

Tiny Polka Dot Games in the Classroom



Match the Dots

Topics: Counting and cardinality, subitizing, recognizing numbers

Materials: Tiny Polka Dot cards

Common Core: K.CC.4, K.CC.5, MP6, MP7

The numbers look different. Which ones are the same?

Why we love Match the Dots

This simple game of counting and matching helps students see how different-looking collections of dots may actually represent the same number.

The Launch

Choose a student volunteer to demonstrate the game, or put the cards where everyone can see them (center of a circle, document camera) and play with the entire class, where you find a match, and then the students raise their hands if they see a match.

The rules are simple: deal a collection of cards face up. On your turn, simply find two cards of the same number, and remove that pair from the board. There aren't really winners or losers in this game—you just play taking turns until all the cards are gone. For early games, pick just two suits at a time, and start with numbers the students know. For a first game, you might pick Teal 0-4 and Blue 0-4. In subsequent games, students can play with larger numbers and additional suits.

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.

The Wrap

Ask students which cards were easiest and hardest to count.

Tips for the classroom

1. Start students with very easy 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. This game evolves into Dot Match Memory and Dot Fives. If students are ready for a greater challenge, you can show them those games.
4. If students aren't ready for Dot Match, you can let them play Hungry Numbers, or just play with the cards, or organize them into color piles.

PowerDot

Math concepts: Counting, greater than/less than

Equipment: Tiny Polka Dot cards OR dominoes, tiles & ten frames (optional)

Common Core: K.CC.4, K.CC.5, K.CC.6, K.CC.7, MP7

Highest card wins.

Why we love PowerDot

Games in the “war/top-it” category are quick to learn and fun to play. Good for counting and comparing, and a good platform for more sophisticated games later.

Launch

Take a volunteer from the class for a demonstration game, and explain the rules. This game is best with two players, though you can play with groups of three.

Rules

PowerDot is best for two players, though you can play with three (or more).

Split the cards into equal parts, and give one part to each player. On each play, players turn over one card from their deck. Whoever has the largest card wins the round, and keeps the cards from that round in a separate pile.

If two or more players tie for a win, they each turn over another card to see who has the highest of those cards.

The game is over when all the cards are used up. Whoever has taken the most cards wins.

Questions and prompts

- Show me how you counted.
- (After one card is flipped) Do you think they'll win this round?
- Try putting a finger on the first dot you count, so you remember where you started.

The Wrap

Ask the students if any colors of cards were easier or harder to count. What did they notice about the arrangements?

Tips for the classroom

1. This is a convenient game to up- or down-level. To make the game simpler, just remove some of the larger numbers from the deck, or take out some of the more difficult dot arrangements.
2. To make the game more challenging, students can flip over two cards per turn instead of just one.
3. Games with two players are best, but games with three are okay too. It's generally not recommended to have larger than four in a group if you can help it.
4. Try playing with dominoes for variety! Dominoes create a natural way to see basic addition of dots.
5. Another important option for down-leveling is to build the number on your card out of tiles or counters, then compare how tall the stack of counters is, or how completely it fills out a ten frame or a five frame. For students who have trouble comparing the numbers in the picture, building is a very helpful way to compare.

Dot Fives

Topics: Addition within 5, greater than/less than

Materials: Tiny Polka Dot cards

Common Core: K.CC.4, K.CC.5, K.CC.6, K.OA.5, MP1, MP7

What two cards make five?

Why we love Dot Fives

This variation on Match the Dots gives students a fun way to practice their sums to five.

Example Launch

Part 1: Fingers.

Teacher: Who can hold up five fingers? I can do it too. [Holds up three fingers.]

Students: That's not five fingers!

Teacher: What? Let me count them: 1, 2, 3. You're right. I'd better hold some fingers up on my other hand. [Holds up two fingers on the other hand.] Let me count that now: I have three on this hand, and two on this hand. Does that make 5? 1, 2, 3,... 4, 5. What if I only had held up 1 finger? [Holds up one finger on the right hand, 0 on the left.] Show me with on your hands how many I need to hold up on this hand?

Teacher: Let me try: is it four fingers? That would be 1 here, and 4 here. That's $1 + 4$. I can count that: 1, 2, 3, 4, ... 5. So that makes five too!

Part 2: Tiny Polka Dot cards

After the counting finger opening, invite a students up to play Dot Fives with you, and explain the rules. Tell the students that game is all about making fives.

Here are the rules: deal a collection of cards face up. On your turn, find two cards that add up to five, and remove that pair from the board. There aren't really winners or losers in this game—you just play taking turns until all the cards are gone.

For early games, pick just two suits at a time, and start with numbers the students know. For a first game, you might pick Teal 0-5 and Blue 0-5. In subsequent games, students can play with additional suits. Don't add numbers over 5.

Prompts and Questions

- What number do you need to make five with this one? Do you see it anywhere?
- Do you know of any pairs of numbers that make 5?
- That's a 0. What do you need to add to zero to make 5?

Wrap Up

Let students share observations and questions they may have about the game. One nice closing question is whether certain pairs that sum to ten feel easier or harder.

Tips for the classroom

1. For students who need a more sophisticated game, try Dot Five Memory, where the cards are face down instead of face up. See Dot Five Memory in Week 3.
2. Another nice variation is to find pairs that add up to 6, 7, 8, 9, or 10.
3. You can add more colors, as long as you include the numbers from 0 to 5.

Dot Five Memory

Math concepts: Arithmetic, addition, greater than/less than

Equipment: Tiny Polka Dot cards

Common Core: K.OA.1, K.OA.3, K.OA.5

Do you remember where the card is that makes it 5?

Why we love Dot Five Memory

This memory-style game is easy to learn and fun to play. Great practice for finding pairs that add to 5. A perfect preliminary to Dot Ten Memory, on the following page.

Launch

Take a volunteer for a demonstration game, and explain the rules while you demonstrate play. First, choose two suits, and take the cards (0 - 5) in those two colors. Mix them up and deal them out in a grid. Players take turns turning two cards face up. If these two cards add to 5, keep them, and take another turn. If not, turn them face down in place, and it is the next player's turn. Keep playing until all the cards are gone. Whoever has the most cards at the end is the winner.

If a group of four takes a single deck, they can split it into two piles of two suits and each pair can play a game. When they're all done, they can redivide the deck in a different way.

Questions and Prompts

- What number do you need to make five with the one you've already turned over? Think about it before turning over the next one.
- Do you know of any pairs that make five?
- Can you do anything with the card they just turned over?
- Show me how you know those two cards add up to 5.

Wrap Up

Let students share observations and questions they may have about the game. One nice closing question is whether certain pairs that sum to five feel easier or harder.

Tips for the classroom

1. For students who need a more challenging game, try Dot Six Memory, Dot Seven Memory, etc.
2. Students may, after repeated playing, come up with interesting variations, like being able to turn over three cards to make five. These may be worth exploring.

Dot Ten Memory

Math concepts: Arithmetic, addition, greater than/less than

Equipment: Tiny Polka Dot cards

Common Core: K.OA.1, K.OA.3, K.OA.4, K.OA.5 1.OA.5, 1.OA.6, 2.OA.2

Do you remember where the card is that makes it 10?

Why we love Dot Ten Memory

This memory-style game is easy to learn and fun to play. Great practice for finding pairs that add to 10.

Launch

Take a volunteer for a demonstration game, and explain the rules while you demonstrate play. First, choose two suits, and take the cards (0 - 10) in those two colors. Mix them up and deal them out in a grid. Players take turns turning two cards face up. If these two cards add to 10, keep them, and take another turn. If not, turn them face down in place, and it is the next player's turn. Keep playing until all the cards are gone. Whoever has the most cards at the end is the winner.

If a group of four takes a single deck, they can split it into two piles of two suits and each pair can play a game. When they're all done, they can redivide the deck in a different way.

Questions and Prompts

- What number do you need to make ten with the one you've already turned over? Think about it before turning over the next one.
- Do you know of any pairs that make ten?
- Can you do anything with the card they just turned over?
- Show me how you know those two cards add up to 10.

Wrap Up

Let students share observations and questions they may have about the game. One nice closing question is whether certain pairs that sum to ten feel easier or harder.

Tips for the classroom

1. For students who need a simpler game, try Dot Five Memory, which starts with just the numbers 0 - 5, and pairs need to sum to 5 instead of 10.
2. Students may, after repeated playing, come up with interesting variations, like being able to turn over three cards to make ten. These may be worth exploring.

The Very Hungry Number

Topics: Counting, addition, missing-addend subtraction

Materials: Tiny Polka Dot cards, extra paper and pencil if necessary.

Common Core: K.OA.1, K.OA.2, K.OA.3, K.OA.4, MP1, MP6, MP7

The number is hungry! But it will only eat the dots in a special way.

Why we love The Very Hungry Number

The Very Hungry Number is a fun way to practice lots of counting, adding, and missing addend subtraction. Making the “Om Nom Nom” sound of eating can be delightful for the kids, and they have plenty of chances to do the same. The challenge of this game is very easy to adjust up and down by changing the very hungry number.

The Launch

Launch in a station with a smaller group of students. Using the Tiny Polka Dot cards, show them the card with numeral 10, and tell them that the 10 is *very* hungry. The problem is, it will only eat ten dots at a time. Show them an example: take a card with 10 dots and “feed” it to the 10 (making eating sounds is highly encouraged). Then try taking a card with 8 dots on it—can the 10 eat this? No. It only eats 10 dots at a time. What if we gave it 1 more dot? That won’t work either: $8 + 1$ is 9, which is still too small. But what if we put an 8 dot card together with a 2 dot card? The 10 will happily eat the 8 and 2 dot cards together (Yum yum yum...).

Once they get how it’s done, spread out a full deck of cards. the students can put cards together to feed the very hungry 10. The teacher can play the role of the 10 at the station, and make the students show that they’ve got the right number of dots to feed it.

Prompts and Questions

- You have a seven. How many more dots do you need to feed it to the very hungry 10?
- $6 + 3$ is how many? That’s close, but not 10. How could you make it ten?
- I see one of those piles of dots won’t be right for the 10. Do you see which one?

The Wrap

Once all (or almost all) the cards have been fed to the 10, have students help you write down a list of all the pairs that make 10, using the “+” sign. “If we had dots, how many more did we need to make 10?” (Students: 4). Then write down $6 + 4 = 10$. When you have all the ways to make 10 written down in a column, ask students what they notice.

$$1 + 9 = 10$$

$$2 + 8 = 10$$

$$3 + 7 = 10$$

etc.

Tips of the classroom

1. Students can use numeral cards as well as dot cards to add up to 10.
2. To make this activity easier, use a smaller number like 5 or 7 for the very hungry number.
3. To increase challenge, use a number like 12. You can make this number using the 1 and 2 cards next to each other, or just write it on a separate piece of paper.
4. Students may get the idea to add multiple cards together to make 10, as in $7 + 2 + 1$. It is great if they do! As long as there are ten dots, the very hungry number is happy.

PowerDot Pro

Math concepts: Arithmetic, addition, greater than/less than

Equipment: Tiny Polka Dot cards OR dominoes

Common Core: K.CC.6, K.OA.5, 1.OA.5, 1.OA.6, 2.OA.2

Choose your challenge. Highest sum wins.

Why we love PowerDot Pro

PowerDot Pro adds an extra layer of challenge to PowerDot. Kids love challenging themselves, and differentiation is built in.

Launch

Take a volunteer from the class for a demonstration game, and explain the rules. This game is best with two players, though you can play with groups of three.

Rules

PowerDot is best for 2-3 players, though you can play with up to six if an adult is leading.

Divide the deck evenly among the players. On each play, a player issues a challenge of how many cards they will turn over. then all players turn over that many cards from their deck. Whoever has the largest sum wins the round, and puts all the cards on the bottom of their pile. In case of ties, each player turns over another card and adds it to their previous sum.

The game is over when someone runs out of cards.

Example Play

Round 1: Player 1 calls for two cards. Then each player turns over two card from their deck. Player 1 turns up a 4 and a 3, for a total of 7, and Player 2 turns up a 9 and a 0, for a total of 9. Player 2 wins all four cards, and puts them on the bottom of their deck.

Round 2: Players 2 calls for three cards. Player 1 turns up a 5, 6, and 8, for a total of 19. Player 2 turns up a 1, 10, and 8, for a total of 19. Since they are tied, they each turn another card over. Player 1 turns up a 3, and Player 2 turns up a 1, making their totals 22 to 20. Player 1 takes all the cards, and play continues.

Questions and prompts

- Show me how you counted/added.
- (After one card is flipped) Do you think they'll win this round?
- Did you get more than 10?
- Which colors are the easiest to count/add/count on?
- What's the most the cards can add up to?
- Are you ready to try going to three (or four, or five) cards?

The Wrap

The central practice here has to do with adding lots of smaller numbers together. A fun wrap project can be to take a challenge—like six cards—and take guesses for what they'll add up to (15? 30? 100?). Then turns them over and add them up as a class. How close did you get? What would happen if you tried again?

Tips for the classroom

1. This is a convenient game to up- or down-level. To make the game simpler, just remove some of the larger numbers from the deck, or remind students that they only need to turn over as many cards as they want to.
2. Use single dominoes as a down-level option as well.
3. To make the game more challenging, students can flip over more cards per turn.
4. Games with two players are best, but games with three are okay too. It's generally not recommended to have larger than four in a group if you can help it. The exception is if an adult is leading the game, in which case it's fun to play with lots of people. You may need to switch to dominoes or put cards back in a central pile if too many people are playing. Don't be afraid to give away some of your own cards to keep kids in the game.