Counting, Cardinality, and Addition
Teaching Tips: Kindergarten

Using Best Instructional Practices with Educational Media to Enhance Learning
Choosing Games to Address CCSS: Mathematics

Alignment to CCSS: English Language Arts

Alignment to ISTE Technology Standards: Students

Alignment to ISTE Technology Standards: Teachers

Try Out the Games

Teaching Routines

Preview the Game

- Hide and Seek
- Apple Picking
- Flower Garden
- Bug Catcher
- Vegetable Harvest

Teaching Tips

- Hide and Seek
- Apple Picking
- Flower Garden
- Bug Catcher
- Vegetable Harvest

Credits
### Counting and Cardinality

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<tr>
<td>K.CC.A.1  Count to 100 by ones and by tens.</td>
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<td>K.CC.A.2  Count forward beginning from a given number within the known sequence (instead of having to begin at 1).</td>
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<td>K.CC.A.3  Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects).</td>
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<td>K.CC.B.4  Understand the relationship between numbers and quantities; connect counting to cardinality.</td>
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<td>K.CC.B.5  Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.</td>
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<td>K.CC.C.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, e.g., by using matching and counting strategies.</td>
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<td>K.CC.C.7  Compare two numbers between 1 and 10 presented as written numerals.</td>
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## Vocabulary Acquisition and Use

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<tr>
<td>L.K.4  Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.</td>
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<td>L.K.5  With guidance and support from adults, explore word relationships and nuances in word meanings.</td>
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<td>L.K.6  Use words and phrases acquired through conversations, reading and being read to, and responding to texts.</td>
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## Print Concepts

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<tr>
<td>RF.K.1b Recognize that spoken words are represented in written language by specific sequences of letters.</td>
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## Alignment to ISTE Technology Standards: Students

### 2. Communication and Collaboration

| a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media. | ⭐ | ⭐ | ⭐ | ⭐ | ⭐ |
| d. Contribute to project teams to produce original works or solve problems. | ⭐ | ⭐ | ⭐ | ⭐ | ⭐ |

### 4. Critical Thinking, Problem Solving, and Decision Making

| b. Plan and manage activities to develop a solution or complete a project. | ⭐ | ⭐ | ⭐ | ⭐ | ⭐ |

### 5. Digital Citizenship

| a. Advocate and practice safe, legal, and responsible use of information and technology. | ⭐ | ⭐ | ⭐ | ⭐ | ⭐ |
| b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity. | ⭐ | ⭐ | ⭐ | ⭐ | ⭐ |

### 6. Technology Operations and Concepts

| a. Understand and use technology systems. | ⭐ | ⭐ | ⭐ | ⭐ | ⭐ |
| b. Select and use applications effectively and productively. | ⭐ | ⭐ | ⭐ | ⭐ | ⭐ |
| d. Transfer current knowledge to learning new technologies. | ⭐ | ⭐ | ⭐ | ⭐ | ⭐ |
# Alignment to ISTE Technology Standards: Teachers

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<tr>
<td>a. Promote, support, and model creative and innovative thinking and inventiveness.</td>
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<td>c. Promote student reflection using collaborative tools to reveal and clarify students’ conceptual understanding and thinking, planning, and creative processes.</td>
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<td>d. Model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments.</td>
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<td>a. Design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity.</td>
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<td>b. Develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress.</td>
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<th>3. Model Digital-Age Work and Learning</th>
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<tr>
<td>a. Demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations.</td>
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<td>b. Collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation.</td>
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<td>c. Communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital-age media and formats.</td>
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<th>4. Promote and Model Digital Citizenship and Responsibility</th>
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<tr>
<td>c. Promote and model digital etiquette and responsible social interactions related to the use of technology and information.</td>
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Try Out the Games

Hide and Seek

Apple Picking

Flower Garden

Bug Catcher

Vegetable Harvest

NOTE: These links will take you away from the Teaching Tips. They will open a web browser that lets you play the featured game.
Teaching Routines

Maintain Brisk Pacing
Research demonstrates that “brisk” pacing is related to greater content coverage, increased motivation and engagement, and, in turn, higher levels of student achievement.

• **Note the time allocated to each component of game play** (Build Background, Get Ready to Play, Play the Game). Monitor the length of your teaching and children’s turns so that all activities are completed within the allocated time.

• **Establish a predetermined system for calling on children** to work at the whiteboard. For example, write each child’s name on a Popsicle stick and place the sticks in a jar. To call a child to the board, draw a stick from the jar. When a child’s name is selected, set that stick aside, leaving only the sticks of children not yet chosen.

• **Invite all selected children to the whiteboard at once** when more than one child will be playing.

Engage All Children
When children are highly focused and engaged, they attain higher levels of achievement.

• **Position children so they do not block the screen** when they stand at the whiteboard, so that everybody can see the images and game play.

• **Involve all children in thinking about the correct answers** even if it is not their turn at the whiteboard.
  • Use strategies such as “Turn and Talk.” For example, ask all children to tell a partner the answer they would choose, or if they agree/disagree with a stated choice.
  • When the child at the whiteboard gives an answer, invite all the others to show “thumbs up” if they agree with the answer or “thumbs down” if they disagree.

• **Observe children’s understanding of key concepts.** When most children demonstrate understanding by rapidly choosing correct responses, wrap up game play.

Support Independent Learning
When teachers notice and name the learning strategies children use, children are more likely to become strategic and independent learners.
Teaching Routines

**Use Key Vocabulary Frequently**
When children have many opportunities to hear and use new vocabulary words, they are more likely to acquire and use the words on their own.

- **Repeat key words as often as possible** during game play, as well as during other parts of the school day when use of these words is appropriate.
- **Ask children to use key words** while playing the games.
  - When children are at the whiteboard, encourage them to use key words to describe their actions. For example, “I’m looking for the *missing* number that will fill the *gap*.”
  - When children are invited to Turn and Talk, encourage them to use key words. For example, “I *estimate* that there are eight flowers in the *garden*.”

**Mediate Game Play**
When well-developed educational media programs are effectively joined with a sound classroom curriculum, children demonstrate high levels of motivation and engagement as well as notable increases in early literacy and mathematics skills and knowledge.

- **Load the game on the computer and minimize it before you begin the lesson.** This allows you to optimize instructional time by beginning game play as soon as you and the children are ready.
- **Preview the screen to explain what children will do.** Point out game features such as selecting objects, moving objects, and repeating the game instructions.
- **Quickly mute/unmute the sound by using the mute button** on the top row of the computer keyboard. You can also use the volume down/up buttons on the keyboard, or the volume controls on the interactive whiteboard, to adjust the sound.
- **If the touch function doesn’t work, use your computer to click on the item the child touches.**
- **Prepare for the worst!** Have a dry erase board or manipulatives available to carry out activities intended for the interactive whiteboard (such as using cubes for counting, comparing, and estimating).
Preview the Game: Hide and Seek

Description
Children help George find a numeral, the number word, and the corresponding number of animals in the picture. When they click on these, they appear in the red bar at the top of the screen.

The game first plays in numerical order from 1 to 10. For numbers 1 and 2, the Man in the Yellow Hat explicitly prompts players to find the number, the number word, and the number of animals. Children can find the items in any order.

Beginning with the number 3, he tells players to look for the threes (without explicitly noting the numeral and number word) and the three animals.

After 1 to 10, players are asked to find the number 0, the word zero, and zero animals. Then players are prompted to find the numerals, number words, and animals for the numbers 0 to 10 in random order.

Helpful Background
Children do not need to understand cardinality to play this game. If they are asked to find four orangutans, for example, the Man in the Yellow Hat prompts them to keep looking until all are found. In this way, the game helps develop children’s understanding of cardinality. The game also helps children connect three representations of a number (numeral, number word, quantity) since they have to find all three for the numbers 0 to 10.

The word “numeral” refers to the symbol for a number (1, 2, 3). When the Man in the Yellow Hat asks children to find a number (an umbrella term for numerals, number words, quantities), he wants them to find the numeral.
In this lesson, children will:

- become familiar with three representations of a number: the numeral, the number word, and quantity
- understand the relationship between numbers and quantities—connecting counting to cardinality
- learn that spoken words are represented in written language by specific sequences of letters
- learn new vocabulary, including the word seek, and use this word in context
- learn and practice using location-related vocabulary, such as under, above, on top of, below, beside, next to, behind, near
- use technology to learn, working individually and in groups, and gain skills selecting objects on a screen

1. **Build Background**
   Conduct a whole-class activity that activates and builds children’s background knowledge.

2. **Get Ready to Play**
   Use the interactive whiteboard to preview the game with the whole class.

3. **Play the Game**
   Play the game as a whole-class or small-group activity.
NOTE: Open the SMART Notebook™ file called Number Representations. Minimize the file to place it on the dock for easy access when you play the game.

Tell children that the game they’re going to play is called Hide and Seek. Ask them to give a “thumbs up” if they have played the traditional game of Hide-and-Seek. Then ask a child familiar with the game to explain how it is played. If no child volunteers, explain that in Hide-and-Seek one player looks for all the other players after giving them time to hide.

Write the word seek on the whiteboard and invite children to say the word with you. Explain that seek means to look for or try to find something, such as a missing shoe. Ask children to give a “thumbs up” if they ever:
• had to find, or seek, a pencil to write with
• lost a sock or shoe and had to look for, or seek, it

Tell children that in this game George is seeking numerals, number words, and animals.

Children will see and hear names of animals that may be unfamiliar, such as raccoon, beaver, orangutan, flamingo, lizard. You may want to provide a brief description of each animal (e.g., an orangutan is a kind of ape), and encourage children to find out more about them in books from the classroom or library.
Teaching Tips: Hide and Seek

Get Ready to Play
Time: 5 minutes

Explain that the purpose of the game is to practice recognizing numbers in three ways: numeral, word, and the correct quantity of objects. Tell children that a numeral is the symbol or figure we use to write a number. To demonstrate, write the numerals 0 to 10 on the whiteboard, saying each number as you write it.

Next, explain that numbers can also be written with words. Write the word “one” as an example. Sweep your fingers under the word and say, “one,” repeating a few times and asking the children to say it with you.

Mute the sound, erase the board, and launch the game. Ask children to look at the screen to seek, or find, the numeral 1, the word one, and one lion. Then unmute the sound and click on the yellow hat to play the instructions.

Point out that the three representations of the number appear in the red bar at the top of the screen as they are found.

Show children what happens when you touch the circle with the picture of the yellow hat. Remind them they can select this button when they’re playing if they need to hear the instructions again.

To start the game:
1. Make sure your computer is connected to the whiteboard and the Internet.
2. Find the game on your computer by going to pbskids.org/lab
3. Click on Games on the left.
4. Games are in alphabetical order.
5. When you find the game, select PLAY NOW.
Teaching Tips: Hide and Seek

Play the Game

Play this game as a teacher-led, Whole-Class activity if children need guided support:

- recognizing the relationship among numerals, number words, and numbers of objects
- understanding the relationship between numbers and quantities—connecting counting to cardinality
- using location-related vocabulary, such as under, above, on top of, below, beside, next to, behind, near
- playing a game collaboratively
- using common game navigation

Play this game as an independent, Small-Group activity if children understand...

- the relationship between numbers and quantities—connecting counting to cardinality
- game navigation

...but need practice:

- understanding the relationship among numerals, number words, and numbers of objects
Teaching Tips: Hide and Seek

Play the Game: Whole-Class Activity
Time: 10 minutes

NOTE: You will need the SMART Notebook™ file called Number Representations for this activity.

For each round of the game:
• Invite a child to the interactive whiteboard to touch all three representations of the number: the numeral, the number word, and the animal(s).
• Model the use of location-related words, such as under, above, on top of, below, beside, next to, behind, near. Encourage children to use these words to tell you where they found the numeral, number word, and animals.
• After the child finds all three representations for a number, mute the sound and display the Number Representations file. This file includes slides with the completed screen for the first 10 rounds of the game. Select the slide for the round just played.
• To reinforce the three representations of a number, recap with children what they found. Point to each representation at the top of the screen and have children say with you, for example: We found the number four, the word four, and four orangutans.
• To reinforce children’s understanding of cardinality, when there is more than one animal, count them together with the class: One, two, three, four. Four orangutans.
• Minimize the file to return to the game. Unmute the sound and touch the green arrow to start the next round.

When most children have mastered the game, stop playing and review key concepts. Ask:
• What did we help George do in this game? (find a numeral, a number word, and the matching number of animals)
• What new word did we learn and practice? (seek)

Tell children: This game helped us see how a number can be shown as a numeral, a word, and a group of objects. When you are at school or home, look for, or seek, numerals and number words. When you see a group of objects, count them and write the matching numeral or number word.
Teaching Tips: Hide and Seek

Play the Game: Small-Group Activity

Time: 10 minutes

Check in with children as they play the game. To reinforce cardinality, ask them to count and name the animals they see, such as “One, two, three beavers.” Then ask them to tell you, without counting again, how many animals they found.

To help them connect the three representations of a number, have them tell you what they found. For example, have children say: “I found the number five, the word ‘five,’ and five lizards.”

If children are having difficulty, the activities for whole-class instruction will provide helpful practice.

Ask children to tell you where they see a numeral, number word, or animal, and encourage them to use location-related words as they respond (e.g., under, above, on top of, below, beside, next to, behind, near).

Observe if children are having difficulty using the computer to play the game. Help them learn how to address any problems they are having. For example, if they don’t know how to hear the instructions again, have them click on the Man with the Yellow Hat.
Description

Children help George pick which number on three floating apples fills the gap in the sequence of numbers at the bottom of the screen. The numbers are lined up in increasing order by ones.

The game has four rounds played in sequence. The rounds increase in difficulty.

**Round 1:** Displays the numbers 0 to 9. The distractors (wrong answers) have two digits.

**Round 2:** Displays the numbers 0 to 9. The distractors are mostly single digit numbers.

**Round 3:** Displays the numbers 10 to 19. The distractors have one digit.

**Round 4:** Displays the numbers 10 to 19. The distractors are mostly two-digit numbers.

Helpful Background

In the first two rounds, the first apple on the bottom row is labeled with the numeral 0 and the last apple has the numeral 9. Children may think that there are 9 rather than 10 apples. However, the focus of the activity is saying the numbers in a sequence, rather than counting the number of objects (apples). If children are confused:

- Remind them that 0 means “none.”
- Explain that when we are counting objects, we begin with 1.
- Explain that in this game they are practicing saying the numbers in order, beginning with the number 0, and finding the missing number.
In this lesson, children will:

• count from 1 to 20
• count forward by ones, beginning with a given number
• compare numbers between 1 and 19 to determine which is bigger or smaller
• identify missing numbers in a sequence
• learn new vocabulary, including gap and missing, and use these words in context
• learn multiple meanings for the word missing
• use technology to learn, working individually and in groups, and gain familiarity with basic game conventions

1. **Build Background**
Conduct a whole-class activity that activates and builds children’s background knowledge.

2. **Get Ready to Play**
Use the interactive whiteboard to preview the game with the whole class.

3. **Play the Game**
Play the game as a whole-class or small-group activity.

Teaching Tips: Apple Picking
Teaching Tips: Apple Picking

Build Background

Time: 10 minutes

Explain to children that in this game George is putting numbered apples in order from the smallest number to the largest. They will help by filling the gap in the line of apples. To help them understand the meaning of gap, draw a number line, leaving a gap in the numbering. Draw children’s attention to the space that is missing a numeral, and use the word gap to describe the empty space. As you say the word gap, write the word so children can see it. Invite them to say the word gap with you.

Tell children that as they play the game, they may hear the Man in the Yellow Hat say the word missing. (For example, “That is not the missing number.”) Provide a child-friendly definition, such as “something that is not there.” Connect this idea to something that is familiar to children, such as missing teeth creating a gap in their mouths.

Let children know that the word missing can have other meanings too. For example, you can be missing a friend or someone in your family who is far away. That means you feel sad because they’re not there. Ask children to give a “thumbs up” if they have ever missed someone. Tell them that missing can also mean something that is lost, such as a missing sock, shoe, or toy.

Remind children that when the Man in the Yellow Hat tells them that they haven’t found the missing number, he wants them to pick the number that isn’t on the line of apples so that they can fill the gap.

Reviewing the counting sequence will help children play the game. Invite children to practice saying the numbers from 1 to 20.
Mute the sound and display the opening screen of the game on the interactive whiteboard. Invite children to look at the screen and describe what they see (e.g., Curious George, squirrel, baskets of apples, apples bobbing in the water, a series of numbered apples in a line).

Explain that the purpose of the game is to practice putting the numbered apples in order, not to count the number of apples.

Unmute the sound and demonstrate how to play the game.

• Ask children to find a gap in the line of apples.
• Show how you can hear the number on a floating apple by placing your finger on a nearby non-interactive part of the screen and dragging it across the apple.
• Show what happens if you touch the wrong apple.
• Show what happens when you touch the Man with the Yellow Hat.
• Show what happens when you touch the apple that correctly fills the gap in the number line.
• Point out that when children play the game on a computer, they will use the mouse or trackpad to click on the correct apple. If they want to hear the number on an apple, they can put the pointer over the apple without clicking on it.
Play the Game

Play this game as a teacher-led, Whole-Class activity if children need guided support:

• recognizing the representation of numerals and/or counting beginning with the number 10
• determining which numbers are bigger or smaller than another number
• identifying missing numbers in a sequence
• understanding the meaning of gap and missing
• playing a game collaboratively
• using common game navigation

Play this game as an independent, Small-Group activity if children understand...

• the representation of numerals and/or counting beginning with the number 10
• how to determine which numbers are bigger or smaller than another number
• the meaning of gap and missing
• game navigation

...but need practice:

• identifying missing numbers in a sequence
Teaching Tips: Apple Picking

Play the Game: Whole-Class Activity

Time: 10 minutes

Point to each apple along the bottom in sequence, and lead the class in saying the names of the numerals on the apples. When you reach a missing apple/numeral, note the gap, and ask children to figure out which apple fills the gap. Call on one child to say the answer, prompting him or her to use the word missing or gap. For example, “Six is the missing number” or “This apple will fill the gap.” Ask the class to give a “thumbs up” if they agree with the answer.

Ask the child to explain why the other choices cannot fill the gap, such as:
• “That number is too big.”
• “That number is too small.”

Invite the child to select the apple. If it is not the correct number, provide helpful feedback, such as: That number is too big. Let’s try again. Look for a smaller number. Follow the same steps as you continue playing the game, inviting different children to select the apple on the whiteboard for each round.

In Round 1, the distractors are double-digit numbers. In Round 3, distractors are single-digit numbers. Call children’s attention to this feature and model its use: I know that this is not the missing number, because it has two digits and the correct answer is a single digit.

When most children have mastered the game, stop playing and review key concepts. Ask:
• What did we do to find the right answer when we played the game? (counted numbers in order; decided if numbers were too big or too small)
• What new words did we learn and practice? (gap, missing)

Tell children: To remember what you learned, practice counting and use the words gap and missing when you talk and play.
Teaching Tips: Apple Picking

Play the Game: Small-Group Activity
Time: 10 minutes

Check in with children as they play the game. Verify that they are following the number sequence rather than counting the apples.

• Ask them to explain how they are deciding which is the right apple to fill the gap in the line of apples.
• Ask them to explain their choices. (For example: “I looked for a bigger number.” Or: “I looked for a smaller number.”)
• If you observe children making three or more incorrect responses in a row, they may not be ready to play this game independently. The whole-class activities will help them play the game successfully.

Prompt children to use the words missing or gap as they talk to you about the game. (For example: “I think this is the missing number.” Or: “This number will fill the gap.”)

Children earn sticker pages in many of the Curious George games. If children show interest in this feature, ask them if they know how to find their sticker pages.

• What information did they use to figure this out? (There is a button that says “Stickers” at the top right of the screen.)
• How do they get back to the game after looking at their sticker book?
  - click on the back button at the top left corner of the screen, or
  - click on the picture of the bubbles at the top, then select the picture of the apples in the next screen.
Preview the Game: Flower Garden

Description
Flowers appear when George waters his garden. The Man in the Yellow Hat invites children to click on the flowers to count them.

When players move the computer pointer onto a flower that hasn’t been counted, it is highlighted in yellow. When they click on the flower, the bud opens. The Man in the Yellow Hat says the number aloud and it appears along the bottom of the screen on a number line.

Players count as few as four and as many as nineteen flowers. The first four times they count, the flowers are all in one row, grouped together or spaced apart. After that, they pop up in multiple rows. Sometimes a butterfly or bee flies out when a flower opens.

Helpful Background
Children may think they need to count the flowers in a specific order to determine how many there are. You will dispel this misconception by demonstrating that the number of objects does not change based on the order of counting.

If children don’t click on all the flowers, there may be a long pause (up to seventeen seconds) before the Man in the Yellow Hat prompts players to keep counting.

Children playing this game on a computer need to use the mouse often and accurately to click on and count each flower.
In this lesson, children will:

- count from 1 to 19
- understand one-to-one correspondence of numbers to objects
- learn that the last number name spoken tells the number of objects counted
- learn that the number of objects is the same regardless of their arrangement or the order in which they are counted
- learn to estimate quantity
- learn new vocabulary, including garden and row, and use these words in context
- learn and practice using academic vocabulary, such as estimate
- use technology to learn, working individually and in groups, and learn how to use a mouse or trackpad to highlight an object

1. **Build Background**
   Conduct a whole-class activity that activates and builds children’s background knowledge.

2. **Get Ready to Play**
   Use the interactive whiteboard to preview the game with the whole class.

3. **Play the Game**
   Play the game as a whole-class or small-group activity.
Teaching Tips: Flower Garden

Build Background

Time: 5 minutes

NOTE: Open the SMART Notebook™ file called Vocab–Rows. Minimize the file to place it on the dock for easy access.

Explain that in this game George waters his garden to help the flowers grow. Ask children what they know about gardens and flowers, and provide missing background information. For example:

- What grows in a garden? (plants, flowers, vegetables)
- What do plants need to grow in a garden? (soil, water, sunlight)

Tell children that in George’s garden, groups of flowers are planted in a row, which means that they are arranged in a line. To help children understand the meaning of the word row:

- Display the Vocab–Rows file on the whiteboard.
- Explain that you want to put the pictures that show items in a row in the first column. Items that aren’t lined up in a row belong in the second column.
- Move the row of crayons into the first column. Point to them and say: These crayons are lined up in a row.
- Move the pile of crayons into the second column. Explain that these are not in a row because they aren’t in a line.
- Invite a child to the whiteboard to move the row of blocks into the first column, and the other blocks into the second column.
- Ask another child to move the desks and chairs into the correct columns. Point out that there are two rows of desks.
- Tell children that the word row has another meaning—when you row a boat, you make it move in the water.
- Let them know that in this game the word row always means “in a line.” George’s garden has three rows, and the flowers may pop up on different rows.
Get Ready to Play

Time: 10 minutes

Close the Vocab–Rows file. Mute the sound and launch the game.

Explain that the purpose of the game is to count how many flowers have grown in George’s garden. When there are a lot of flowers, they will estimate the number of flowers before counting them. Tell them that to estimate means to make a good guess by quickly looking at the number of items to figure out how many there are.

Point out that when the flowers pop up, they are closed. When you touch each flower to count it, the flower opens. Invite children to use their hands to show what a flower looks like when it is closed (both hands clasped together) and when it is open (hands open).

Unmute the sound and demonstrate how to play:
• On the whiteboard, highlight a flower by placing your finger nearby on a non-interactive part of the screen and dragging your finger quickly across it. Tell children that if a flower hasn’t been counted yet it can be highlighted.
• Invite a child to touch a flower. The flower opens and is counted on the number line at the bottom. The Man in the Yellow Hat says the number.
• Have the child touch and count all the flowers.
• Ask: How can you tell if a flower has been counted already? (it is open; it won’t highlight)

Tell children that when they play this game on a computer they can use the mouse or trackpad to click on a flower or to highlight a flower by moving the pointer onto the flower without clicking. Ask children to show “thumbs up” or “thumbs down” if they have used a mouse these two different ways when playing a computer game. Remind them:
• Placing the pointer over the flower with your mouse will highlight it if it hasn’t been counted.
• You click on a flower to count it.
Teaching Tips: Flower Garden

Play the Game

Play this game as a teacher-led, Whole-Class activity if children need guided support:

• counting to 19
• understanding one-to-one correspondence or cardinality
• understanding that objects can be counted in any order
• playing a game collaboratively
• using common game navigation

Play this game as an independent, Small-Group activity if children understand...

• how to count to 19
• that objects can be counted in any order
• game navigation

...but need practice:
• understanding one-to-one correspondence or cardinality
Teaching Tips: Flower Garden

Play the Game: Whole-Class Activity

*Time: 10 minutes*

Invite children to take turns at the whiteboard touching and counting the flowers that grow in George’s garden. After several children have had a turn, ask the class what they think will happen if you start counting with a different flower in a different order. Have them tell their answers to a partner. Call on a few children to share their answers and explain their reasoning.

For the next group of flowers, have children count along with you as you point to flowers from left to right without touching them. Remind children that the last number counted tells you the number of flowers. Write this number where all the children can see it. Then invite a child to touch the flowers out of order to count them. Ask:

- *Did the number of flowers change or stay the same when they were counted in a different order?*
- *Will the number of flowers change if they are grouped together or spaced apart? If they are on different rows?*

As the number of flowers increases, encourage children to first estimate, or make a good guess about, the number of flowers in the garden before they come up to the whiteboard to count them. When a child touches the final flower, ask: *Is that more or fewer than what you estimated, or the same?*

When most children have mastered the game, stop playing and review key concepts. Ask:

- *What did we do in this game? (counted and estimated)*
- *Does the number of objects change or stay the same when we count them in a different order? (stays the same)*
- *What new words did we learn and practice? (garden, row, estimate)*

Tell children: As you practice counting, remember to try estimating the number of items you see by making a good guess. Then check your estimate by counting each item.
Teaching Tips: Flower Garden

Play the Game: Small-Group Activity

Time: 10 minutes

Check in with children as they play the game. See if they are clicking on the flowers in order. If they are, ask: What do you think will happen if you click on a different flower first? Help children explore counting the flowers in a different order, to make the explicit connection that the order of counting doesn’t matter.

As you talk with children, use (and prompt them to use) key lesson vocabulary. For example, ask: Does the number of flowers in the garden change if they are grouped together or spaced apart on a row? If they are on different rows?

As more flowers appear in George’s garden, encourage children to first estimate (make a good guess about) the number of flowers before they count them. After they count, ask: Is that more or fewer than what you estimated, or the same?

Check to see if children are clicking on an open flower more than once. If they are, explain that the flower has already been counted and that is why the number is not spoken and does not appear at the bottom of the screen. If children are having difficulty playing the game, the activities for whole-class instruction will provide helpful practice.

Watch children play to see if they are able to use the mouse or trackpad to click on and count the flowers. If they are having trouble, show them how to move the pointer to the correct spot (the flower will be highlighted). Then show them how to click so that the flower opens and the Man in the Yellow Hat counts the flower.
Description
George is collecting bugs that are two different colors. The Man in the Yellow Hat asks players whether they think there are more bugs of one color or the other.

Players choose the answer by selecting one of two yellow buttons at the bottom of the screen. Then they help George collect the bugs, using the pointer to move the net back and forth across the screen.

Two jars slide into view, each holding bugs of one color, with the number of bugs in the jar displayed on a label. If players estimated correctly, the Man in the Yellow Hat praises their bug catching. If not, he counts the bugs in each jar and points out the correct response. Each bug is highlighted in yellow as it is counted, supporting cardinality.

The colors and numbers of bugs keep changing as children continue playing.

Helpful Background
Children are not expected to count the bugs to determine the answer. The focus of this game is on estimating rather than counting. After children estimate, you may want to have them count each group of bugs to see if the estimate is correct.
Teaching Tips: Bug Catcher

1. **Build Background**
   Conduct a whole-class activity that activates and builds children’s background knowledge.

2. **Get Ready to Play**
   Use the interactive whiteboard to preview the game with the whole class.

3. **Play the Game**
   Play the game as a whole-class or small-group activity.

In this lesson, children will:

- estimate whether the number of objects in one group is more than the number of objects in another group
- count up to 10 items in a scattered configuration
- understand the relationship between numbers and quantities—connecting counting to cardinality
- learn new vocabulary, including **collect**, and use this word in context
- learn and practice using academic vocabulary, including **more** and **estimate**
- use technology to learn, working individually and in groups, and gain practice moving the pointer
Teaching Tips: Bug Catcher

Build Background

Time: 10 minutes

NOTE: Open the SMART Notebook™ file called Comparing Quantities.

Tell children that in the Curious George game they’re going to play they will hear the word more many times. Explain that sometimes we use the word more to mean an extra amount—for example, when you want more soup. In this game, the word more has another meaning; it means “greater than.” Help children understand this meaning of the word more:

• Touch the cookie on the picnic blanket and move it onto one of the picnic tables. Continue moving cookies onto each of the picnic tables, making sure one of the tables has several more cookies than the other.
• Then say: Turn and tell your partner which table you would like to sit at and why.
• Invite a few children to explain how they decided which table to choose. How did they know which one had more cookies?
• Continue placing different numbers of cookies on the tables until you observe that children understand the use of the word more to mean “greater than.”

Tell children that the game is called Bug Catcher because George is collecting bugs. Explain that collect means to gather things together. Sometimes we collect items that are alike in some way (such as stickers or stuffed animals). Sometimes we collect things that are different (collecting our coats, hats, and mittens to go outside). Ask children what they collect. Encourage them to use the word collect in their responses.

Close the Comparing Quantities file.
Get Ready to Play

Time: 5 minutes

Open the game, but before touching the PLAY button, review that the purpose of this game is to estimate which color group has more bugs. Explain that estimate is something we do to make a good guess about something. To estimate which group has more, children need to look carefully at the bugs that are flying around to decide which group they think has a larger number of bugs.

Explain that after they estimate which group has more bugs, they will select that color bug in one of the yellow squares that shows up at the bottom of the screen.

Start the game and model an example of estimating which group of bugs has more. Select your answer, then point out the translucent arrow that appears at the bottom of the screen. Ask: Does anyone know why this arrow is moving back and forth? If no one guesses correctly, explain that it means you need to move the pointer back and forth on the screen for George to collect the bugs. Invite a child to collect them.

After George collects the bugs, the Man in the Yellow Hat says, “Let’s set the bugs free.” Ask children if they know what it means to “set the bugs free.” If no one provides a good answer, explain that the bugs will be able to fly out of the jar.
Play this game as a teacher-led, Whole-Class activity if children need guided support:

- understanding the meaning of *more* and *estimate*
- visually comparing quantities without counting actual objects
- counting fewer than 10 items in a scattered configuration
- playing a game collaboratively
- using common game navigation

Play this game as an independent, Small–Group activity if children understand...

- the meaning of *more* and *estimate*
- game navigation

...but need practice:

- visually comparing quantities without counting actual objects
- counting fewer than 10 items in a scattered configuration
Teaching Tips: Bug Catcher

Play the Game: Whole-Class Activity

Time: 10 minutes

Ask the class to name the two colors of bugs on the screen. Then say: Look carefully at all the bugs and estimate which group has a larger number of bugs. Invite a child to say which group has more bugs and how s/he estimated. Engage all children by asking the class to give a “thumbs up” if they agree, or a “thumbs down” if they disagree.

Invite a child to the interactive whiteboard to point to and count all of the bugs in one of the colors. Develop children’s understanding of cardinality by explaining that the last number the child says tells how many bugs there are of that color. Invite another child to count the second group of colored bugs. Ask: Did we estimate correctly? Then have the child touch the button with the correct answer.

As you continue game play, first have all children tell a partner their estimates of which color has more bugs. Then invite one child to the whiteboard to select the button that matches the estimate.

If children excel at this game, extend their understanding of relationships between numbers and quantities by asking: How many more [blue] bugs are there? You can model a way for them to figure this out by lining up different colored sets of counting blocks to match the number of bugs in each color.

When most children have mastered the game, stop playing and review key concepts. Ask:

• What did we do to help George collect bugs? (estimated which group had more; counted each group)
• What new words did we learn and practice? (collect, more, estimate)

Tell children: At home, collect and sort different objects into two groups (for example, spoons and forks; pencils and pens) and estimate which group has more.
Teaching Tips: Bug Catcher

Play the Game: Small-Group Activity

Time: 10 minutes

Check in with children to see if they are randomly guessing (choosing without careful thought), estimating, or counting the bugs as they play. If they are guessing, guide them to estimate by looking more closely at all the bugs on the screen to see which group they think has more bugs. If they are counting, encourage them to try estimating first before they count. Do this at least once together before they continue to play independently. If children continue to have difficulty playing on their own, the activities for whole-class instruction will provide helpful practice.

Observe children to see if they are able to move the pointer back and forth to help George collect bugs. If they are having difficulty, show them how to use the mouse or trackpad to move the pointer left and right so that George can collect bugs on both sides of the screen.

Ask open-ended questions or give prompts that provide opportunities for children to use content and academic vocabulary, such as collect, estimate, and more. For example, ask:

• What is George doing?
• How are you figuring out the answer?
Description

Children help Gabriela gather and count vegetables from her garden. At the start of each game, they pick and count just one kind of vegetable. If they do this correctly, they pick and count two kinds of vegetables. Then they add these together to get the total number of vegetables.

After children pick all the vegetables, Gabriela counts them. When there is more than one type of vegetable, there is a plus sign between the two types of vegetables and an equal sign preceding the total. Then players select which of two boxes shows the correct total number of picked vegetables.

After children play three times, they can choose to play again. The game begins again with different quantities and kinds of vegetables.

Helpful Background

When there are two kinds of vegetables, players must first gather the ones Gabriela names before picking another kind. Moving the pointer over a vegetable highlights it, but it can only be gathered if it is the vegetable Gabriela asks players to count.

In this game, clicking on the circle at the top right featuring Sid the Science Kid takes players away from the game to the Super Fab Lab, where they can select and play other games featured on the show’s web site. This is different from the Curious George games, where the Man in the Yellow Hat (in the circle at the top right of the screen) provides instructions and feedback.
In this lesson, children will:

- understand the relationship between numbers and quantities—connecting counting to cardinality
- understand that the last number name spoken when counting tells the total number of objects counted
- use objects between 1 and 10 to solve math problems
- learn new vocabulary related to gardening, including, gather, vegetables (carrots, bell peppers, beans, tomatoes, ears of corn), harvest, and use these words in context
- learn and practice mathematics vocabulary, including add, total, plus (+), equals (=)
- use technology to learn, working individually and in groups, and gain practice navigating an online game

1. Build Background
Conduct a whole-class activity that activates and builds children’s background knowledge.

2. Get Ready to Play
Use the interactive whiteboard to preview the game with the whole class.

3. Play the Game
Play the game as a whole-class or small-group activity.
NOTE: Open the SMART Notebook™ file called Number Sentences–Intro. Minimize the file to place it on the dock for easy access. You will use this file along with manipulatives for this activity.

Tell children that in this game they will help Gabriela gather vegetables in a garden. When we gather, or pick, vegetables, we harvest them. This means we take them out of the garden so we can eat them or sell them.

Point out that vegetables are plants we can eat and that help us stay healthy. Some grow above the ground and some grow in the ground. Ask children to give a “thumbs up” if they have seen or eaten these vegetables: Carrots? Bell peppers? Beans? Tomatoes? Ears of corn?

Tell children that as they help Gabriela harvest groups of vegetables, they will add the vegetables in the two groups to figure out how many there are in total. But first they will practice adding using blocks.

Give pairs of children a set of five blue blocks and five red blocks, then display the Number Sentences–Intro file.

- Point out the number of blue blocks and the number of red blocks on the whiteboard.
- Ask children to use their blocks to figure out how many blocks there are in total, or altogether. Call on a few students to share their answers. Notice and name the strategies children use to find the total (counting, “counting on,” number facts).
- Demonstrate the correct answer on the whiteboard. Select and drag each set of blocks into the circle on the bottom, pointing out that you are adding three and three.
- As you touch the corresponding blanks and symbols on the number sentence, say: Three plus three equals, or is the same as, six. (When you touch the blanks, the correct numbers will appear. When you touch the symbols, they will pulse larger.)
- Invite different children to the whiteboard to complete the four remaining number sentences, while the rest of the class uses the manipulatives to figure out the totals. Prompt children to read the completed number sentences.
Teaching Tips: Vegetable Harvest

Get Ready to Play

Time: 5 minutes

Close the Number Sentences–Intro file. Remind children that in this game they will gather and count vegetables in Gabriela’s garden. In the first round, they will count one kind of vegetable. In the next two rounds, they will count two kinds of vegetables and add them together to get the total number of vegetables. After adding groups of vegetables twice, they can choose to play again.

Mute the sound, then start the game to demonstrate how to play.

• Tell children that when the vegetables are the same (all carrots, for example) you can gather, or pick, them in any order.
• Unmute the sound and invite the class to count the vegetables as you gather them, and to count them again with Gabriela when she asks how many vegetables there are in total.
• After counting the vegetables, point out the two blue boxes that appear on the right side of the screen. Each box shows a quantity of vegetables and the corresponding numeral. Let children know that the vegetables may be arranged in different ways each time.
• Ask: Which box shows the total number of vegetables we picked? Show how to select the correct box by touching it.

Tell children that on the computer, each vegetable is highlighted when they move the pointer over the picture; then they can click the vegetable to count it. Also, if they move the pointer onto the blue answer boxes, Gabriela says the number of vegetables shown in the box.

If children accidentally exit the game by clicking on the circle with the picture of Sid the Science Kid, show them how they can return to the game:
• Look for and click on the picture of a small shovel with a purple handle, near Gabriela and her purple watering can.
Teaching Tips: Vegetable Harvest

Play the Game

Play this game as a teacher-led, Whole-Class activity if children need guided support:

- counting fewer than 10 items
- understanding the relationship between numbers and quantities
- learning simple addition through object and numeral representation
- understanding the meaning of plus and total
- playing a game collaboratively
- using common game navigation

Play this game as an independent, Small-Group activity if children understand...

- how to count fewer than 10 items
- game navigation

...but need practice:

- understanding the relationship between numbers and quantities
- doing simple addition through object and numeral representation
- understanding the meaning of plus and total
Teaching Tips: Vegetable Harvest

Play the Game: Whole-Class Activity

Time: 10 minutes

When children are counting just one group of vegetables, invite a child to gather, or harvest, all the vegetables on the interactive whiteboard. Have the class count aloud with Gabriela to practice one-to-one correspondence. Call on another child to tell you how many vegetables were harvested in total. (If the answer is incorrect, explain that the last number said while counting tells the total. Ask the child to count again and tell you the last number counted.)

When there are two groups of vegetables:
• After Gabriela asks children to count the vegetables, mute the sound and ask one child to gather and count one group of vegetables. As the child touches each one, have the class count aloud.
• Ask another child to harvest and count the second group of vegetables.
• Have the other children turn to their partners to say how many vegetables were gathered in total. Say, for example: We gathered [two ears of corn] and [four tomatoes]. Tell your partner what you think ____ plus ____ equals? (As you say this, point on the whiteboard to the numerals above the vegetables as well as to the plus and equal signs.)
• Have manipulatives (e.g., blocks, rods) available so children can work on figuring out the answer on their own. As you observe children, notice and name the strategies they use (i.e., pushing the two groups of objects together to count the total, “counting on,” or adding the two groups).
• Invite a child to touch the correct answer on the whiteboard. Then unmute the sound and listen as Gabriela checks the answer. Encourage children to count along with her.

When most children have mastered the game, stop playing and review key concepts. Ask:
• What did we help Gabriela do today? (harvest, count, and add the total number of vegetables)
• What new words did we learn and practice? (gather, harvest, vegetables, add, total, plus, equals)

Tell children: During playtime and mealtime, practice using the skills and words you learned. For example, you can say, “I gathered all my toys. I had a total of six toys.” Or, “I’m eating carrots. Carrots are a vegetable.”
Teaching Tips: Vegetable Harvest

Play the Game: Small-Group Activity

Time: 10 minutes

Watch children as they add groups of vegetables together to see if they are guessing or using a counting or addition strategy. If they are guessing:

- Show them how they can count all the picked vegetables lined up in boxes at the top of the screen (even if they are different types) to get the total.
- Have them use manipulatives such as two groups of different colored blocks to represent the correct number of each kind of vegetable. Ask: If you want to know how many blocks there are altogether, what can you do? Show them that they can push all the blocks together and count them. Help them connect counting the two kinds of blocks altogether with counting two kinds of vegetables altogether to figure out the total number of vegetables.

Observe children to make sure they are able to use the mouse or trackpad to highlight and select each vegetable.

Encourage children to tell you about the game using the new vocabulary they have learned. For example:

- What does Gabriela want you to do? (gather, or harvest, vegetables)
- What does this symbol [+] mean? (plus, to put together, or add)
- What does this symbol [=] mean? (equals, or the same as)
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