

Explore Number Order

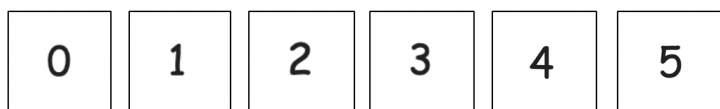


Ages 3+
5-10 minutes

Materials:

Cards to use:

numeral cards 0-5



OR any dots cards 0-5



Goal of the game: child arranges the cards in the correct order, with assistance if needed.

Setup:

1. Shuffle cards



2. Hand child the cards

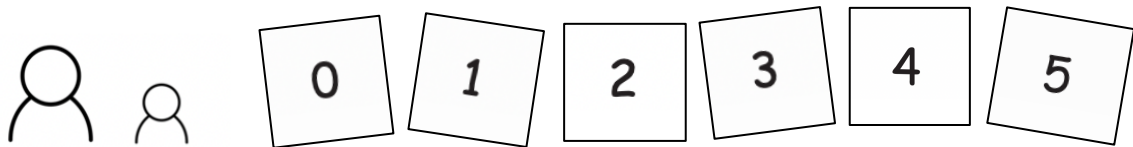
Play:

Ask questions about the cards.



What do you notice about the cards?
Do you see any numbers that you know?
Can you count the dots? How many dots are there?

Ask the child to put the cards in order from 0-5 (smallest to biggest). Have them make sure the numbers are in the correct order.



Variation:

If children are ready for a higher challenge, use cards up to 10!

What children are learning:

- This game can help you figure out your child's "just right" level of difficulty for future games. If your child is not yet ready to put cards 0-5 in order, use cards 1-3. If your child easily orders cards 0-5, use higher cards or move on to another game.
- Some children may need your help to count and understand the numerals or number of dots on the cards.
- Talk to children about their strategy: how are they ordering the cards? How do they know the correct order?

Hidden Card (X-Ray Vision Game)



1-4 players

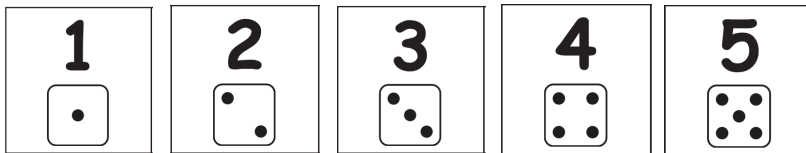
Ages 4+

5-10 minutes

Materials:

Two Numbers cards to use:

1-5 (add more cards as children gain experience)



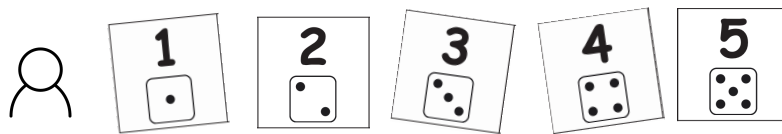
Goal of the game: children identify the hidden numbers on the face-down cards.

Setup:

1. Shuffle cards

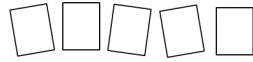


2. Ask the children to put the cards in order from 1-5



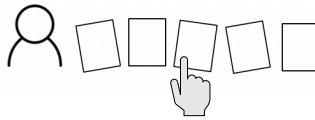
Play:

While the children are watching, turn the cards face down



Ask one player, “Can you point to a card? I will tell you what number is on the card using my special x-ray vision!”

The child points to one card



Say, “It is 3! Turn the card over to check.” The player turns the card over and checks the number.



Replace the card on the table face down. Say to the next player, “Now it is your turn to use your x-ray vision. Are you ready?”

If they are ready, have children take on the role of identifying the cards.

Variation:

Leave the cards face-up after they have been identified. Encourage children to use the face-up cards to help them identify the hidden cards. Once children practice this game with an adult, they can play in pairs.

What children are learning:

- Notice which strategies children use to identify hidden cards. If a player is unsure of what to do, help them count up from the first card to the hidden card, pointing to each card as they count.
- Leave the identified cards face-up and encourage children to “count on” from the face-up card to the hidden card. For example, you can count on from the face-up 3 card to the hidden 5 card: “3...4, 5!” Counting on is an important math skill.
- This game practices three executive function skills: inhibitory control, working memory, and attention shifting. Children must *inhibit* themselves from impulsively turning the cards over. They use their *working memory* to sort the cards into the correct order to begin with, and they remember that order throughout the game. *Attention shifting* is practiced when children switch between the role of the card selector to the role of the card identifier.

For more information, see Clements & Sarama (2019): https://www.nctm.org/Publications/Teaching-Children-Mathematics/2019/Vol25/Issue7/Double-Impact_-Mathematics-and-Executive-Function/

Roll One (two numbers with one die)



1-4 players

Ages 3+

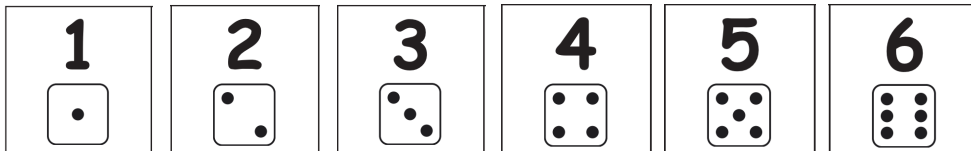
5-10 minutes

Materials:

1 die 

Two Numbers cards to use:

one set of 1-6 cards for each player



Goal of the game: children match the numbers rolled on the die to turn over all of their cards.

Setup:

1. Give each child a set of 1-6 cards in random order.

Play:

Each child puts their cards in order from 1-6



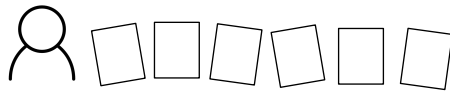
On your turn:

Roll the die. Turn over the card that matches the number rolled.



If the number rolled does not match any of your face-up cards, pass the die to the next player. Or, keep rolling until the number rolled matches a face-up card.

The game ends when all players have turned over all of their cards!



What children are learning:

- Some children may match the dot patterns on the die with the same dot patterns on the cards. These children are matching by pattern and quantity. If this occurs, be sure to say the number names (“three”) and point to the numerals (“3”). With practice, children learn to connect quantities with their number names and written numerals.
- This game can be played individually, in pairs, or in small groups.
- Choose to play competitively or cooperatively. To play cooperatively, children can share one set of cards and take turns rolling the die and turning the cards over.

Roll Two (two numbers 1-6)



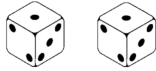
1-4 players

Ages 4+

5-10 minutes

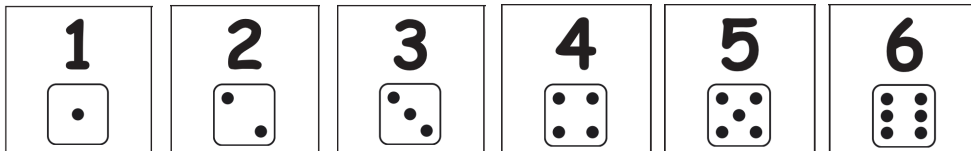
Materials:

2 dice with 1-3 dots



Two Numbers cards to use:

1-6 cards



Goal of the game: children match and combine the numbers rolled on the dice to turn over all of the cards.

Setup:

1. Shuffle cards



2. Ask children to put the cards in order from 1-6



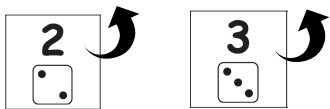
Play:

On your turn:

Roll the dice. Turn over cards that match the number(s) rolled. For example:

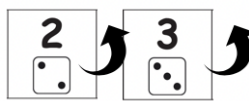
If a player rolls  and , they can turn over:

the 2 card *or* the 3 card



OR

the 2 *and* 3 cards



OR

the sum (the 5 card)



If the numbers rolled, or their sum, do not match any of the face-up cards, pass the dice to the next player. Or, keep rolling until the number(s) rolled match a card.

The game ends when players have turned over all of the cards!

Variation:

Make rolling doubles a “wild card.” When a player rolls a “wild card,” they can choose any card to turn over. See if children choose wisely! Help them choose a number card that would otherwise be hard to roll. This can also speed the game up.

What children are learning:

- Some children may count each dot on the dice, one by one, to find out the total number rolled. Other children may add the two dice numbers quickly.
- Some children might need help to count accurately – count along with them.
- Start with a small set of numbers (within 6). This helps children understand how to compose and decompose small numbers to make new numbers.

What's the Missing Card?



1-4 players

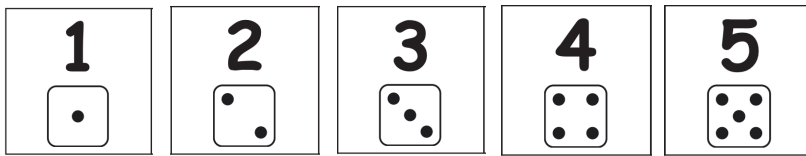
Ages 4+

5-10 minutes

Materials:

Two Numbers cards to use:

1-5 (add more cards as children gain experience)



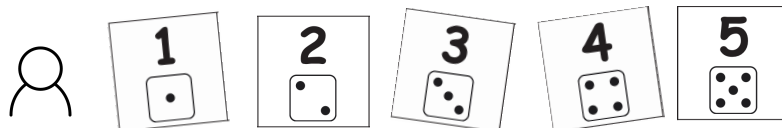
Goal of the game: children identify which number cards are missing from the line.

Setup:

1. Shuffle cards



2. Ask children to put the cards in order from 1-5

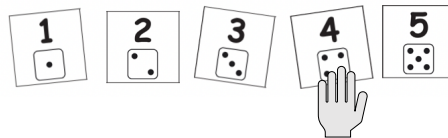


Play:

Say, "Close your eyes. I'm going to take one card away. See if you know which card is missing!"



Once the children close their eyes, remove one card



The children open their eyes. Ask one player, "What's the missing card?"



If the player correctly identifies the missing card, say, "Yes, it is 4! 4 comes after 3 and before 5." Replace the card and play again with the next player.

If the player cannot correctly identify the missing card, help them count the cards from 1 to find the missing card.

What children are learning:

- Notice which strategies children use to identify the missing card. Strategy choice can tell you a lot about what children know and what they are ready to learn.
- Some children will count the cards from 1 up to the missing card. Other children will know the missing card right away because they know 4 comes after 3 and before 5. Encourage children to notice the "number-after" by pointing it out each time you play.
- For more information, see *Clements & Sarama (2013). Building Blocks, Volumes 1 and 2. Columbus, OH: McGraw-Hill Education.*

Roll Two (two numbers 1-12)



1-4 players

Ages 5+

5-10 minutes

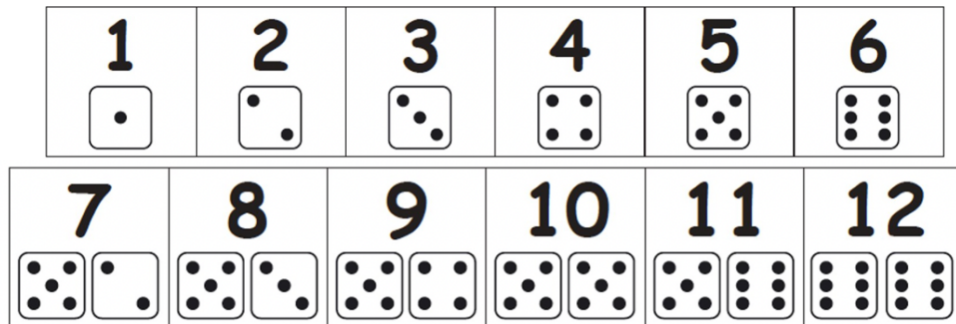
Materials:

2 regular 6-sided dice



Two Numbers cards to use:

1-12 cards



Goal of the game: children match and combine the numbers rolled on the dice to turn over all of the cards.

Setup:

1. Shuffle cards



2. Ask children to put the cards in order from 1-12

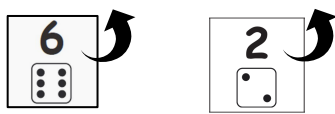
Play:

On your turn:

Roll the dice. Turn over cards that match the number(s) rolled. For example:

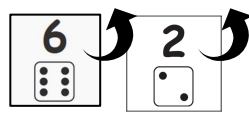
If a player rolls  and  they can turn over:

the 6 card *or* the 2 card



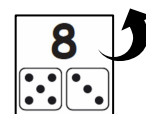
OR

the 6 *and* 2 cards



OR

the sum (the 8 card)




If the numbers rolled, or their sum, do not match any of the face-up cards, pass the dice to the next player. Or, keep rolling until the number(s) rolled match a card. The game ends when players have turned over all of the cards!

Variations:

1. Make rolling doubles a “wild card.” When a player rolls a “wild card,” they can choose any card to turn over. This can help turn over a number card that is difficult to get.

For children who are ready for kindergarten or first grade mathematics:

2. After rolling the dice, subtract the smaller number from the bigger number. Turn over the card that represents the difference. For example, if a player rolls 6 and 2, they can subtract $6 - 2 = 4$ and turn over .
3. Use three dice and mix and match them to turn over cards. For example, if a player rolls 2, 3, and 4: add them to turn over the 9 card OR turn over the 2 and $(3 + 4 = 7)$ 7 cards

What children are learning:

- Encourage children to “count on” from the larger rolled number. For example, if they roll a 6 and 2, start from 6 and count on: “6...7, 8.” Counting on is a skill that helps with learning addition later on.
- When children are ready, have them play this game in pairs without an adult. See who can turn over all of their cards first. Children can also play this game on their own at their individual skill level.
- Rolling different numbers and combining them in different ways encourages children to think about number composition and strategy.