



AT-HOME SUMMER GUIDE

for **SCHOOL-AGE** (Kindergarten–6th Grade)

Week of July 27, 2020

Welcome to the first week of the Champions learning guides for **Computer-Free Coding!**

In these activities you'll explore one of the foundational forms of computer languages called **BINARY**. This important language uses 1s and 0s to communicate with technology to tell it how to perform.

This week's activities focus on learning basic computer-free coding skills to help you learn and understand the technology around you. These activities will improve **PROBLEM-SOLVING, CREATIVITY, and COMMUNICATION** skills through learning foundational forms of computer language.

FAMILIES WITH KINDERGARTENERS:

Our summer school-age guide incorporates **first grade readiness activities** to keep your kindergartener's mind sharp through the summer!



This Week's Theme:

Computer-Free Coding



COMPUTER-FREE CODING

[Algorithms 101](#)

Put your descriptive writing skills to the test and create your own algorithms for your family and friends to follow.

[Binary-Alphabet Art](#)

Let's see how well you can convert letters into binary code using only 1s and 0s.

[Binary Alphabet Messages](#)

Practice using the binary alphabet to write secret messages between you and your family and friends.

[Binary Numbers](#)

Try your hand at creating binary numbers using just five cards with predetermined values.

[Converting Binary Cards to 0s and 1s](#)

Use your new coding skills to translate your binary cards into binary code.

PREVENTING LEARNING LOSS

[Game of Decryption](#)

Crack the code in this special game by eliminating the incorrect options and solving a code created by a friend or family member.

[Job Pantomime](#)

Time to put those non-verbal communication and acting skills to the test with this fun game of pantomime!

FIRST GRADE READINESS

[Phonics Activity: Word Family Feud](#)

Take turns coming up with words that go together in this phonics game about word families.

[Math Activity: Jump to Conclusions](#)

This week's math activity gets physical, as your child solves mental math problems and jumps to show the answer.

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Getting Ready for the Week: Materials to Gather

For Computer-Free Coding Activities: :

- [Binary code alphabet](#)
- [Binary Cards](#)
- Scissors
- Paper
- Writing and drawing tools

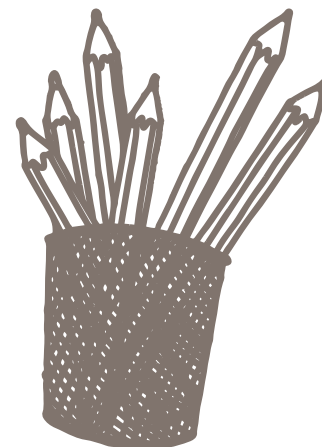
For Preventing Learning Loss Activities:

- [Decryption Game Board](#)
- Index cards (1 per pair of players)
- Writing and drawing tools
- 10-20 index cards

For First Grade Readiness:

- Paper
- Pencil
- Sidewalk chalk or masking tape

Tip: At the beginning of your week, gather materials and place them in a container so you're ready to go!



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Computer-Free Coding: Algorithms 101

Put your descriptive writing skills to the test and create your own algorithms for your family and friends to follow.

Length of activity:

25 minutes



Level of Engagement Required by Adult: Low



Level of Prep Required: Low



What you need:

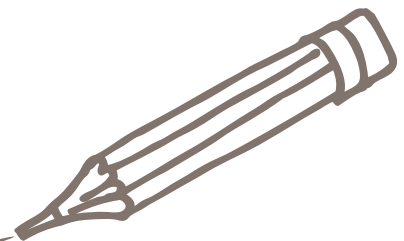
- Paper
- Writing and drawing tools

What you will do:

An *algorithm* is a set of step-by-step instructions that, when followed, carry out a task or solve a problem. Examples of algorithms include recipes, the steps for solving a long-division problem, and even directions for completing a science experiment.

Start your algorithm by thinking of a shape. Practice drawing your shape and think about how you would explain how to draw this shape to a friend or family member. Now write an algorithm that would help someone else draw that shape. After finishing your algorithm, share it with a member of your family to test if the instructions are clear. Don't verbally explain the shape you are trying to have them make. Evaluate the final product to see how accurately they recreated your shape following your algorithm. Discuss how you can adapt your algorithm to improve it. How can you make the directions clearer? Can you shorten the steps and still give accurate directions?

Remember, it takes time and practice to write algorithms that are easy to understand and produce the intended outcomes. Computer programmers use algorithms to write programs in languages computers can understand. To continue practicing this skill, think of all the steps it takes to accomplish any task you do.



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Computer-Free Coding: Binary-Alphabet Art

Let's see how well you can convert letters into binary code using only 1s and 0s.

Length of activity:
20 minutes



**Level of Engagement
Required by Adult:** Low



Level of Prep Required: Low



What you need:

- [Binary code alphabet](#)
- Paper
- Writing and drawing tools

What you will do:

Binary code is a classic form of coding that simplifies large amounts of information into 1s and 0s for easy communication. In this activity you are going to practice writing in binary code. Start by writing your name using the [binary code alphabet](#), making sure to include a space between each letter so it is easier to read. You could also write your name vertically like this:

L- 1001100

E- 1000101

A- 1000001

R- 1010010

N- 1001110

I- 1001001

N- 1001110

G- 1000111

After writing your name in code, draw a large outline of your initials using bubble or box letters as pictured on the right. Fill the inside of each letter with the binary code for that letter. Try creating binary letter posters of your name or the name of a friend or family member. You can also continue making binary letters for each part of the alphabet to create binary posters for your room.



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Binary Code Alphabet

Letter	Binary Equivalent
A	1000001
B	1000010
C	1000011
D	1000100
E	1000101
F	1000110
G	1000111
H	1001000
I	1001001
J	1001010
K	1001011
L	1001100
M	1001101
N	1001110
O	1001111
P	1010000
Q	1010001
R	1010010
S	1010011
T	1010100
U	1010101
V	1010110
W	1010111
X	1011000
Y	1011001
Z	1011010

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Computer-Free Coding: Binary-Alphabet Messages

Practice using the binary alphabet to write secret messages between you and your family and friends.

Length of activity:
25 minutes



**Level of Engagement
Required by Adult:** Low



Level of Prep Required: Low



What you need:

- [Binary code alphabet](#)
- Paper
- Writing and drawing tools

What you will do:

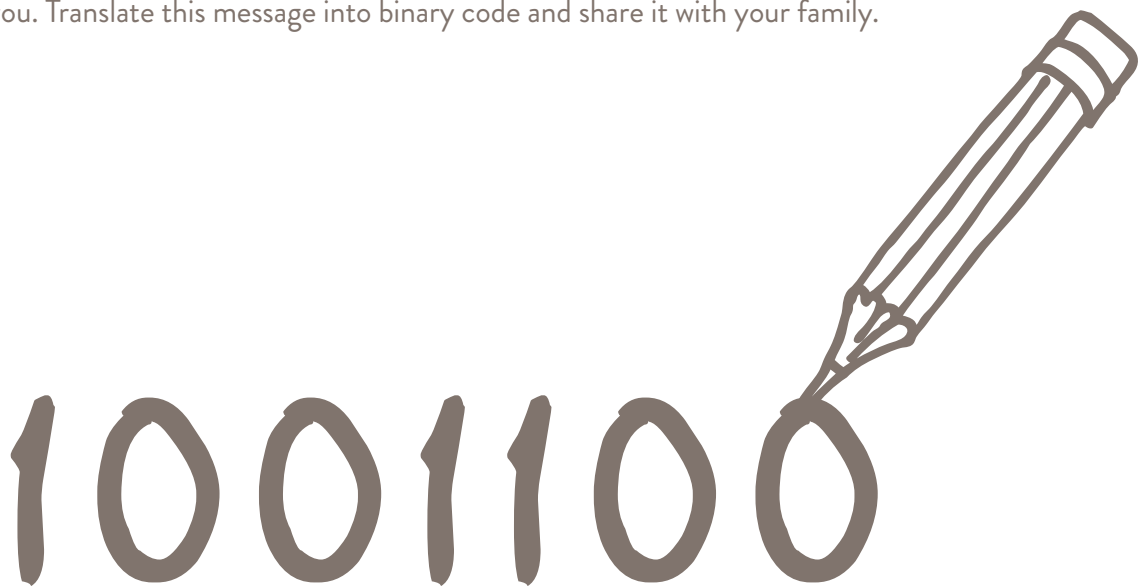
In this activity you'll each create a short message using the [binary alphabet](#), then a friend or family member will attempt to decode the message. Make sure you leave small spaces between each letter and larger spaces between each word. You can also use underlining to separate words or letters from each other. Try starting with 1–2 word statements then work your way up to full sentences.

After writing your message, pass it to a family member to decode and check for accuracy. Next, challenge them to see if they can write you a message back using the binary-alphabet.



Social and Emotional Learning

Take time to write a short message or a few 1–2 word phrases about what a family member or friend means to you. Translate this message into binary code and share it with your family.



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Computer-Free Coding: Binary Numbers

Try your hand at creating binary numbers using just five cards with predetermined values.

Length of activity:
25 minutes



**Level of Engagement
Required by Adult:** Low



Level of Prep Required: Low



What you need:

- [Binary Cards](#)
- Scissors

What you will do:

Cut out each of the five [Binary Cards](#). Place the cards face-up in a straight line from highest to lowest, with the lowest card on the right. Each card is twice the value of the card to its right. These cards can be used to represent different amounts simply by turning cards face-up or face-down. Face-down represents 0s or off and face-up represents 1s or on.

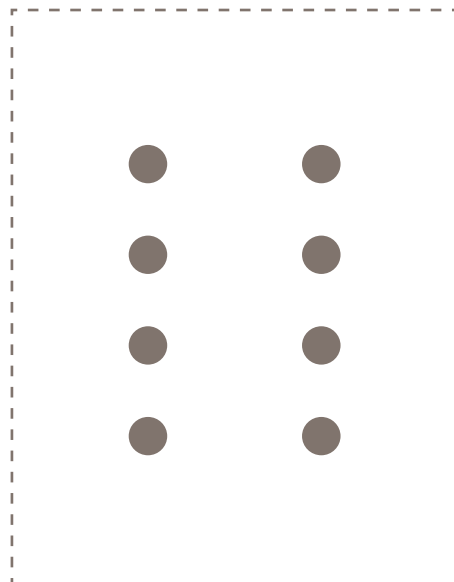
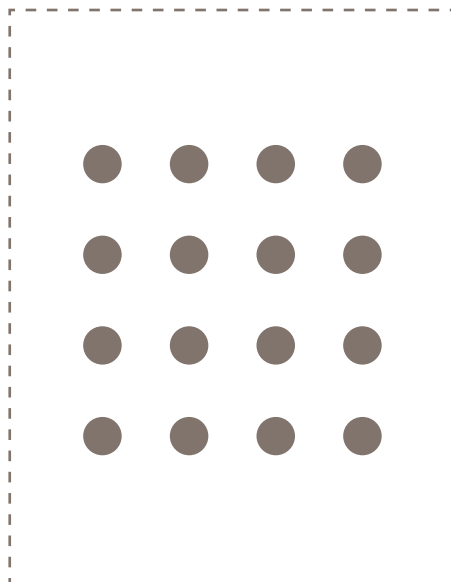
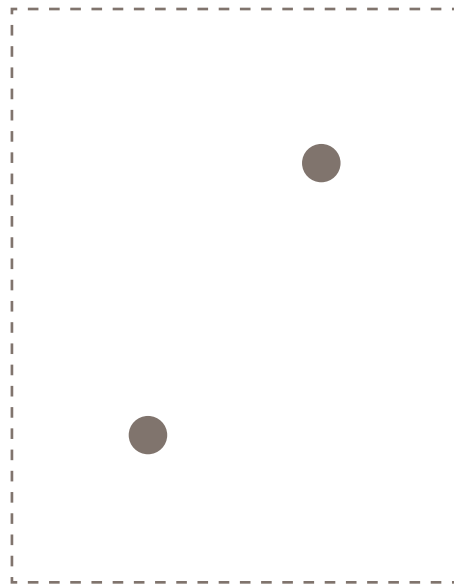
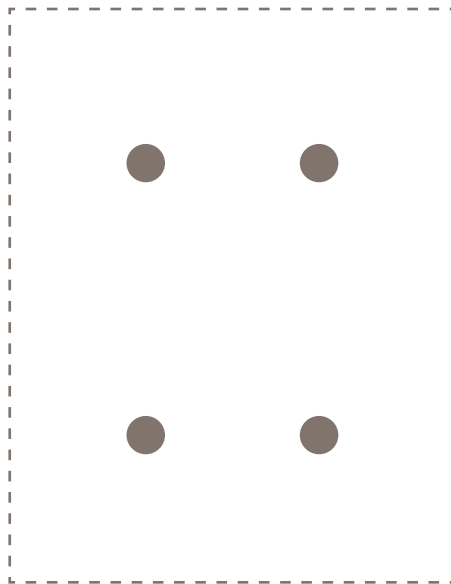
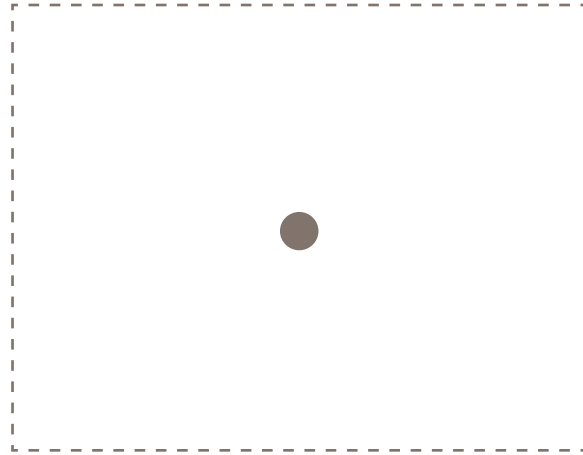
How could you show the number 1 using the cards? The last card in the line shows one dot. If you turn the other four cards face-down, only one dot will be showing. This is how to show the number 1 using these cards. Now flip all the cards face-up. How could you show the number 2? For this, you'll turn the first three cards face-down and leave the fourth card face-up. Next, turn the last card face-down, so that only two dots are showing. Continue this process for each number up to 31. How could you represent the number 0 using the cards?



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Binary Cards



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Code Camping: Converting Binary Cards to 0s and 1s

Use your new coding skills to translate your binary cards into binary code.

Length of activity:
30 minutes



**Level of Engagement
Required by Adult:** Low



Level of Prep Required: Low



What you need:

- [Binary cards](#)
- Paper
- Writing and drawing tools

What you will do:

After exploring making words out of your binary cards you'll now convert them into binary code. Begin by laying out your binary cards in a line from highest to lowest. Next demonstrate how to use the cards to show the number 1 like you did in the Binary Numbers activity above. When an amount has been represented by face-up or face-down cards, use the cards to determine what series of 0s and 1s will represent that amount. Remember a face-down card would be represented by a 0 while a face-up card would be represented by a 1.

Decide which cards need to be face-up or face-down to represent different values. To represent the number 1, you would turn the first four cards face-down and the final card face-up. This would convert to give the number 1 a binary value of 00001.

Write the binary value for the numbers 2–15. If you're up for a challenge go up to the number 31!



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Preventing Learning Loss: Decryption (3rd–6th grade)

Crack the code in this special game by eliminating the incorrect options and solving a code created by a friend or family member.

Length of activity:
20 minutes



Level of Engagement
Required by Adult: Medium



Level of Prep Required: Low



What you need:

- [Decryption Game Board](#)
- Index cards (1 per pair of players)
- Writing tools
- 6 differently-colored drawing tools

What you will do:

- Form pairs with family or friends to play a code-breaking game called Decryption.
- One player will act as the code-maker and the other will act as the code-breaker.
- Begin with the code-maker making a four-dot code on the secret code section on the [game board](#) using any of the six available colors. Colors can be repeated. Next, the code-maker will cover the code with the index card.
- The code-breaker will then try to guess the code by filling in the first four circles on the guesses column.
- The code-maker will only provide feedback in the feedback column using the Feedback Key at the top of the column indicating how many dots are the right color and in the right spot and how many dots are the right color but in the wrong spot. The code-maker does not give any feedback if there are wrong colors in the wrong spots.
- Play continues until the code-breaker has successfully decrypted the code, then players can switch roles and play again.



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Decryption Game Board

Secret code: ○ ○ ○ ○	
Guesses	Feedback Key: X For right color, right spot; ○ For right color, wrong spot
○ ○ ○ ○	
○ ○ ○ ○	
○ ○ ○ ○	
○ ○ ○ ○	
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Preventing Learning Loss: Job Pantomime

Time to put those non-verbal communication and acting skills to the test with this fun game of pantomime!

Length of activity:
15 minutes



**Level of Engagement
Required by Adult:** Medium



Level of Prep Required: Low



What you need:

- 10–20 index cards

What you will do:

- Before starting the activity, write 10–20 occupations on separate index cards for you and a partner. Try to think of diverse occupations such as firefighter, nurse, dentist, hockey player, and so on.
- Each participant will select an index card with an occupation written on it. Then they will act out the job on the card for others to guess. Verbal clues are not allowed, but the actor can non-verbally indicate if the person guessing is right or close to being right. The challenge will be to get others to guess your occupation by pantomiming what that person might do from day to day using only non-verbal communication.
- The game will continue until all jobs have been successfully pantomimed and guessed.



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First Grade Readiness

Our summer school age guide incorporates **first grade readiness activities** to keep your kindergartener’s mind sharp through the summer.

Phonics Activity: Word Family Feud

Take turns coming up with words that go together in this phonics game about word families.

Length of activity:
10–15 minutes



Level of Engagement
Required by Adult: High



Level of Prep Required: Low



What you need:

- Paper
- Pencil

What your child is learning:

- How to group words together by ending letters
- How to spell words from the most common word families

What you will do: Ask your child if they remember what a word family is. If they need a refresher, remind them that word families are groups of words that end with the same letters. For example, the words “wall,” “ball,” and “hall” are all part of the -all word family.

Pick one of the following word families:

WORD FAMILIES		
-at	-ot	-un
-am	-og	-all
-ad	-en	-ill
-it	-ed	-ick
-im	-ug	-ack

Write the word family you chose at the top of a sheet of paper. For example, if you chose the -all word family, write -all at the top of your paper. Take another sheet of paper and write the word “Rhymes” at the top of the paper.

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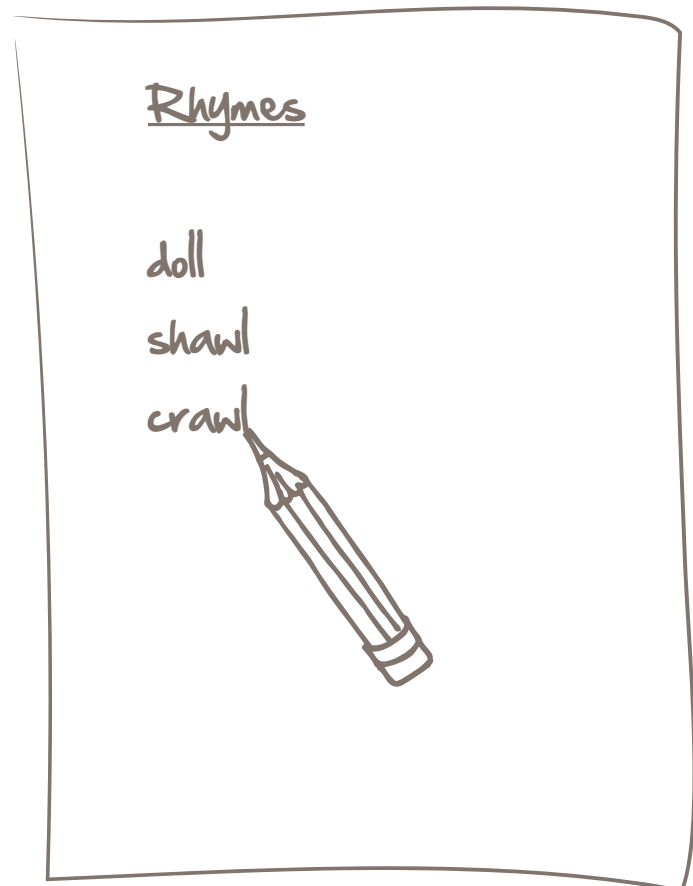
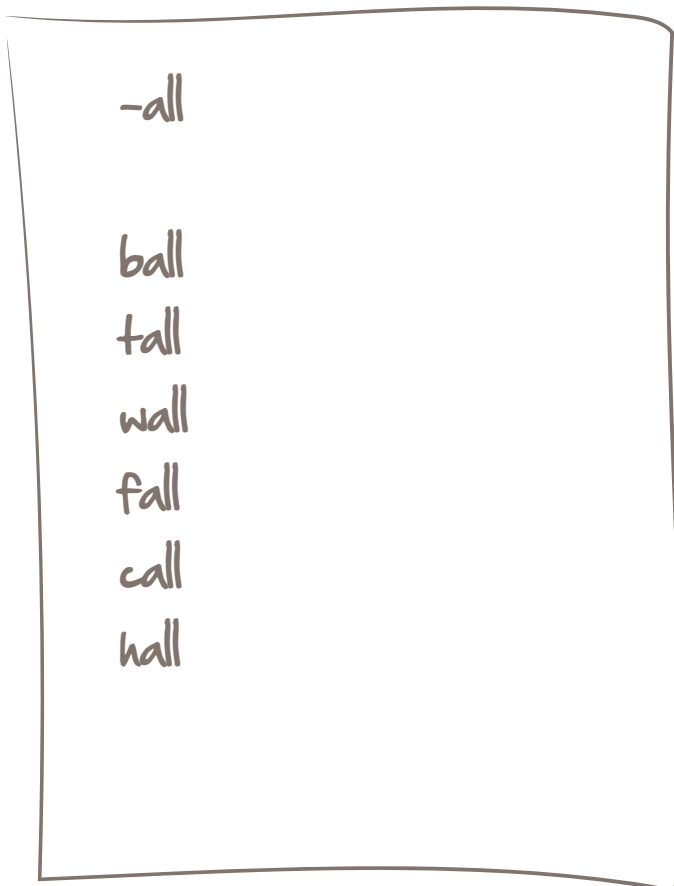
Now, the game is on! You and your child will take turns saying words that fit in the word family you have chosen. Your goal is to keep coming up with new words that go in that family. As you come up with new words, write them down in a list on your sheet of paper. The last player to come up with a new word wins the game.

Additional rules:

- All players must know the meaning of a word for it to count.
- If a player comes up with a word that rhymes with the word family but isn't spelled the same way (for example: *doll* rhymes with *-all*), write it on the "rhymes" page. The player can take another turn.
- To play a cooperative game rather than a competitive game, pick a target number of words. All players work together to come up with that many words that fit in the word family.

If your child is ready: The word families are listed in order of easier to harder. For more of a challenge, use the word families towards the end of the word family list.

Example game:



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Math Activity: Jump to Conclusions

This week's math activity gets physical, as your child solves mental math problems and jumps to show the answer.

Length of activity:
10–15 minutes



**Level of Engagement
Required by Adult:** High



Level of Prep Required: Low



What you need:

- Masking tape or sidewalk chalk

What your child is learning:

- To add and subtract numbers less than ten in their head
- To practice the concepts of “greater than,” “less than,” and “equal to”

What you will do:

Create a line on the ground using masking tape (if indoors) or sidewalk chalk (if outdoors). Have your child start out by standing on the line. You'll call out a simple number sentence using numbers 1–9, which your child will solve in their head. If the answer to the number sentence is less than five, they should jump to the left of the line. If the answer is greater than five, they should jump to the right of the line. If the answer is exactly five, they should jump on the line (or put one foot on either side of the line).

Example math problems to call out:

$$1 + 2 =$$

$$7 - 1 =$$

$$2 + 3 =$$

If your child is ready: To make this game more challenging, set up a hopscotch course numbered 1–10. Have your child jump to the number that represents the answer to each number sentence, making sure you only present number sentences with answers represented on the hopscotch course. To support children who are not yet solving mental math problems, you could create a number line using chalk or masking tape on the ground or suggest counting on fingers to arrive at the correct answer.

