

HOW TO PLAY DOT CARD GAMES

Math children are practicing:

- Counting (know the number names in the correct order)
- Recognizing how many immediately (subitizing)
- Knowing how many in all (cardinality)
- Using one-to-one correspondence when counting

Materials

- 2 sets of small dot cards (22 in a set)
- 1 set of large dot cards (22 in a set)
- 1 set of small dot cards, blank on back (22 in a set)
- 4 blank boards (with 5x5 inch square on it)
- 25 tokens
- *Other:* Any counting objects in your classroom

Picture Book: Ten Black Dots by Donald Crews

- *Circle time:* Read the book aloud. Ask a few children to touch the dots in the book as you count them together. Talk about what they see and predict what number of dots might be on the next page.
- *Art table:* Use circle stickers, stamps, or bingo daubers to have each child create their own picture with up to 10 dots. Have children tell you about what they draw and write it down on their paper: "I used 5 dots in all. 4 dots to make car wheels, 1 dot to make a steering wheel."

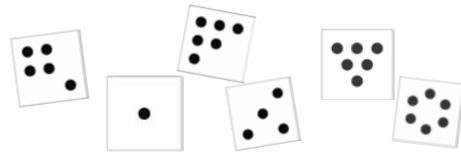
Suggested plan for playing with dot cards	
<i>Play each game several times or as long as the games keeps the children's interest and is challenging for them. (Each game typically lasts 5-10 minutes.)</i>	
Game	Materials
1. How many do you see?	Fingers
2. Cover the dots. Children count 1 by 1 as they place tokens on the dots.	Large dot cards & tokens
3. Can you find?	Small dot cards
4. Quick images	Large dot cards
5. Which one doesn't belong?	Small dot cards
6. Match the number	Small dot cards
7. Make the image	Large dot cards & large blank card
8. Memory (Concentration) game	Small dot cards (blank on the back)

This work has been supported by funding from the National Science Foundation and Heising-Simons Foundation.

Citation: Reed, K. E., & Young, J. M. (2017). *Games for Young Mathematicians: How To Play Dot Card Games*. Waltham, MA: Education Development Center, Inc. <http://ym.edc.org/>



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Tips from the classroom:

- Only have a small number of cards on the table at one time so children aren't overwhelmed with choices
- Place the tokens in a small open container so children have access to them but they are contained
- Typically small groups of 2-4 children work best.

Questions to ask:

- How many dots do you see?
- How do you know?
- Do you know how many without counting?
- How could we do it a different way?
- What strategy did you use?

Praising the process:

- You're working hard!
- Good idea!
- Keep trying!
- I like how you took your time and worked hard on that.

Fingers: How many do you see? (subitizing; for quick play or transition time; 1-5 minutes)

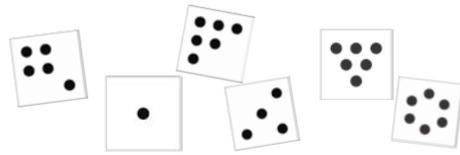
1. Hold your hands behind your back. Chant "Fingers, Fingers 1,2, 3. How many do you see?"

Hold up 3 fingers .
2. Children can call out "3" and/or show "3" with their fingers.
3. Keep playing with different numbers of fingers, focusing on 1-5, but eventually going up to 10.
4. Vary how you show the number on your fingers, for example like  or  or with 2 hands like .
5. *Variation 1:* Hold up any number of fingers on your hands and ask children to hold up that same number of fingers on their hands but in a different way.
6. *Variation 2:* Ask children to hold up one more than you or one less than you.

About the learning in this game. This is a great game to play during transitions, as part of your circle time routine, or when you have just a couple minutes. Fingers are the only material you need. Kids are practicing subitizing (or counting) the fingers you are holding up



Dot Cards



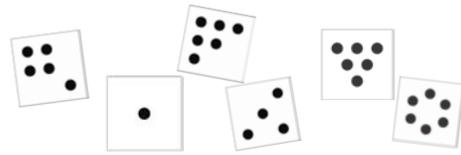
then counting on their own fingers. They are also practicing combinations of numbers that partner to make other numbers (i.e., 2 and 1 make 3). Being able to take apart and put numbers back together is a skill they need for later addition and subtraction. Research has shown that when children use their fingers in math it helps them develop a physical and visual feeling for numbers that helps them in math later on.

Cover the Dots (focus on one-to-one correspondence and cardinality, 5-10 minutes)

1. Give each child one large dot card. Give each child some tokens (about 5 or 6).
2. Ask children to count 1 by 1 as they cover each dot with a token.
3. Use your "Look For" chart to see if children are able to count in the correct order, able to coordinate counting with placing tokens (one-to-one correspondence), know to stop adding tokens after all the dots are covered, and know how many dots in all (cardinality).

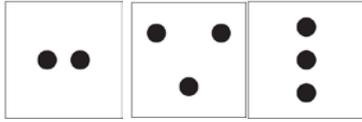
About the learning in this game. Just putting the tokens on the dots while they are counting helps to reinforce one-to-one correspondence and may be just right for some children. Counting out the tokens to a certain number also reinforces cardinality. Pay attention to what each child knows and is able to do and consider what they might be ready to learn next.

Dot Cards

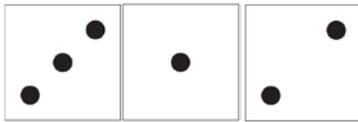


Can You Find? (counting, and subitizing, 5-10 minutes)

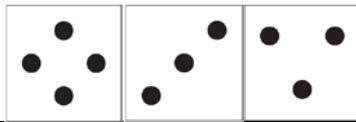
1. Place 3 small dot cards on the table, each with different quantities on them. (Begin with quantities 1 to 3 before adding the 4 and 5 cards. Wait until children are strong with numbers 1 to 5 before adding the 6 cards).



2. Ask children to find the card with 2 dots. Notice if they can see 2 immediately or need to count.
3. Put down new cards. Ask children to find the card with 3 dots.



4. Continue to play. When children are comfortable with the numbers 1, 2, and 3. Add the 4 dot cards. See if they are able to subitize 4 (probably by chunking 2 groups or 2) or if they need to count the dots one-by-one.



About the learning in this game. Notice if children subitize dot cards with only 2 or 3 dots or count the number of dots one-by-one. Notice if children are counting dots one-by-one accurately or making mistakes. Notice if children are reciting the counting words in the correct order and can tell you how many after they count. You can learn a lot about the children’s understanding of counting and number concepts that will help you know what the next step is for each of them.

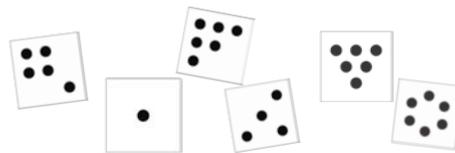
Quick Images (focus on subitizing, 5-10 minutes)

1. Use the large cards. Start with cards with just 2 or 3 dots. Hold up one card for about 3 seconds for the children to see then turn it over so they can’t see it. Ask, *How many dots were on that card?*
2. As children gain practice, use cards with more dots.

About the learning in this game. This game asks children to subitize or count the number of dots in their head, know how many (cardinality) and then express it verbally. Suggest to some children that they use their fingers to help them keep track of counting how many in all. They can hold up their fingers and say the number name or you can help them with the number name.



Dot Cards


Which One Does Not Belong? (focus on counting and subitizing, 5-10 minutes)

1. Use the small cards with just 2 or 3 dots on them. Lay out 3 of the cards; 2 of them should have the same number of dots. Ask, *Which two have the same number of dots?*



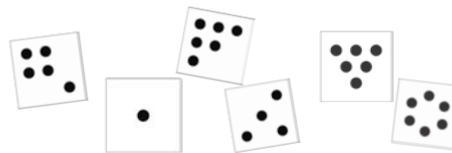
2. Continue to with different cards. Work with dots cards with 1 to 3 first, then add the 4 dot cards, 5 dot cards. After children have 1 to 5 solid, add the 6 dot cards.

About the learning in this game. This game encourages children to practice subitizing first with small quantities then with larger quantities up to 6 dots. Talk to them about how they can chunk the dots into groups that makes it easier for them to count such as seeing 2 dots and 2 dots is 4, or 3 dots and 2 dots is 5. This is a skill they will use later when adding and subtracting numbers. Some children may stick to counting the dots one-by-one, this is okay too, that may be what they need to be practicing right now. All children will be working on the concept of cardinality but comparing how many dots in all on three cards and identifying which two are the same. Also, don't worry if you make a mistake in putting out the cards—like accidentally putting out 3 different ones. Make it fun if they catch you making a mistake (e.g. extra sticker to anyone who finds the teacher's mistake).

Match the number (focus on counting and subitizing, 5-10 minutes)

1. Give each child 3 cards. Say a number (e.g., 2) and have the children point to (or hold up) one of their cards with the same number of dots (their card with 2 dots).
2. *Variation:* hold up a dot card (large ones work well) instead of saying the numeral. Have children figure out the number of dots on your card, then match to one of theirs. Ask, *How many dots do I have?* Once children understand the task you don't have to keep asking how many; instead use fewer words (or be silent) and have children simply match to your card.
3. *Variation:* To see if children recognize numerals, hold up a written numeral and have children find one of their cards with the same number of dots.
4. *Variation:* Children take turns calling out a number that the other children have to find. Or pair children up, and have them play the game together.

About the learning in this game. This game asks children to hold the number the teacher says in their head while they subitize (or count) the dots on their cards. It adds a bit of complexity and while it seems simple to adults, it may be challenging for some children and an important school readiness skill to work on. In this game children are working on counting and/or subitizing as well as an aspect of cardinality where they are counting the dots to reach a certain number. Children also practice recognizing the written numeral in that variation of this game.

Dot Cards
***Make the Image (focus on one-to-one correspondence and cardinality, 5-10 minutes)**

1. Give each child one large card (with 2 to 6 dots depending on the child) and some tokens. Ask children to use the tokens to count as they cover the dots on the card.
2. Pass out the blank board. Ask children if they can *make the matching image on this blank board with your tokens?*

About the learning in this game. Just putting the tokens onto the dots while they are counting helps to reinforce one-to-one correspondence and may be 'just right' for some children. Counting out the tokens to a certain number also reinforces cardinality. As a next step, children can make the same image on a blank board. This transfer of the image requires children to pay attention to number as well as orientation and spacing. Many children will put out the correct number of tokens but not pay attention to the design, which is fine. Encourage them to compare how the dots on the card are oriented compared to their board. This skill in attending to orientation and spacing is also important for early literacy as children are learning that *b* is different than *d* or *p* or *q* and that space between letters means a new word.

Roll die and make the image (focus on subitizing, one-to-one correspondence, and rolling dice, 5-10 minutes)

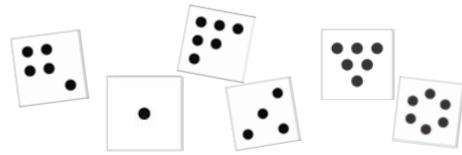
1. A variation on "Make the Image" above. Say, *Roll a die (dot cube) and make the dot pattern you see on the die on your board.*

About the learning in this game. Many young children are just learning how to roll a die (rather than placing it down or throwing it). They are also learning that you pay attention to the side of the die that lands on top and not all of the dots on all sides. These skills are important for playing all kinds of games, including math games. It also targets the skills mentioned above in "Make the Image."

Dot-card Memory/Concentration (working memory, taking turns, 5-10 minutes) *Use the dot cards that are blank on the back

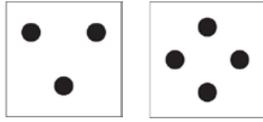
1. Make pairs of cards with the same number of dots, so you have an even number of 2-dot, 3-dot, and 4-dot cards (use 5- and 6-dot cards as children are ready). Start with 6 cards (3 pairs) then add more pairs as children get more comfortable.
2. Mix up the cards then lay them face down in a rectangular array. Children take turns turning over 2 cards to try to find 2 cards that have the same number of dots (the arrangement of the dots can be different). If they make a match, they get to keep those cards and go again. If they don't make a match, they turn them back over, in the same spot, and get it's the next child's turn.

Dot Cards



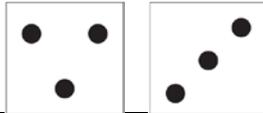
3. Model flipping over a card (many kids will want to pick it up rather than flip it over) and saying out loud the number of dots on the card, for example: *3 dots!* Then flip over a second card, for example: *4 dots, no match!*

Not a match:



Encourage children to remember where those cards were after they are turned over, encourage them to picture it in their minds.

Cards match:



About the learning in this game. Many children are just learning how to take turns and share materials and need lots of practice to learn how to do it well. Make sure to model taking turns for them and help them understand how. Children at this age often struggle to flip the card over so everyone can see the card rather than pick it up and hold it. As they turn over their cards, encourage them to remember which cards they have seen (turned over themselves and others have turned over) and where they are in the array so they can find them again. They can use that information on their turn.