrooms.

Daniel Finkel | Founder | Math for Love



Katherine Cook | Creative Director | Math for Love



Table of Contents

Day	Opener	Main Activity
<u>1</u>	<u>Guess My Number</u>	<u>Exploration of Materials</u>
<u>2</u>	<u>Dot Talks</u>	<u>Counting Collections</u>
<u>3</u>	<u>Choral Counting</u>	<u>Back and Forth</u>
<u>4</u>	<u>Same and Different</u>	<u>Pattern Block Fill-ins</u>
<u>5</u>	<u>Dot Talks</u>	<u>Match the Dots</u>
<u>6</u>	<u>Choral Counting</u>	<u>Counting Collections</u>
<u>7</u>	<u>Guess My Number</u>	<u>Handfuls - One Hand</u>
<u>8</u>	<u>Dot Talks</u>	<u>Tiny Polka Dot Memory</u>
<u>9</u>	<u>Rolly Poly</u>	<u>Counting Collections Comparisons</u>
<u>10</u>	<u>Same and Different</u>	<u>PowerDot</u>
<u>11</u>	<u>Dot Talks</u>	<u>Counting Collections - Ordering</u>
<u>12</u>	<u>Guess My Number</u>	<u>Choice Time Day</u>
<u>13</u>	<u>Choral Counting</u>	<u>1-2 Nim on a Ten Frame</u>
<u>14</u>	<u>Dot Talks</u>	<u>Counting Collections - Ten Frames</u>
<u>15</u>	<u>Same and Different</u>	<u>Roll and Fill</u>
<u>16</u>	<u>Choral Counting</u>	<u>Back and Forth (to 12)</u>
<u>17</u>	<u>Dot Talks</u>	<u>Counting Collections - Ten Frames</u>
<u>18</u>	<u>Guess My Number</u>	<u>Square Tile Fill-Ins</u>
<u>19</u>	<u>Rolly Poly</u>	<u>1-2-3 Nim on a Ten Frame</u>
<u>20</u>	<u>Dot Talks</u>	<u>Counting Collections with Ten Frames</u>

Table of Contents

Day	Opener	Main Activity
<u>21</u>	<u>Same and Different</u>	<u>Pattern Breakers</u>
<u>22</u>	<u>Choral Counting</u>	<u>Choice Time Day</u>
<u>23</u>	<u>Choral Counting</u>	<u>Number Rod Free Play and Rod Rolling Game</u>
<u>24</u>	<u>Dot Talks</u>	<u>Dot Fives</u>
<u>25</u>	<u>Dot Talks</u>	<u>Spill and Write (to 5)</u>
<u>26</u>	<u>Rolly Poly Addition (+1)</u>	<u>Cube Sum Builder</u>
<u>27</u>	<u>Dot Talks</u>	<u>Dot Sixes</u>
<u>28</u>	<u>Same and Different</u>	<u>Rod Fill-Ins</u>
<u>29</u>	<u>Dot Talks</u>	<u>Counting Collections - Small Sums</u>
<u>30</u>	<u>Choral Counting</u>	<u>Dot Sevens</u>
<u>31</u>	<u>Dot Talks</u>	<u>Spill and Write (to 7)</u>
<u>32</u>	<u>Choral Counting</u>	<u>PowerDot Pro (with anchor card)</u>
<u>33</u>	<u>Rolly Poly Addition (+2)</u>	<u>Handfuls - Students vs Teacher!</u>
<u>34</u>	<u>Same and Different</u>	<u>Dot Eights</u>
<u>35</u>	<u>Guess My Number</u>	<u>Rod Fill-Ins (8 cm)</u>
<u>36</u>	<u>Dot Talks</u>	<u>Cube Sum Builder (part 2)</u>
<u>37</u>	<u>Rolly Poly Addition (+3)</u>	<u>Dot Nines</u>
<u>38</u>	<u>Same and Different</u>	<u>Rod Fill-Ins and Challenges</u>
<u>39</u>	<u>Dot Talks</u>	<u>Counting Collections - Sums</u>
<u>40</u>	<u>Guess My Number</u>	<u>Choice Time Day</u>

Table of Contents

Day	Opener	Main Activity
<u>41</u>	<u>Same and Different</u>	<u>Dot Tens</u>
<u>42</u>	<u>Choral Counting</u>	<u>Back and Forth (to 15)</u>
<u>43</u>	<u>Dot Talks</u>	<u>Number Races</u>
<u>44</u>	<u>Dot Talks</u>	<u>Handfuls - 2 Hands</u>
<u>45</u>	<u>Choral Counting</u>	<u>Train Building</u>
<u>46</u>	<u>Same and Different</u>	<u>The Very Hungry Number (10)</u>
<u>47</u>	<u>Dot Talks</u>	<u>Back and Forth (Fill the Board)</u>
<u>48</u>	<u>Dot Talks</u>	<u>PowerDot Pro</u>
<u>49</u>	<u>Same and Different</u>	<u>Cube Statues</u>
<u>50</u>	<u>Same and Different</u>	<u>Rod Addition</u>
<u>51</u>	<u>Dot Talks</u>	<u>Square Tile Fill-Ins - Addition</u>
<u>52</u>	<u>Same and Different</u>	<u>Pattern Block Fill-Ins 2</u>
<u>53</u>	<u>Same and Different</u>	<u>The Very Hungry Number (12)</u>
<u>54</u>	<u>Choral Counting</u>	<u>1-2-3 Fill the Frame</u>
<u>55</u>	<u>Dot Talks</u>	<u>Hidden Numbers</u>
<u>56</u>	<u>Dot Talks</u>	<u>Hidden Numbers (Larger Parts)</u>
<u>57</u>	<u>Choral Counting</u>	<u>Same Difference with Number Rods</u>
<u>58</u>	<u>Rolly Poly Addition (+4)</u>	<u>The Very Hungry Number (15 and 16)</u>
<u>59</u>	<u>Choral Counting</u>	<u>Same Difference with Number Rods</u>
<u>60</u>	<u>Dot Talks</u>	<u>Choice Time Day</u>

Table of Contents

Day	Opener	Main Activity
<u>61</u>	<u>Guess My Number</u>	<u>The Very Hungry Number (18 and 19)</u>
<u>62</u>	<u>Choral Counting</u>	<u>Same Difference with Number Rods</u>
<u>63</u>	<u>Same and Different</u>	<u>Twenty Faces</u>
<u>64</u>	<u>Dot Talks</u>	<u>Handfuls - What's left in the pile?</u>
<u>65</u>	<u>Choral Counting</u>	<u>The Very Hungry Number (20)</u>
<u>66</u>	<u>Rolly Poly Addition (+5)</u>	<u>Back and Forth (to 20)</u>
<u>67</u>	<u>Same and Different</u>	<u>Choice Time Day</u>
<u>68</u>	<u>Choral Counting</u>	<u>Dots and Boxes</u>
<u>69</u>	<u>Dot Talks</u>	<u>Cube Sum Builder (Part 3)</u>
<u>70</u>	<u>Guess My Number</u>	<u>Cubes Statue Challenges</u>
<u>71</u>	<u>Dot Talks</u>	<u>Square Tile Fill-Ins</u>
<u>72</u>	<u>Choral Counting</u>	<u>Roll and Fill (5 Ten Frames)</u>
<u>73</u>	<u>Dot Talks</u>	<u>Back and Forth (2 dice version to 30)</u>
<u>74</u>	<u>Dot Talks</u>	<u>Counting Collections with Estimation</u>
<u>75</u>	<u>Same and Different</u>	<u>Pattern Block Triangles</u>
<u>76</u>	<u>Same and Different</u>	<u>Pattern Block Triangles 2</u>
<u>77</u>	<u>Choral Counting</u>	<u>Box the Numbers</u>
<u>78</u>	<u>Dot Talks</u>	<u>Rod Challenges: Which Line is Longest?</u>
<u>79</u>	<u>Rolly Poly Addition (+6)</u>	<u>Box The Numbers - Subtractions</u>
<u>80</u>	<u>Guess My Number</u>	<u>Choice Time Day</u>

DAY 1

Opener

Main Activity

Closer

Choice Time

Overview

Focus Standards

MP1 Make sense of problems and persevere in solving them.

K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.

Materials: Pattern blocks, connecting cubes, number rods, square tiles

Opener	Guess My Number	10 – 15 minutes
Main Activity	Exploring Materials	20 – 30 minutes
Closer	Reflection	5 – 10 minutes
Choice Time	None Today	

Standards Connections

K.M.1, K.G.2, K.G.4, K.G.6

DAY 1

Opener

Main Activity

Closer

Choice Time

Guess My Number

Write the numbers from 1 to 10 on the board. Tell your students that you are going to think of a number from 1 to 10, and they will try to guess it in the fewest number of guesses possible. After every guess, you will tell them whether your number is greater or less than their guess.

Little do the students know that you haven't actually chosen a number. Instead, always make their guess turn out as poorly for them as possible. If they guess 8, your number is less than 8. If they guess 2, your number is greater than 2.

After each guess and your response, ask students which numbers are no longer possible. Cross those numbers off the list. This should help students with their guesses.

Plan to play 2 - 3 games. You can increase the range of numbers after each game, playing to 12, 15, or 20 instead of 10.

Tips for the Classroom

1. If kids make a bad guess, don't try to steer them toward a good guess right away. But you can ask the students after you write the guesses down which guesses were most helpful, or whether they would make a different guess if they could take it back.
2. Don't play for too long at one time. Two to three games is usually enough to get the kids mentally alert and ready for whatever is coming next.

Prompts and Questions

- Talk to a neighbor about what you think the next guess should be, and why.
- How many numbers do you think that guess will cross out?

DAY 1

Opener

Main Activity

Closer

Choice Time

Exploration of Materials

Materials and Prep

Pattern blocks, connecting cubes, number rods, square tiles. Set these out in different parts of the room.

Motivating Question

What can you build? What can you count?

Launch

For the first day, the goal is to help the students get comfortable with you, with the classroom, and with the manipulatives that will be used throughout the year.

Hold up an example of each type of manipulative and name it for the students (no need to name each individual pattern block).

Explain that today, the students will have time to freely explore all of the materials. They will have 7-10 minutes at a location and then clean up and move to another one.

Work

Students move through the stations and explore the manipulatives at each one. Encourage them to share their projects with each other.

Tips for the Classroom

1. It is helpful to give students a two minute warning before ending time at a station and starting to clean up.
2. Have a bell on hand to mark the start of a transition. Sometimes music can help with the clean up and rotation time.

Launch Key Points

- Name each manipulative.
- Explain how the station rotation will work—how long at each station, where each student will start, what will mark transitions.

Prompts and Questions

- Have you tried making a pattern?
- Can you tell me what you're making?
- How many blocks did you use?
- Can you challenge a friend to build the same thing? Or something bigger, or smaller?

DAY 1**Opener****Main Activity****Closer****Choice Time**

Closer

Gather students together and ask them what they noticed about the pattern blocks.

Let students share their observations. Look for opportunities to make connections between different observations, and where possible emphasize the mathematics.

After talking about the pattern blocks, do the same for the number rods.

Prompts and Questions

- What did you notice about the pattern blocks?
- What did you notice about the number rods?

DAY 2

Opener

Main Activity

Closer

Choice Time

Overview

Focus Standards

MP1 Make sense of problems and persevere in solving them.

K.CC.4 Understand the relationship between numbers and quantity; connect counting and cardinality.

Materials: Collections of objects of different numbers between 7-20, including one demonstration collection; paper; pencils.

Opener	Dot Talks	10 – 15 minutes
Main Activity	Counting Collections (small numbers)	20 – 30 minutes
Closer	Counting Strategies	5 – 10 minutes
Choice Time	<ul style="list-style-type: none"> ● Block Free Play ● Counting Collections ● Addition by Heart ● Challenge Problems 	5 – 25 minutes

Standards Connections

K.CC.1 | K.CC.2 | K.CC.3 | K.CC.4 | K.CC.5 | K.MD.3

DAY 2

Opener

Main Activity

Closer

Choice Time

Dot Talks

Project the dot image on the board where all students can see it. Then ask students to figure out:

1. **How many dots there are**
2. **As many ways to count them as they can**

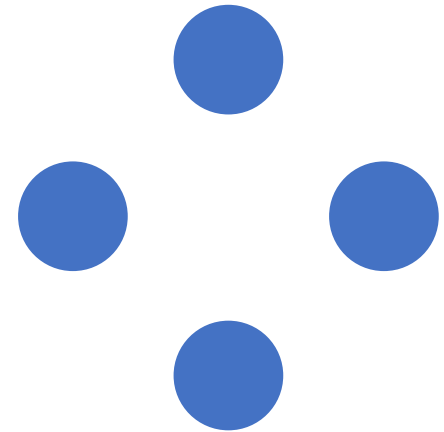
Students can think about the questions on their own first, and then share with a partner. Once students have had time to think the question through, lead a class discussion where students share their answers and approaches.

Your job is to restate and write down counting strategies, clarifying as necessary and making connections between ideas. If students come up with wrong answers or incorrect approaches, make sure these are addressed with clear arguments before moving on.

The key elements to these talks are a de-emphasis on speed and an added emphasis on process and communication. Expect some disagreements over the answers, and try to use those disagreements as a motivation for students to articulate their ideas to their classmates.

Tips for the Classroom

1. Students will be looking to see if you indicate what the right answer is. Don't favor right answers over wrong ones. Make sure that the explanations are what matters.
2. Give students constructive language to use in the discussion, like, "I respectfully disagree, because..." and "I agree with _____, because..."
3. Always keep the environment safe and positive.



Prompts and Questions

- Who would like to defend this answer?
- I don't quite follow. Do you mean I should count this group first?
- How did you do that/know that?
- Does anyone else think they can explain what Shawn is saying?
- Turn to the person next to you and explain how you counted.

DAY 2

Opener

Main Activity

Closer

Choice Time

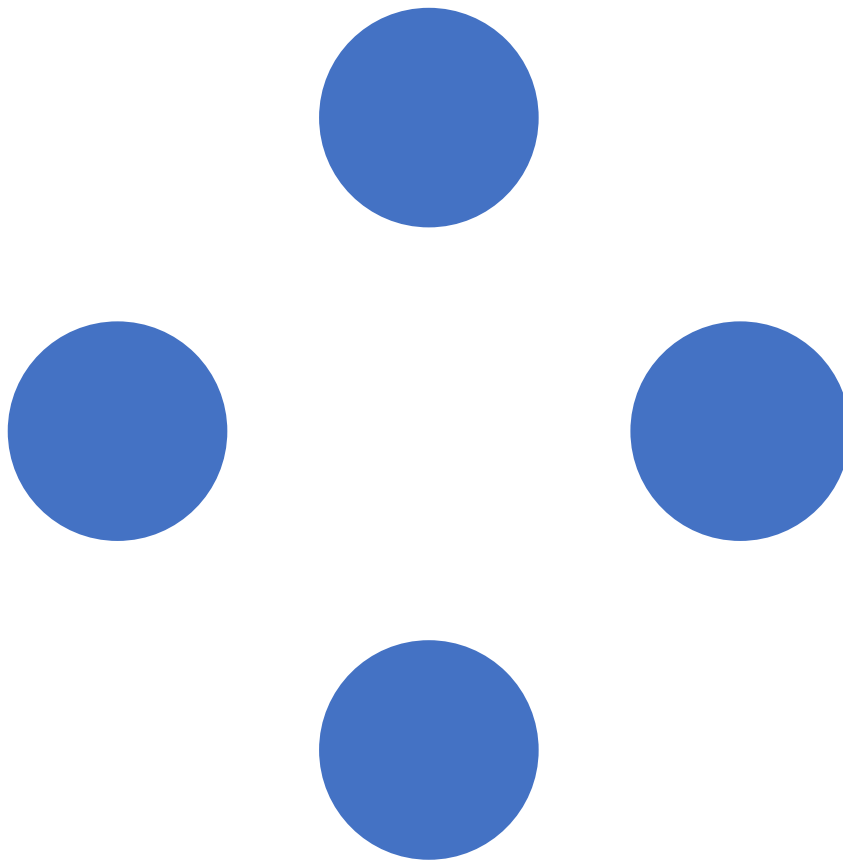


Image 1

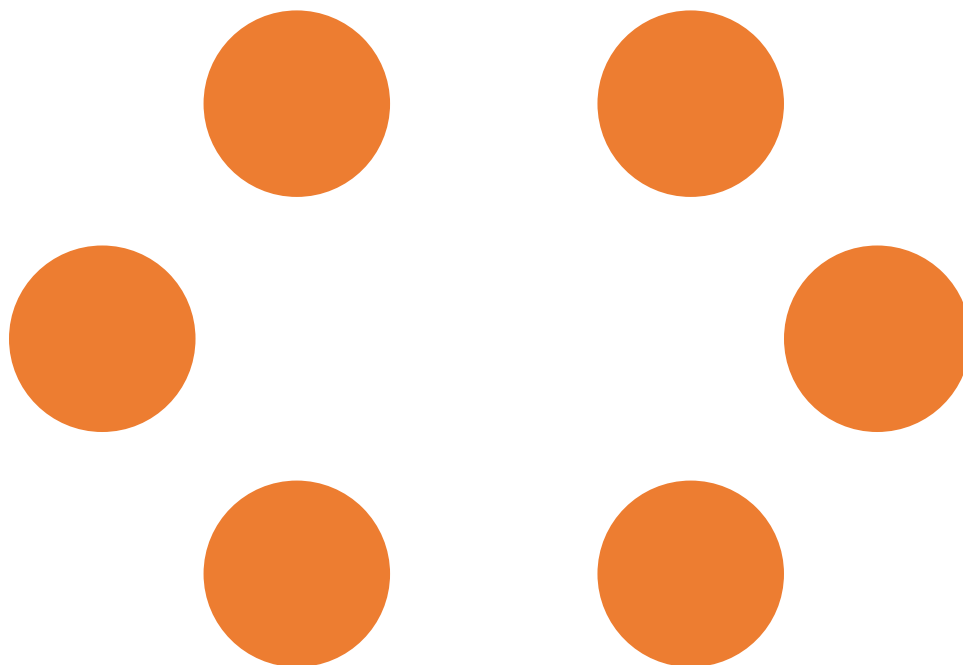


Image 2

DAY 2

Opener

Main Activity

Closer

Choice Time

Counting Collections

Materials and Prep

Make collections of between 7-20 objects and one small collection for the launch. Place in different parts of the room. You'll want enough collections so that when students are working in pairs, every pair can be focused on their own collection, plus a few extras.

Collections might include manipulatives, cups of legos, straws, blocks, pencils, buttons, markers, etc. Make some same-size collections that are made with different-size objects. (For example, a collection with 8 square tiles, and another with 8 pattern block hexagons.) Provide students with pencils and recording sheets.

Motivating Question

How many objects are in your collection?
How did you count them?

Launch

Choose a student volunteer to demonstrate predicting and then counting the demonstration collection. Have the student write down both the prediction and then the actual count.

Point out the groups of collections available around the room, and tell students their goal is to predict and then count how many objects are in a collection and make a sketch to remember how they got the answer.

Work

Students, working individually or in pairs, count and record the number of objects in a collection. Circulate to observe how students are counting, provide support as needed, and take notes on the strategies students are using.

Tips for the Classroom

1. You can differentiate Counting Collections most easily by including collections with more or fewer objects to count.
2. On this first day of Counting Collections, make sure you have plenty of small collections available for students to count.

Launch Key Points

- Model making a prediction before counting, writing the prediction on the worksheet, and drawing your counting method.
- Make sure students understand that their goal is to predict and count how many objects are in each collection.

Prompts and Questions

- What strategies are you using to count?
- What helps you know you have counted all of the objects in your collection?
- Can you tell how your partner is counting by looking at their picture?

Day 2

Counting Collection

Guess: _____

Picture of how I counted



How many I counted: _____

DAY 2

Opener

Main Activity

Closer

Choice Time

Closer

Pick a collection with 8 - 10 objects and ask students how they would approach counting the collection.

Demonstrate suggestions such as:

- moving and counting each object, saying one counting word for each object, and moving from one pile to another;
- placing the objects in a line, and counting each object as it is touched;
- sorting the collection into smaller groups and count each group until all of the groups are counted. For example, students could count by 2s, if they know how.

Prompts and Questions

- What collection was easy for you to count? What helped you count all of it?

Choice Time

- Block Free Play
- Counting Collections
- Addition by Heart
- Challenge Problems

Prepare students for Choice Time by explaining that they will choose from some pre-selected options. Tell students that once they choose an activity, they should spend at least 5 minutes on it before trying something else.

Show the Challenge Problem Deck and explain that it will always be among the Choice Time options. Students can simply take a challenge problem card and try to solve it, on their own or with a partner. Be sure to provide scratch paper and pencils to support student work.

Block Free Play and Counting Collections are also options. Block Free Play is an opportunity for students to build freely with Pattern Blocks or other manipulatives.

The Addition by Heart cards may also be a good option for some students. In a group of 2 - 4, each student picks five cards at random and quizzes their group mates. The cards they miss go a pile and when everyone is done, the team looks over the "hard" addition facts together. What makes those ones hard? How can they remember them? For students who are interested, Addition by Heart can always be an option for Choice Time, today and in the future.

DAY 3

Opener

Main Activity

Closer

Choice Time

Overview

Focus Standards

MP1 Make sense of problems and persevere in solving them.

K.CC.2 Count forward beginning from a given number within the known sequence (instead of having to begin at 1).

Materials: Gameboard to 10, counters in 2 colors, dice

Opener	Choral Counts	10 – 15 minutes
Main Activity	Back and Forth (to 10)	20 – 30 minutes
Closer	Back and Forth Strategies	5 – 10 minutes
Choice Time	<ul style="list-style-type: none"> ● Block Free Play ● Back and Forth ● Challenge Problems 	5 – 25 minutes

Standards Connections

K.CC.4

DAY 3

Opener

Main Activity

Closer

Choice Time

Choral Counting

Choral counting is an incredibly powerful activity for building numeracy. Students practice counting forward, backward, skip counting, and — critically — looking for patterns.

For this first Choral Count, explain to students that you'll be counting together as a whole class. The goal is to go slow and stay together. If students aren't sure what the next number will be, you'll be going slow enough that they'll have some time to think about it.

Step 1. Tell students you'll **start at 1 and count by 1s until you reach 20.**

Step 2. The students' job is to predict to themselves what each next number will be as you write it, and to count along with you.

Step 3. Start writing out the numbers. Do this slowly, so students have time to think of what might come next. Ask them to say each number with you as you write it. For today, write the numbers in **four rows of five.** Pause after writing 115 and ask students if they are noticing any patterns in the chart.

Step 3. Once you've written out the whole sequence, recount the numbers together as a class.

Step 4. Ask students to share what they notice about the number sequence. Write down their observations.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

Prompts and Questions

- Think about what it will sound like when we count.
- Let's count all the numbers together.
- Take a moment to look at these numbers. What do you notice?

Tips for the Classroom

1. Changing the number of columns you use will create more or less emphasis on different kinds of patterns. You can experiment with this as you do more talks.
2. There may be some very interesting patterns that emerge. Some may be correct, some incorrect. Most important is to write students' comments down as clearly as you can, making notes/circles/arrows on the numbers if that helps.
3. Students might comment on first digits, last digits, digit sums, columns, rows, diagonals, or any other relationships between numbers. Prepare to be surprised!

DAY 3

Opener

Main Activity

Closer

Choice Time

Back and Forth (to 10)

Materials and Prep

Gameboard, counters, (2 colors), 6-sided die

How to Play

Place three counters on the board in any three spots, from 0 to 10. For cooperative play, place a single counter of a different color on 0. This will be the players' pawn. For competitive play, place two counters, each a different color, on 0, one for each player.

Roll the die and move your pawn forward or backward until you collect all three counters by landing on them. After each roll, the choose whether to add or subtract without going off the board – rolls can only be used if they entirely fit on the board. When you lands on a space with a counter, you pick up the counter.

The game is over when all the counters have been collected. If playing competitively, win by collecting the most counters.

Launch

Choose a student volunteer to demonstrate the game where everyone can see. For the first game, play a collaborative version by sharing a pawn with the student. For the second game, play a competitive version (you don't need to play this game until its end if it is taking a long time). Play until the rules to both versions are clear to everyone.

Work

Students play Back and Forth in pairs. Depending on their comfort with competition, nudge students to play collaboratively or competitively.

Circulate to support students who need help counting, predicting, or strategizing.

Tips for the Classroom

1. A fun extra rule to include is that if a player lands on 10 exactly, the player gets to roll again.

Launch Key Points

- Demonstrate until everyone understands and is excited to play.
- On your turns, narrate your thinking out loud.
- On the student volunteer's turns, ask them if they want to add or subtract each roll.

Prompts and Questions

- What number do you wish you'd roll right now? What would you do if you roll it?
- Are you going to go forward or backward?
- Show me how you count forward 4.
- Show me how you count backward 3.
- Can you predict where you're going to end up without counting?
- Why do you think it's a good move to go backward right now?

Back and Forth

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

DAY 3**Opener****Main Activity****Closer****Choice Time**

Closer

Set up the board with a counter on 7 and your pawn on 4. Ask the students what you should hope to roll collect the counter on 7. Then ask them the reverse, where the pawn is on 7 and counter is on 4.

Choice Time

- Block Free Play
- Back and Forth
- Challenge Problems

Prompts and Questions

- How did you know what a good roll would be?
- Why do you think the answer is the same for both questions?

DAY 4

Opener

Main Activity

Closer

Choice Time

Overview

Focus Standards

MP1 Make sense of problems and persevere in solving them.

K.CC.4 Count to tell the number of objects.

Materials: Upscale pattern blocks (collections shared among groups of students), fill-ins, pencil, and paper.

Opener	Same and Different	10 – 15 minutes
Main Activity	Pattern Block Fill-Ins	20 – 30 minutes
Closer	What's the largest number of blocks I can use to fill in a hexagon?	5 – 10 minutes
Choice Time	<ul style="list-style-type: none"> ● Pattern Block Fill-Ins ● Back and Forth (to 10) ● Block Free Play ● Challenge Problems 	5 – 25 minutes

Standards Connections

MP6 | K.CC.5 | K.OA.1 | K.G.6

DAY 4

Opener

Main Activity

Closer

Choice Time

Same and Different

Show an image that consists of two distinct parts, and ask: what's the same? What's different?

Students then discuss what they see, first in pairs or small groups, and then with the whole class. Once students have shared 3 or 4 attributes that are either the same or different, you can wrap up, or try a second image if you have time.

Here are some attributes to consider when discussing images:

- **Material** - are both images made of the same stuff or not?
- **Number** - are there the same number of things on both sides or not?
- **Shape/arrangement** - are the things arranged in a line, in a circle, etc.?
- **Grouping** - are they grouped in twos, in threes, in fives, etc.?
- **Color**
- **Orientation** - are they pointing up, large side down, etc.?

Ideally, students will find other attributes too!

Possible student observations:

- The number of blocks is different.
- The space they take up (area) is the same.
- The shapes are the same.
- The colors are different.
- The background color is different.
- There's a line through the blocks on the right, but not on the left.

Tips for the Classroom

1. Same and Different is meant to help encourage and deepen student discourse. Make sure everyone feels their observation is welcomed and valued.
2. Plan to do two Same and Different images, if time permits. If you run short on time, it's okay to do the first image only.



Prompts and Questions

- I see they are the same color. What is something that's different about them?
- We've heard two things that are different. What's something that's the same?
- We just heard someone argue that there are a different number in these two images. Turn to your partner and figure out which image has more.

DAY 4

Opener

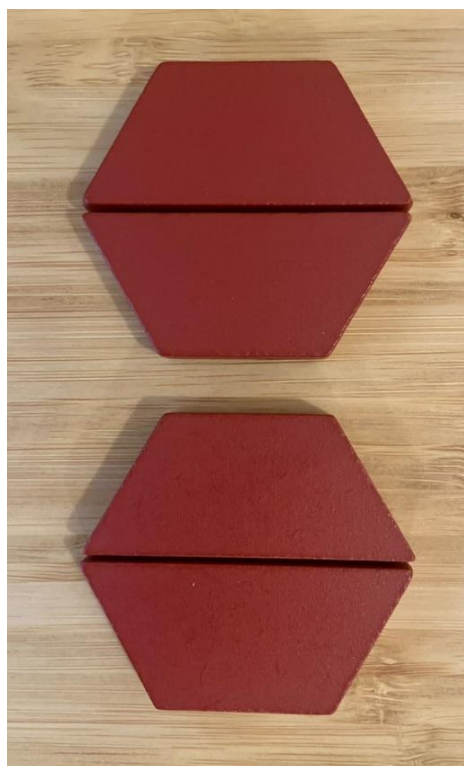
Main Activity

Closer

Choice Time



A



B



A



B

DAY 4

Opener

Main Activity

Closer

Choice Time

Pattern Block Fill-Ins

Materials and Prep

Upscale pattern blocks, fill-ins, pencil and paper.

Motivating Question

How many blocks does it take to fill in the shape?

Launch

Provide pattern blocks so students can freely play for about 5 minutes. Then bring students together to name each pattern block before you launch the activity (triangle, rhombus, trapezoid, hexagon, with sizes small, medium, large).

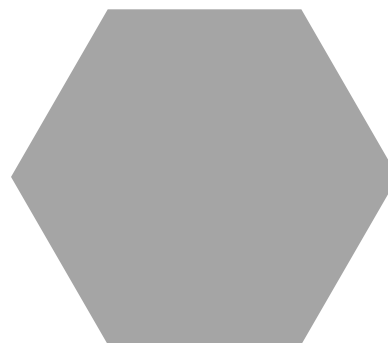
Show one of the fill-ins and take guesses on how many blocks it will take to fill in a hexagon. Then fill it in, demonstrate how to count the blocks, and write in how many you used. Ask whether you should try to use fewer blocks or more blocks when you fill it in a second time. After you've demonstrated two ways to fill in the hexagon, tell students they'll get to do their own fill-ins, starting with the hexagon and moving on to something bigger!

Work

Students work alone or in pairs to fill in shapes with pattern blocks, counting how many blocks were used, and looking for ways to use the most possible blocks, and the least number of blocks. Help students to count and record how many blocks they used, and challenge them to use fewer or more the next time they try the same fill-in.

Tips for the Classroom

1. For some students, just filling in the shapes without gaps may be a challenge.
2. Some counting methods to notice and encourage:
 - a. Separate into shapes and count.
 - b. Count how many of each shape first, then combine groups (add).
 - c. Place shapes in a straight line or in a ten frame to organize the counting.



Launch Key Points

- Make sure to demonstrate filling in the hexagon shape completely after predicting how many blocks might fill it.
- Consider transferring the blocks to a ten frame when counting one of your demonstration fill-ins.

Prompts and Questions

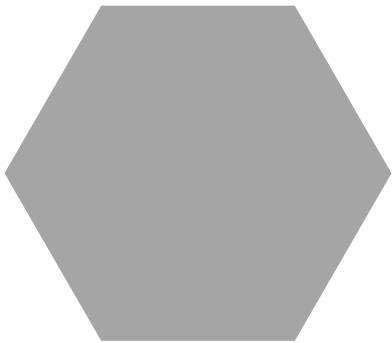
- How many blocks did you use to fill in that shape?
- Show me how you counted.
- Do you think you could fill it in with more/less than last time?
- What's the smallest number of blocks you could use?
- What's the greatest number of blocks you could use?

Day 4

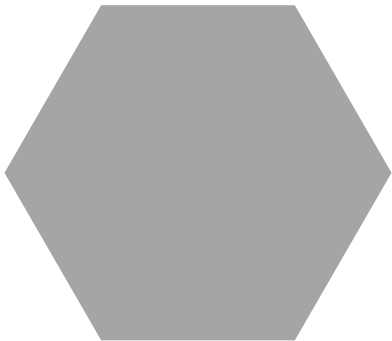
Pattern Block Fill-Ins

Fill in each hexagon in a different way.

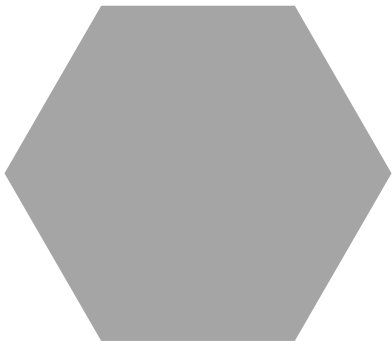
Record how many blocks you used.



I used _____ blocks



I used _____ blocks



I used _____ blocks

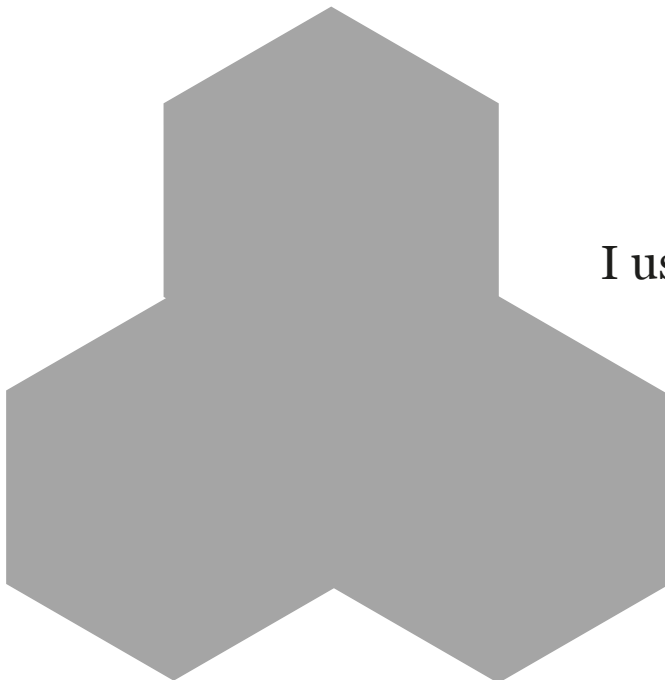
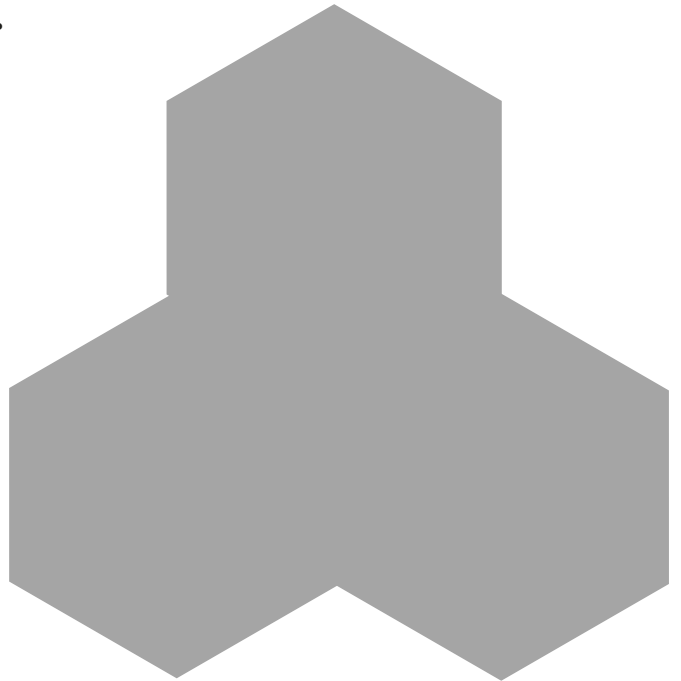
Day 4

Pattern Block Fill-Ins

Fill in each shape in a different way.

Record how many blocks you used.

I used _____ blocks



I used _____ blocks

DAY 4

Opener

Main Activity

Closer

Choice Time

Closer

Show the fill-in with one hexagon. Ask students what is the largest number of blocks that can fill in a hexagon.

After you get predictions, place blocks inside the hexagon. Count them together.

Show the fill-in with three hexagons. Take student suggestions for how you might fill this one in.

After getting predictions for what blocks (or how many blocks) will work, place blocks inside three-hexagon shape. Count them together.

What do students notice? Take some observations and discuss.

Choice Time

- Pattern Block Fill-Ins
- Back and Forth (to 10)
- Block Free Play
- Challenge Problems

Prompts and Questions

- What block/blocks did we use to have the largest number? Why?
- What do you notice about the largest number of blocks that can fill one hexagon compared to the largest number of blocks that can fill three hexagons?

DAY 5

Opener

Main Activity

Closer

Choice Time

Overview

Focus Standards

MP1 Make sense of problems and persevere in solving them.

K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.

Materials: Tiny Polka Dot cards. Start with Blue (ten frames) 0-4 and Teal (dice patterns) 0 - 4, and have larger numbers ready for extensions.

Opener	Dot Talks	10 – 15 minutes
Main Activity	Match the Dots	20 – 30 minutes
Closer	Which arrangements were easiest or hardest to count?	5 – 10 minutes
Choice Time	<ul style="list-style-type: none"> ● Back and Forth (to 10) ● Pattern Block Fill-Ins ● Block Free Play ● Challenge Problems 	5 – 25 minutes

Standards Connections

MP6 | MP7 | K.CC.5

DAY 5

Opener

Main Activity

Closer

Choice Time

Dot Talks

Project the dot image on the board where all students can see it. Then ask students to figure out:

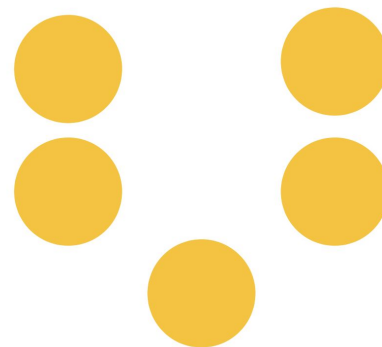
1. **How many dots there are**
2. **As many ways to count them as they can**

Students can think about the questions on their own first, and then share with a partner. Once students have had time to think the question through, lead a class discussion where students share their answers and approaches.

The key elements to these talks are a de-emphasis on speed and an added emphasis on process and communication. Expect some disagreements over the answers, and try to use those disagreements as a motivation for students to articulate their ideas to their classmates.

Tips for the Classroom

1. Students will be looking to see if you indicate what the right answer is. Don't favor right answers over wrong ones. Make sure that the explanations are what matters.
2. Give students constructive language to use in the discussion, like, "I respectfully disagree, because..." and "I agree with _____, because..."
3. Always keep the environment safe and positive.



Prompts and Questions

- Who would like to defend this answer?
- I don't quite follow. Do you mean I should count this group first?
- How did you do that/know that?
- Does anyone else think they can explain what Shawn is saying?
- Turn to the person next to you and explain how you counted.

DAY 5

Opener

Main Activity

Closer

Choice Time

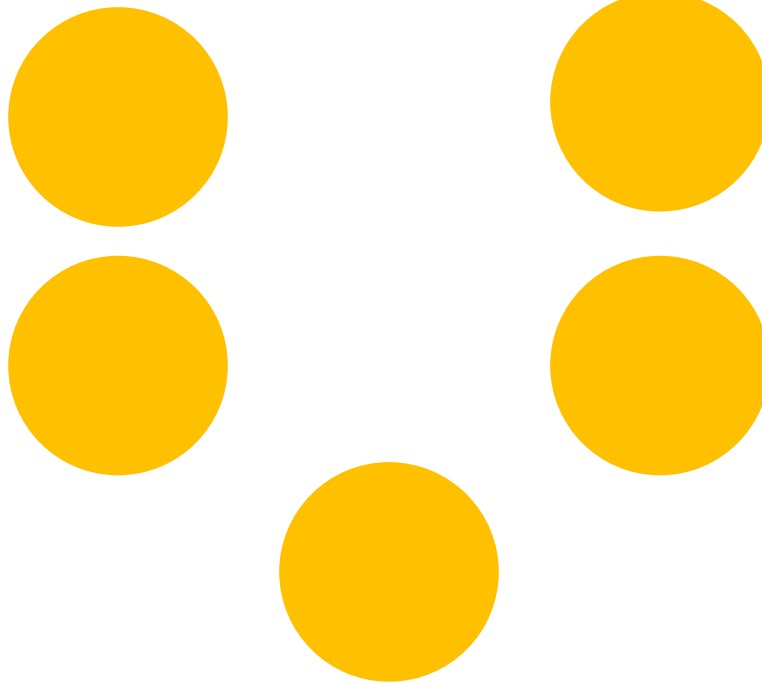


Image 1

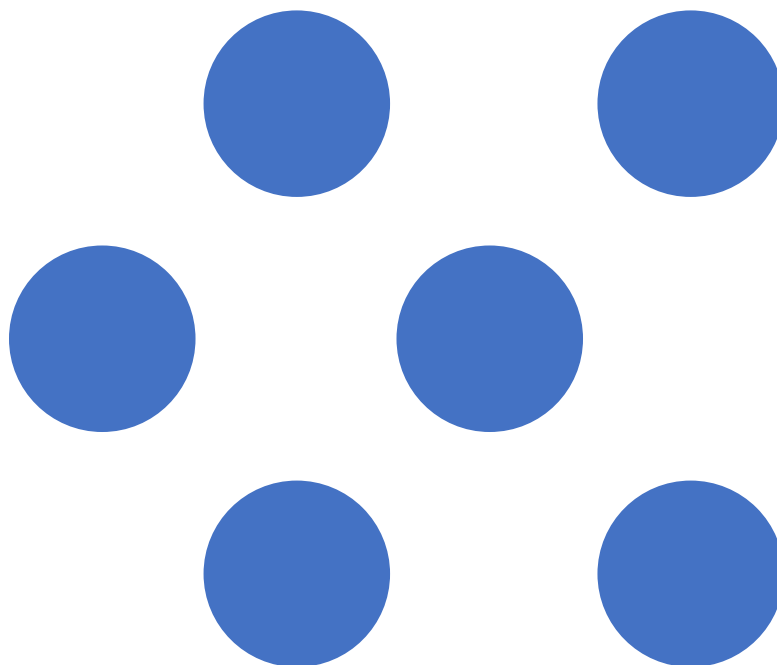


Image 2

DAY 5

Opener

Main Activity

Closer

Choice Time

Match the Dots

Materials and Prep

Tiny Polka Dot cards – one deck per group of four students. Start with Blue (ten frames) 0-4 and Teal (dice patterns) 0 - 4, and have larger numbers ready for extensions.

How to Play

Deal the ten cards face up. Students take turns. Each turn, find two cards of the same number and remove that pair from the board. There aren't winners or losers in this game—just take turns until all the cards are gone.

For a first game, play with Teal 0-4 and Blue 0-4. In subsequent games, students can play with larger numbers and additional suits.

Launch

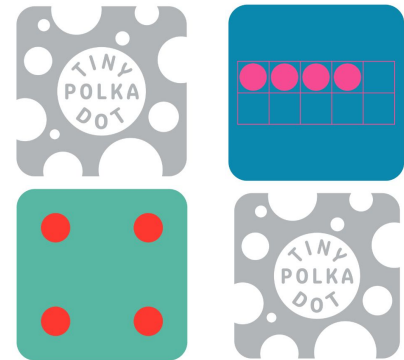
Select a student volunteer to play a game of Match the Dots with you. Play a few turns until the game is clear.

Work

Students play Match the Dots in groups of 3 or 4. Circulate to support students who need help counting or matching, and giving larger numbers or more suits to students who finish their games and are ready for a greater challenge.

Tips for the Classroom

1. Start students with small numbers, and slowly let them increase the difficulty. Every step up should feel like a fun new challenge. "Do you think you're ready to add in some sixes?"
2. The game is more fun if you're using an even number of suits, so every card gets taken in the end.
3. If students aren't ready for Match the Dot, you can let them play Hungry Numbers (see the Tiny Polka Dot games included in the deck), or just play with the cards, or organize them into color piles.



Launch Key Points

- Demonstrate strategies for counting the dots in methodical ways, such as placing a finger on the starting dot, or working left to right and up to down.
- Students watching will want to share what they see. Give them a quiet way to show they have something to share.

Prompts and Questions

- How do you know those two cards have the same number of dots?
- I'm going to pick this card. It has two dots. Do you see a card that matches it?
- Are you sure those two are the same? Let's count them together.

DAY 5**Opener****Main Activity****Closer****Choice Time**

Closer

Choose a collection of dot cards and ask students which arrangements of dots on the cards are easiest or hardest to count.

Demonstrate students suggestions to help count all of the dots.

Choice Time

- Back and Forth (to 10)
- Pattern Block Fill-Ins
- Block Free Play
- Challenge Problems

Prompts and Questions

- How can we count this arrangement of dots?
- How do you know you counted every dot only one time?

DAY 6

Opener

Main Activity

Closer

Choice Time

Overview

Focus Standards

MP1 Make sense of problems and persevere in solving them.

K.CC.4 Understand that the last number name said tells the number of objects counted.

Materials: Make collections of objects of different numbers between 7-20, including one demonstration collection; paper; pencils.

Opener	Choral Counts	10 – 15 minutes
Main Activity	Counting Collections	20 – 30 minutes
Closer	Counting a Collection	5 – 10 minutes
*Choice Time	<ul style="list-style-type: none"> ● Back and Forth (to 10) ● Match the Dots ● Block Free Play ● Challenge Problems 	5 – 25 minutes

Standards Connections

K.CC.1 | K.CC.2 | K.CC.3 | K.CC.5 | K.MD.3

DAY 6

Opener

Main Activity

Closer

Choice Time

Choral Counting

Choral counting is an incredibly powerful activity for building numeracy. Students practice counting forward, backward, skip counting, and — critically — looking for patterns.

- Step 1.** Tell students you'll **start at 1 and count by 1s until you reach 20.**
- Step 2.** The students' job is to predict to themselves what each next number will be as you write it, and to count along with you.
- Step 3.** Start writing out the numbers. Do this slowly, so students have time to think of what might come next. Ask them to say each number with you as you write it. For today, write the numbers in **four columns of five.** Pause after writing 115 and ask students if they are noticing any patterns in the chart.
- Step 3.** Once you've written out the whole sequence, recount the numbers together as a class.
Step 4. Ask students to share what they notice about the number sequence. Write down their observations.

1	6	11	16
2	7	12	17
3	8	13	18
4	9	14	19
5	10	15	20

Prompts and Questions

- Think about what it will sound like when we count.
- Let's count all the numbers together.
- Take a moment to look at these numbers. What do you notice?
- What do you wonder about these numbers, that you might not know yet?

Tips for the Classroom

1. Changing the number of columns you use will create more or less emphasis on different kinds of patterns. You can experiment with this as you do more talks.
2. There may be some very interesting patterns that emerge. Some may be correct, some incorrect. Most important is to write students' comments down as clearly as you can, making notes/circles/arrows on the numbers if that helps.
3. Students might comment on first digits, last digits, digit nums, columns, rows, diagonals, or any other relationships between numbers. Prepare to be surprised!

DAY 6

Opener

Main Activity

Closer

Choice Time

Counting Collections

Materials and Prep

Make collections of between 7-20 objects and one small collection for the launch. Place in different parts of the room. If the students were effective at counting the collections on Day 2, you may choose to make some collections with larger numbers, up to 30.

Collections might include manipulatives, cups of legos, straws, blocks, pencils, buttons, markers, etc. Make sure same size collections are made with different size objects. Provide students with pencils and recording sheets.

Motivating Question

How many objects did you count in your collection?
How did you count them?

Launch

Choose a student volunteer to demonstrate predicting and then counting the demonstration collection. Have the student write down both the prediction and then the actual count.

Point out the groups of collections available around the room, and tell students their goal is to predict and then count how many objects are in a collection and make a sketch to remember how they got the answer.

Work

Students, working in pairs, count and record the number of objects in a collection. Circulate to observe how students are counting, taking note of the strategies they are using to count all of the objects in a collection. By the end of the activity today, you should have a good sense of where all your students are with respect to their counting.

Tips for the Classroom

1. You can differentiate Counting Collections most easily by including collections with many or fewer objects to count.
2. As students become more comfortable with Counting Collections, the goal is to help each individual develop greater efficiency, accuracy, and power in their counting strategies. Look for opportunities to encourage grouping, skip counting, using ten frames, etc., and tailor your guidance according to each student's needs.

Launch Key Points

- Model all the steps of recording during the launch.
- Make sure students understand that their goal is to predict and count how many objects are in each collection.

Prompts and Questions

- What strategies are you using to count?
- What helps you know you have counted all of the objects in your collection?
- Can you tell how your partner is counting by looking at their picture?

Day 6

Counting Collection

Guess: _____

Picture of how I counted



How many I counted: _____

DAY 6**Opener****Main Activity****Closer****Choice Time**

Closer

Pick a collection with about 14 objects and ask students how they would count this collection, making sure that every object was counted.

Demonstrate student suggestions such as counting while moving each object or first lining the objects up and then counting them.

Choice Time

- Back and Forth (to 10)
- Match the Dots
- Block Free Play
- Challenge Problems

Prompts and Questions

- How can we count this collection?
- How can you be sure that all of the objects have been counted?

DAY 7

Opener

Main Activity

Closer

Choice Time

Overview

Focus Standards

MP1 Make sense of problems and persevere in solving them.

K.CC.6 Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group.

Materials: Connecting cubes in grab-able containers, ten frames (optional), pencil, paper, tiles (optional).

Opener	Guess My Number	10 – 15 minutes
Main Activity	Handfuls - one hand	20 – 30 minutes
Closer	Comparing Two Handfuls	5 – 10 minutes
Choice Time	<ul style="list-style-type: none"> ● Counting Collections ● Match the Dots ● Block Free Play ● Challenge Problems 	5 – 25 minutes

Standards Connections

K.CC.3 | K.CC.4 | K.CC.5 | K.OA.1 | K.OA.2

DAY 7

Opener

Main Activity

Closer

Choice Time

Guess My Number

Write the numbers from 1 to 10 on the board. Tell your students that you are going to think of a number from 1 to 10, and they will try to guess it in the fewest number of guesses possible. After every guess, you will tell them whether your number is greater or less than their guess.

Little do the students know that you haven't actually chosen a number. Instead, always make their guess turn out as poorly for them as possible. If they guess 8, your number is less than 8. If they guess 2, your number is greater than 2. After each guess and your response, ask students to determine which numbers can be crossed out.

Plan to play 2 - 3 games. You can increase the range of numbers after each game, playing to 12, 15, or 20 instead of 10.

Tips for the Classroom

1. If kids make a bad guess, don't try to steer them toward a good guess right away. But you can ask the students after you write the guesses down which guesses were most helpful, or whether they would make a different guess if they could take it back.
2. Don't play for too long at one time. Two to three games is usually enough to get the kids mentally alert and ready for whatever is coming next.

Prompts and Questions

- Talk to a neighbor about what you think the next guess should be, and why.
- How many numbers do you think that guess will cross out?

DAY 7

Opener

Main Activity

Closer

Choice Time

Handfuls - one hand

Materials and Prep

Connecting Cubes in grab-able containers shared among groups of students (make sure the cubes are all disconnected), ten frames (optional), pencil, paper, square tiles (optional).

Motivating Question

How many cubes can you grab in one hand?

Launch

Ask for a volunteer. Ask them to predict how many cubes they can grab in one handful. Write their prediction down together, then let them reach into a box of cubes with one hand and pull out as large a handful as they can. (The cubes in the box should be disconnected ahead of time.)

Now that they have a handful, ask if the class if they think the prediction is above or below what they grabbed, or exactly the same. Do this before counting.

Count the number they actually got, and write that number down, too. Ask which number is bigger, the guess or the actual amount.

Repeat the activity with a second volunteer so the steps are clear.

Work

Send students to work in pairs around the room to estimate, grab a handful, count, and record. Encourage students to examine their estimations in relation to their actual counts. If students are ready, you can ask them the difference between their prediction and the actual number of cubes they grabbed.

Tips for the Classroom

1. To make the activity more challenging, students can grab two handfuls at a time.
2. Try changing from Connecting Cubes to square tiles. How will the numbers change?

Launch Key Points

- Get students estimating and counting quickly in the demonstration.
- For the demo, ask the class if the prediction should be revised after grabbing the cubes but before counting them. (They should try this step the first couple times they do the activity on their own, but then it may be omitted.)

Prompts and Questions

- How many did you get last time?
- How many did you get the second time and was it more than, less than, or the same amount than the first grab?
- How are you counting the cubes?
- Let's count together.
- How are you sure that you counted all of the cubes?

DAY 7**Opener****Main Activity****Closer****Choice Time**

Closer

Grab a handful of Connecting Cubes and count them.

Then, grab another handful of Connecting Cubes and show them, but don't count them. Ask students to predict if the second handful has more than, equal to, or more than the first.

Finally, after students have made their predictions, count to find out.

Choice Time

- Counting Collections
- Match the Dots
- Block Free Play
- Challenge Problems

Prompts and Questions

- How many Connecting Cubes were in the first handful?
- Why do you think that second handful had more than, equal to, or less than the first handful?
- How many more/less did the second handful have than the first?

DAY 8

Opener

Main Activity

Closer

Choice Time

Overview

Focus Standards

MP1 Make sense of problems and persevere in solving them.

K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.

Materials: Tiny Polka Dot cards. Start with Blue (ten frames) 0-4 and Teal (dice patterns) 0 - 4, and have larger numbers ready for extensions.

Opener	Dot Talks	10 – 15 minutes
Main Activity	Tiny Polka Dot Memory	20 – 30 minutes
Closer	Comparing by Looking	5 – 10 minutes
Choice Time	<ul style="list-style-type: none"> ● Counting Collections ● Dot Memory ● Block Free Play ● Challenge Problems 	5 – 25 minutes

Standards Connections

MP.7 | K.CC.3

DAY 8

Opener

Main Activity

Closer

Choice Time

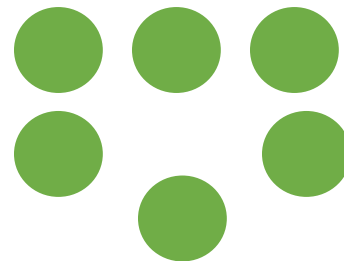
Dot Talks

Project the dot image on the board where all students can see it. Then ask students to figure out:

1. **How many dots there are**
2. **As many ways to count them as they can.**

Students can think about the questions on their own first, and then share with a partner. Once students have had time to think the question through, lead a class discussion where students share their answers and approaches.

The key elements to these talks are a de-emphasis on speed and an added emphasis on process and communication. Expect some disagreements over the answers, and try to use those disagreements as a motivation for students to articulate their ideas to their classmates.



Tips for the Classroom

1. Students will be looking to see if you indicate what the right answer is. Don't favor right answers over wrong ones. Make sure that the explanations are what matters.
2. Give students constructive language to use in the discussion, like, "I respectfully disagree, because..." and "I agree with _____, because..."
3. Always keep the environment safe and positive.

Prompts and Questions

- Who would like to defend this answer?
- I don't quite follow. Do you mean I should count this group first?
- How did you do that/know that?
- Does anyone else think they can explain what Shawn is saying?
- Turn to the person next to you and explain how you counted.

DAY 8

Opener

Main Activity

Closer

Choice Time

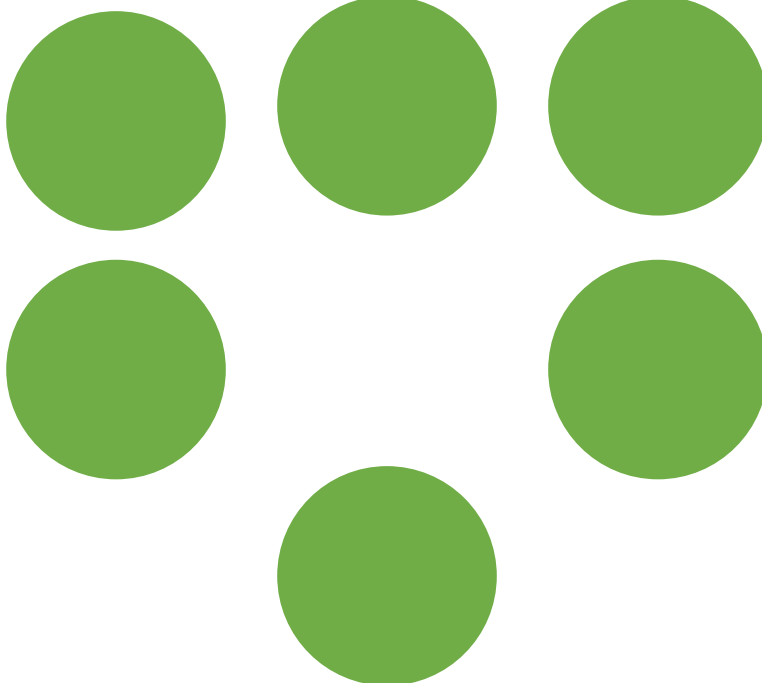


Image 1

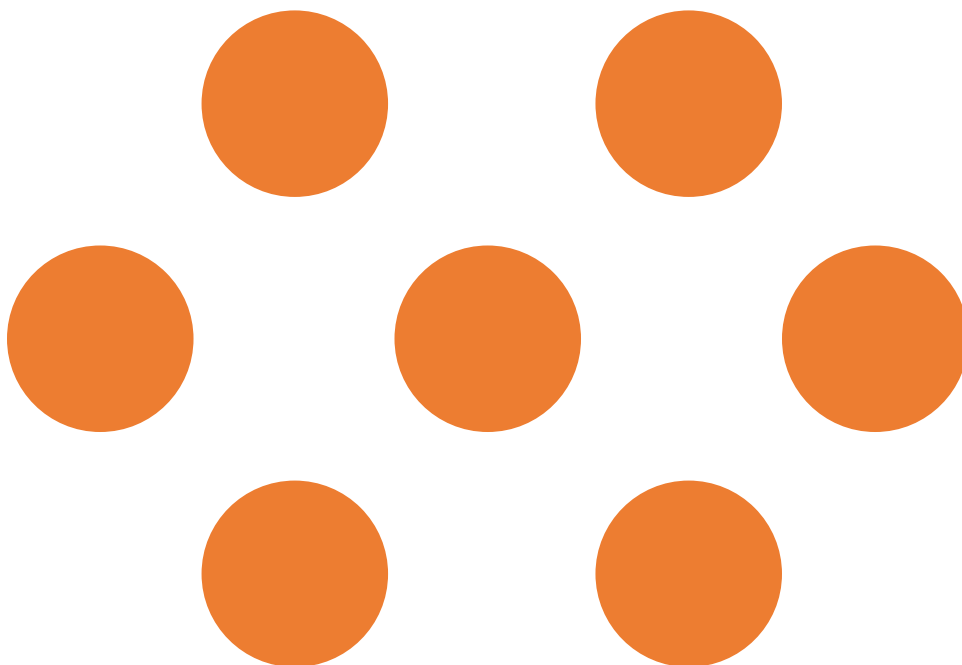


Image 2

DAY 8

Opener

Main Activity

Closer

Choice Time

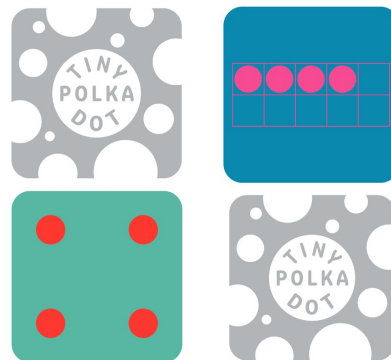
Tiny Polka Dot Memory

Materials and Prep

Tiny Polka Dot cards. Start with Blue (ten frames) 0-4 and Teal (dice patterns) 0 - 4. Have larger numbers or different suits ready for extensions.

How to Play

Deal the ten cards face down. On each play, a player flips over two cards. If they match, they claim the pair. Once cards are flipped, they stay face up. Players take turns until all the cards are gone. Each player can count and see how many cards they got at the end of the game.



Launch

Deal out the cards where everyone can see them (center of a circle, document camera, etc.). Choose a volunteer to play a demonstration game with you, and explain the rules while you demonstrate. Choose blue and teal suits to start, mix them up and deal them out face down in a grid.

Once everyone understands the game, send students to play on their own in pairs or trios.

Work

Students play Tiny Polka Dot Memory in groups of 2 or 3. Circulate to support students who need help counting or matching. For students who are ready, challenge them to play again with larger numbers or more challenging suits.

Tips for the Classroom

1. Start students with small numbers, and slowly let them increase the difficulty. Every step up should feel like a fun new challenge. "Do you think you're ready to add in some sixes?"
2. The game is more fun if you're using an even number of suits, so every card gets taken in the end.
3. If students aren't ready for Match the Dot, you can let them play Hungry Numbers, or just play with the cards, or organize them into color piles.
4. If students are having trouble counting dots in the dice patterns, show them how to hold a finger on their starting dot. You can also provide them with counters to lay over the top of each dot, counting as they go.

Launch Key Points

- Explain the rules as you play in the demo game, narrating what you are doing as you go.
- Students watching will want to share what they see. Give them a quiet way to show they have something to share.
- Demonstrate several different ways to count the dots on the cards.

Prompts and Questions

- How do you know those two cards have the same number of dots?
- I'm going to pick this card. It has two dots. Do you see a card that matches it?

DAY 8**Opener****Main Activity****Closer****Choice Time**

Closer

Hold up two different of cards in the same suit with 6 or more dots on each. Ask, "Which card has more dots?"

Count them together. Does everyone agree which card has more now?

Try another suit, and ask students if some of the suits make it easier to see which number is bigger. What do they think makes it easier or harder to tell whether one is larger than the other? Is it possible to tell without counting?

Prompts and Questions

- Which card has more dots?
- What helps you know without counting?

Choice Time

- Counting Collections
- Dot Memory
- Block Free Play
- Challenge Problems