Teacher's Guide

EXCERPT

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Welcome—Introduction to the PBS KIDS Study

Welcome, educators! Thank you for participating in the PBS KIDS Study—a Ready To Learn Initiative—and for using the Math Curriculum Supplement. The Supplement is a 10-week experience that uses educational media—videos and games from the PBS KIDS and PBS KIDS LAB websites—in combination with other effective learning experiences, such as reading aloud and hands-on activities, to introduce preschoolers to important and age-appropriate math content.

Why Educational Media?

Research shows that developmentally appropriate educational media, such as short, engaging videos and interactive games, can help teachers prepare preschoolers for school success in a variety of subjects. The Math Curriculum Supplement uses educational media to provide preschool children with powerful alternative ways to explore and practice important math concepts. As part of this study, you will use two kinds of educational media.

- **Engaging videos** will help you introduce new math concepts and vocabulary, as well as provide children with models of how to apply their emerging math skills.
- **Interactive games** will provide opportunities for children to practice math skills in pairs and in small or large groups, and can scaffold and support children's learning.

As an early childhood educator, you play a critical role in supporting preschoolers' learning throughout the school day. Your role will be just as important when implementing the Math Curriculum Supplement and the educational media components.

To be sure you have access to educational media, and to ensure your children benefit from the videos and interactive games, we are providing the following technology for you to use in your classroom.

- **Interactive Whiteboards (IWBs)** allow you to project a computer display on a large interactive touch screen. You'll be using your IWB to show each week's video and to demonstrate how to play the week's interactive games. Displaying videos and games on the Interactive Whiteboard helps the whole class visualize math concepts and practice them together, as children will sometimes take turns using the IWB with you.
- **Laptop computers** let children experience and explore the interactive games with a partner. You will have three new laptop computers in your classroom. Each will include a mouse and two sets of headphones, as well as an audio "splitter" that will allow two children to listen to the same audio when playing a game together.
- **Wireless Internet routers**, where necessary, will ensure the Interactive Whiteboards and laptops have high-speed Internet access.

In addition to the new technology, we also will supply you with all of the necessary materials to implement the other classroom activities in the Math Curriculum Supplement, including hands-on objects such as dominoes, Unifix cubes, and crayons, as well as printed materials (number lines and pattern signs) to facilitate large- and small-group activities.

Why Math?

Mathematics is a way of understanding our world. Mathematicians think of mathematics as the science of quantities and patterns. Quantities and patterns are found all around us. Children naturally use quantities and patterns when playing ("My tower is four blocks tall and is made from a red block, then a blue block, then a red block, then a blue block!"). For young children, building a deeper understanding of mathematics can help them better understand the world around them. With exposure to mathematical learning experiences, children can engage in important mathematical conversations and reasoning. They can say how many kids are on the playground, they can figure out if there are enough pieces of fruit for each person at the table, and they can better describe shapes they used to draw a family portrait. Young children frequently have mathematical abilities that are more sophisticated than we realize, and they often have a strong desire to engage in mathematical thinking. It is up to us, as their teachers, to support their mathematical growth and enjoyment.

Math Skills Targeted in the PBS KIDS Study Math Curriculum Supplement

The Math Curriculum Supplement targets various mathematics skills that are important in early childhood. Below we describe each of these skills and provide examples as needed.

Counting

By learning to count, children begin to understand the idea of "quantity," or "how many" things there are in a group. When children first come to preschool they have the ability (and desire!) to count small quantities. In order to become more sophisticated counters, children need opportunities to practice important counting skills, such as the following.

- **Verbal Counting.** Verbal counting involves learning the list of number words (saying "one," "two," and so on). Initially, children learn this through chanting and songs, and they may not yet understand how the words relate to quantities. As children become more sophisticated counters, they are able to count to higher numbers and understand that each number word represents a specific quantity.
- **Object Counting.** Object counting involves children learning to associate specific number words with individual objects as they count. Children learn to do this by practicing one-to-one correspondence—that is, counting objects one at a time. For example, when counting two toys, they point to the first and say "one" and then point to the second and say "two." Initially, when children are learning to count objects, they may skip objects or count objects twice. By scaffolding children's counting, teachers can help children keep one-to-one correspondence.
- **Cardinality.** Cardinality involves understanding that the last number reached when counting a set of objects answers the question, "How many objects are there altogether?" For example, when shown a group of five blocks and asked, "How many blocks are there altogether?" children learn to answer "five". Children who have not yet learned about cardinality may count the blocks, yet not know that the last number, five, describes how many there are.

Subitizing

Subitizing involves looking at a small set of objects and immediately recognizing the quantity without counting (e.g., recognizing the number of dots on a die that's shown *briefly* without having to count them). When children first come to preschool, they are able to subitize small quantities (e.g., one, two) in easy arrangements (e.g., in a line). In order to become more sophisticated subitizers, children need opportunities to practice with larger quantities and varied arrangements.

Identifying Numerals

During the preschool years, children begin to read numerals (0, 1, 2, 3, and so on). For example, they will verbalize "one" when they see "1." With practice, children also learn to associate quantities with their corresponding numerals. For instance, children learn to associate the symbol "2" with a set of two objects. In order to become familiar with numerals, children need opportunities to practice reading numerals out loud, as well as matching them to sets of objects.

Recognizing, Composing, and Representing Shapes

Early in childhood, children are interested and are able to develop a rich understanding of shapes. In order to recognize, compose and represent shapes, children need opportunities to practice the following.

- **Identifying shapes and their properties.** During preschool, children learn to associate shapes with their corresponding names. In order for children to develop a richer understanding of shapes, it is important to help children recognize the geometric properties of shapes (for instance, that triangles have three sides). Properties include the number of sides and the number and kinds of corners (angles). Opportunities to compare and classify shapes can help children develop a richer understanding of shapes and their properties. With time and practice, children come to understand that the same shape can vary in size and orientation.

- **Building or drawing shapes.** Children often enter preschool with the ability to copy shapes. However, in order to draw or create shapes by name (for instance, "using these pencils, create a triangle"), children have to understand the properties of shapes. By providing children with opportunities to practice building or drawing shapes, they can come to a more sophisticated understanding of shapes and their properties.

Patterning

A pattern is an arrangement of repeated parts. Patterning is the search for mathematical regularities and structures. Children's understanding of patterns develops gradually during the early childhood years. Children often come to preschool able to copy simple patterns and, with practice, can learn to identify, copy, extend, and create simple patterns (e.g., AB patterns). However, as they develop a more sophisticated understanding of patterns, they also are able to identify, copy, extend, and create more complex patterns (e.g., ABB patterns).

In order for children to develop a better understanding of patterns, it is important to help them identify core elements of patterns (for example, to identify "red, blue" as the core elements in a "red, blue, red, blue, red, blue ..." pattern). Once children identify core elements of patterns, they are able to develop richer understanding of patterns by copying patterns (using the same objects or different

objects), finding missing core elements in patterns, extending or continuing patterns, or creating their own patterns. This may be done in many spontaneous ways, such as lining up children in a boy-girl-boy-girl pattern for outside time, or copying or extending patterns they see in books, the block towers they build, or the clothes they are wearing.

Setting the Stage for Learning with Educational Media

In this guide, you will find instructions and scripts to help you integrate educational media and other activities into your classroom. Before you begin using the Math Curriculum Supplement, here are some tips for preparing yourself and your classroom to get the most out of technology as a tool for learning.

Familiarize yourself with the media ahead of time.

The more you know about the content of a video or interactive game, the easier it will be for you to interact with children and actively support their learning while they watch and play.

Introduce children to new technologies before you use the technologies to present math content.

Young children are often eager to touch and play with new technologies, but their enthusiasm may distract from learning the intended math ideas. Providing a brief introduction to your new equipment—how it is used and when children will have the opportunity to use it—can help children get comfortable with new technologies and understand that they are tools for learning. Your coach will provide tips for introducing the Interactive Whiteboard (IWB) and laptop computers to your class.

Set up the Interactive Whiteboard where all children can see and hear it.

Ensuring that the Interactive Whiteboard is situated where all children can see it comfortably will allow them to fully engage with the videos and interactive games. Likewise, using the two sets of headphones with the laptops will allow children to work in pairs when playing interactive games and will ensure that both benefit from the game's instructions and feedback.

Set clear rules for children's turn-taking and collaborative play.

To make sure all children have the opportunity to participate in interactive game play on the Interactive Whiteboard and on the laptops, use a system that gives all children a turn and helps them anticipate when they will get to play. Your coach will help you devise a system to keep track of computer use so each child can be assured that they will always get to play the easy and challenge games of the week. When they are using laptops in pairs, we recommend children alternate control of the mouse; every time a round of the game ends, the players can switch roles.

Learning with Videos

Videos are an important part of the Math Curriculum Supplement that help introduce children to the week's focal math skills and concepts. To get the most out of the video co-viewing experience, we recommend the following.

Establish a pre–video-co-viewing routine.

A consistent routine will prepare children to participate in the activity. For instance, get ready to view the videos in the same manner every week so children will be ready to actively listen and learn while they watch. You might, for example, choose to settle your class on the rug with a song, introduce the topic of a video, and dim the overhead lights to signal that the activity is about to begin.

Model active viewing.

When teachers, assistants, and other adults in the classroom focus their attention on the video, it signals to children that they should be watching and learning, too. Try to minimize the amount of other activity going on during video viewing to help maintain children's focus.

Use "pause points" and questions to support children's learning.

The videos provided have built-in points where you will pause the video to engage children in a short conversation. Each video has up to four "pause points," where you will pause the video and review the math content onscreen, ask questions or explain challenging concepts, and help children practice using math skills. This guide will provide information about what to focus on at each pause point. Pause points are numbered from 1 to 4, and the prompts in the guide use the same numbers. Just before the pause point, you will hear a beep and see a red dot flash onscreen. This dot is a cue to get ready to pause the video when the pause point icon  appears. These pre-set pause points are placed to help you support your children's learning, but you can pause the video at other points as well. For example, if a child raises a question you feel is worth further discussion, or if there is something in the video you want to explain to your children, you should feel free to pause the video and take advantage of these opportunities for active learning.

Monitor and support children's engagement.

Look for behaviors that indicate children may be losing interest in the videos (e.g., turning around, playing with children next to them) and redirect children's attention with your own interest and excitement. For example, if children are getting squirmy, try asking them questions about what they see, or making comments about on-screen events. ("Oh, look! She's turning around and around in circles!") Don't be afraid to talk over the video, especially when it comes to pointing out learning content.

Supporting Interactive Game Play

To have a successful learning experience with interactive games, children must have a meaningful understanding of three components of game play.

- **How to use the laptops and accessories (headphones/mice).** For example, how to click and make things happen within a game, as well as how this is different from game play on the Interactive Whiteboard, where you use your finger to touch and select objects.
- **The rules and goals of the game.** For example, selecting the correct shape from the four shape choices on the left of the screen to match the shape on the Huff-Puff-a-Tron.
- **The target learning concepts that must be applied to complete the activity.** For example, all closed objects with three straight sides are called "triangles," and thus the shape on the Huff-Puff-a-Tron is a triangle and should be matched with a triangle.

The information and scripts included in this guide will help you present these concepts to children. For instance, you will have the chance to model playing a game on the Interactive Whiteboard before children play the game on a laptop. The games are designed to be age-appropriate and brief, but children may still require some direction and explanation about the game from you before they begin playing and during independent play.

We also recommend you do the following.

Observe children's progress while they play and ask questions to assess if they need help. To gauge whether children understand the interactive game and are practicing their math skills, watch them play and consider if they are clicking purposefully or randomly. If children appear to be clicking randomly or off-task, ask them to explain what they are doing or to explain the rules to you, then follow up with targeted directions, prompts, or strategies to help them move forward. For example, if a child repeatedly clicks on a shape that does not match the shape on the Huff-Puff-a-Tron in the matching game, you might ask, "Can you tell me which shape you're looking for?" and use the opportunity to review how many sides each shape has.

Use interactive games as opportunities to start rich conversations about math and other things you are learning about in your classroom. Interactive games not only give children opportunities to practice their skills, but also provide them with concrete experiences they can talk about with teachers and peers to solidify their math learning. Don't be shy about asking children math questions related to what they are playing, just as you might make math connections while working with children in the block or art area. Simple questions like "How many are there?" and "What shapes do you see?" can help reinforce children's learning.

About the Educational Media

Math learning often overlaps with science learning, and the Math Curriculum Supplement uses a variety of PBS educational media created as part of the Ready To Learn Initiative and designed to support math as well as science learning for preschool-aged children.

Sid the Science Kid

Sid the Science Kid features videos and games that are based on national science learning standards and on an existing preschool science curriculum. Sid utilizes music and humor to celebrate children's natural curiosity about science in everyday life. The interrelatedness of math and science in preschool learning means that mathematical concepts relating to counting, shapes, and the measurement of objects are often included in these science-based videos and games. Energetic and inquisitive Sid also provides a foundation for the concept of being a detective by embarking on adventures that foster mathematical and scientific questioning and reasoning.

The Cat in the Hat Knows a Lot About That!

Based on the Dr. Seuss children's books, these videos and interactive games are designed to cultivate positive views about science and math among the children who will become tomorrow's citizens and innovators. In each video, Sally and Nick present a scientific question to be solved with the help of The Cat in the Hat by using various mathematical concepts, including patterning, shape identification, and counting. In the games, children have the opportunity to use their mathematical knowledge of shapes and pattern recognition to solve problems, gather clues, and make connections, all with the help and collaboration of The Cat, Sally, and Nick.

Curious George

Curious George is an animated series based on the popular books by Margret and H.A. Rey. The suite of *Curious George* videos and interactive games inspire preschool children to explore math, science, and engineering in the world around them, and what better guide is there for this kind of exploration than the world's most curious monkey? While George's curiosity sometimes gets him in a little trouble, it also fosters his understanding of a wide variety of preschool math concepts, including counting and reverse counting, comparing and contrasting shapes, identifying numerals and comparing different sets of numbers.

Dinosaur Train

Dinosaur Train embraces and celebrates the fascination that preschoolers often have with dinosaurs and trains, while also encouraging the use of basic scientific and mathematical thinking skills. Buddy, the curious young Tyrannosaurus Rex featured in the interactive games, seizes every opportunity to meet and discover the many different types of dinosaurs that exist in his world. While exploring various prehistoric environments, Buddy often needs to use mathematical concepts such as counting, recognizing numerals, and comparing the size and orientation of shapes to help make important discoveries along the way.

Weekly Activities

In the following sections, you will find scripts and activity descriptions for each of the 10 weeks of the Math Curriculum Supplement. The activities are designed to be simple and repetitive because children need to practice the same math skills many times and in many different situations to learn them. The content changes from week to week, but many activities remain the same or are similar to previous activities so you and your children will have a familiar routine to follow. Below is an overview of the activities you and your children will do each week.

Activity	Setting	Description
Video Co-Viewing (25 minutes)	Circle Time with the Interactive Whiteboard (IWB)	Each week, videos introduce new math concepts or review key math content preschoolers may already know. Pause points marked within the videos indicate places where you pause to explain the focal or review math concepts, ask questions, and open up discussions about math with children.
Math Detective Journal (20 minutes per small group)	Small Group	Every child will receive a Math Detective Journal to use during the 10 weeks of the Math Curriculum Supplement. Journal activities are written activities that take place in small groups and provide an opportunity to reinforce skills introduced or reviewed in the week's video.
Easy Game Play (10 minutes per small group)	Small group with the Interactive Whiteboard (IWB)	This is the first opportunity children have to interact with the IWB each week. In a small-group setting, model the easy interactive game of the week with a quick demonstration, then allow children an opportunity to play the game, reinforcing the skills covered in the week's video, or sometimes reviewing skills from previous weeks.
Math Circle Routine (10 minutes)	Circle Time	The Math Circle Routine combines traditional preschool activities of circle time learning with new materials and novel activities or games to reinforce math skills covered in the week's videos and games in a hands-on way. These activities are designed to encourage children to ask questions and to participate.
Guided Book Reading (15 minutes)	Circle Time	Keeping with familiar preschool routines, once a week you will read aloud a math storybook related to the focal math skills of the week. The books contain pause points to allow you to explain math concepts, ask questions, and open up discussion.
Challenge Game Play (25 minutes)	Circle Time with the Interactive Whiteboard (IWB)	The last whole-group activity of the week is the Challenge Game Play, where you model playing an interactive game and then provide an opportunity for children to practice their math skills in the more challenging game environment. As the name suggests, the game is meant to challenge children and may require varying degrees of support.
Computer Center (10 minutes)	Pairs of children at laptops	Throughout the week, children will team up to play interactive games on the laptops. The focal easy and challenge games of the weeks will be available, as well as games from previous weeks, to allow children to practice and apply the math knowledge they are gaining.
Hands-On Centers (10 minutes)	Pairs or small groups of children	Also throughout the week, pairs or small groups of children can play the hands-on games and activities introduced during the week or from previous weeks. The games allow children to practice concepts covered in the videos and interactive games in hands-on ways.

Sample Schedule

We realize you have many things to teach and that you'll need to fit the Math Curriculum Supplement into an already busy schedule. Keep in mind that the Supplement will be most effective if you use a consistent schedule from week to week. Your coach will help you figure out how to schedule the Supplement activities into your week, as well as support you when holidays and other school closures occur. We recommend spreading the activities over four days, as in the sample schedule below. Please use this as a guide to help you plan how best to integrate these activities into your classroom schedule.

Sample Schedule

Monday	Tuesday	Wednesday	Thursday
Video Co-Viewing (25 minutes)	Math Detective Journal (20 minutes)	Math Circle Routine (10 minutes)	Challenge Game Play (25 minutes)
	Easy Game Play (10 minutes)	Guided Reading (15 minutes)	
Computer Center (~10 minutes per pair of children)	Computer Center (~10 minutes per pair of children)	Computer Center (~10 minutes per pair of children)	Computer Center (~10 minutes per pair of children)
	Hands-On Centers (~10 minutes per pair of children)	Hands-On Centers (~10 minutes per pair of children)	Hands-On Centers (~10 minutes per pair of children)

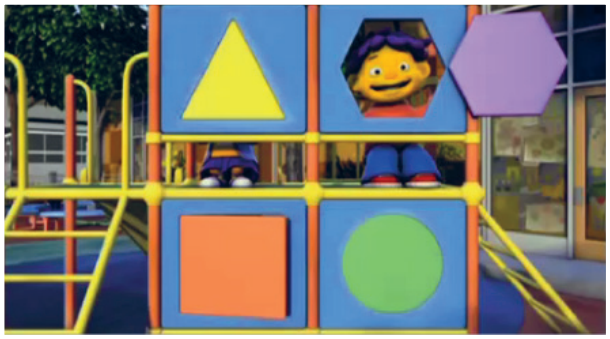
We have divided this guide into weekly units (10), each of which provides one or two activities for you to undertake each day of the week. Each activity is titled with some or all of the following information.

Name of the Activity

Video Co-viewing

Name of the Video or Game with explanation box

The Dirt on Dirt (Sid the Science Kid)



Sid gets the math curriculum supplement started with an investigation. This video helps to introduce the role of children as "detectives," as Sid and his friends investigate what makes dirt, dirt. By counting Sid and all of his friends, the video helps to introduce counting to 5 and also helps to introduce shapes and geometric properties (circle, square, triangle, line, and curve).

Name of the Activity with Timing Goal

Video Co-Viewing Activity

Timing Goal: 25 minutes

Short scripts are provided to help you lead children through the activities.

- **What you do** is displayed by **bold black type**
- **What you say** to the class is displayed in *colored italic type* and marked with ❞.
- **Comments** follow what you say in regular black type in parentheses ().

For Video Co-Viewing activities, the scripts correspond with specific pause points in the episode videos. We indicate these points with a button image (such as) that appears on the video and in the guide. You should pause the video and follow the corresponding script in the guide. See example script below.

What you do

Encourage children to figure out how many girls there are altogether and how many boys there are altogether in the video, again thinking out loud as you figure out the answers.

What you say

❝ *Now, let's just count the girls. How many girls are there? How many boys are there? How do we know how many there are?*
(Remind children that counting to find out how many is math and is part of being a Math Detective.)

Comment

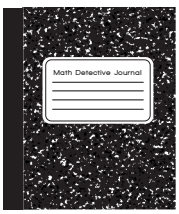
Resume video.

2. 6:44—Suzy, the teacher, talks with the children about what it means to be a detective.

Pause and play buttons with corresponding information

Guide Icons

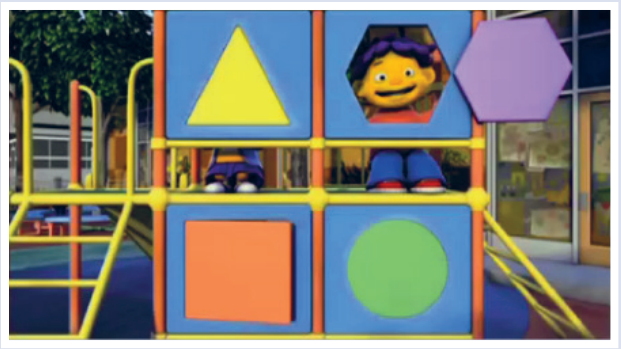
Throughout this guide we use icons to indicate different activities and instructions. Below are the most commonly used icons in the guide and what they represent.

Icon	Description
	Video Co-Viewing (Circle Time with the Interactive Whiteboard [IWB])
	Math Detective Journal (Small-Group Activity)

Icon	Description
	Math Circle Routine (Circle Time)
	Guided Book Reading (Circle Time)
	Easy Game Play (Small Group with Interactive Whiteboard [IWB])
	Challenge Game Play (Circle Time with Interactive Whiteboard [IWB])
	Hands-On Centers (Pairs or small groups of children)
	Computer Center (Pairs of children)
	Skills and other important points to cover
	What you will need

Video Co-viewing

The Dirt on Dirt (Sid the Science Kid)



Sid gets the math curriculum supplement started with an investigation. This video helps to introduce the role of children as "detectives," as Sid and his friends investigate what makes dirt, dirt. By counting Sid and all of his friends, the video helps to introduce counting to 5 and also helps to introduce shapes and geometric properties (circle, square, triangle, line, and curve).

Overview

During **Circle Time**, watch ***The Dirt on Dirt*** with children on the **Interactive Whiteboard** (IWB). Look and listen for key pause points (marked with and a "beep"), and use them as opportunities to ask questions to get children talking about math.

Skills and other important points to cover

- Introduce counting from 1 to 5
- Introduce simple shapes and geometric properties: circles, squares, triangles, lines, and curves
- Introduce and encourage children to be Math Detectives who listen for, observe, and talk about math

What you will need

- Interactive Whiteboard (IWB)
- Sid the Science Kid: *The Dirt on Dirt* video (14:46 minutes)
- Sample Math Detective Journal

Video Co-Viewing Activity

Timing Goal: 25 minutes

1. Warm-Up

Invite all children to the Interactive Whiteboard (IWB) area.

Spend a minute talking about the Interactive Whiteboard (IWB) and how you will use it for watching videos and playing games.

Talk about how you will watch a video with Sid the Science Kid, and that you'll stop the video several times to talk about what's happening with Sid and his friends and to talk about the math you and the children see in the video.

Provide children with examples of math—such as counting—and get ideas about "what math is" from them.

❞ *Today we're going to watch a short video about a boy named Sid. Do you know Sid?*
(Some children may be unfamiliar with the Sid character, so take time to provide background information to familiarize them.)

Who is Sid?

The Sid the Science Kid animated TV series is designed to promote exploration, discovery, and science readiness among preschoolers. Developed by the creators of the Muppets, Sid, the main character, starts each episode with a new question ("Why are my shoes shrinking?" "Why do bananas get mushy?") and spends the day finding answers with the help of family and friends.

❞ *While we watch, our job is to find math in the video. What are some examples of math? We can use math to find out things about the world. For instance, we can use numbers to find out "how many" by counting. Let's count the fingers we have on one hand.*
(Help children count to 5 using their fingers.)

Encourage children to tell you numbers that they know. Suggest other examples of math, such as shapes (circles and triangles) and patterns (something that repeats so that you can predict what comes next).

❞ *Shapes like circles, squares, and triangles are examples of math. Can anyone tell me some names of shapes? What about what comes next in the sound pattern "clap, stomp, clap, stomp, _____?"*
(Offer examples of specific math concepts if children have difficulty coming up with ideas.)

Remind children about the stopping (pause) points during the video, when they should be on the lookout for math.

Note: You can also pause the video any other time you or the children notice math to discuss.

Start the video.

2. Video Co-Viewing (with Pause Points)

1. 4:05—Sid is in the playground dancing and singing with his friends.

Encourage children to figure out how many friends there are altogether, including Sid.

- *Let's figure out how many children there are here, with Sid and all of his friends. How can we do that?*
  (Practice wait time, and give children an opportunity to answer.)

- *We can count everyone—Sid and his friends.*
  (Count aloud with the children, pointing to each friend. Hold up the correct number of fingers (i.e., 4 fingers for Sid and 3 friends).

Encourage children to figure out how many girls there are altogether and how many boys there are altogether in the video, again thinking out loud as you figure out the answers.

- *Now, let's just count the girls. How many girls are there? How many boys are there? How do we know how many there are?*
  (Remind children that counting to find out how many is math and is part of being a Math Detective.)

Ask children to predict what will happen next in the video.

Resume video.

2. 6:44—Suzy, the teacher, talks with the children about what it means to be a detective.

Talk about what it means to be a "detective" and the tools you will use to be detectives—eyes to look for and observe math, and ears to listen for math.

- *Let's talk about what a detective is and what a detective does.*
  (A detective is someone who looks for information to solve a problem. Children should listen for, observe, and talk about math.)

Remind children that Sid and his friends are dirt detectives, but that they are all going to be Math Detectives looking for math all around and recording the math they see in their Math Detective Journals (hold up a journal as an example).

- *For the next few weeks, we're going to be detectives like Sid and his friends, but we are going to look for math instead of dirt. You will each have your own Math Detective Journal to write down the math that you see and learn about.*
  (Hold up the Math Detective Journal to show the children, and let them know they each will have their own Journal to record the math they see and learn about.)

Encourage children to count how many people, including the teacher, there are altogether in Sid's classroom in the video, thinking out loud as you count.

- *Let's detect how many people there are altogether in Sid's classroom.*
  (Point to each person on the screen as you count. Use your fingers to indicate 5 total people.)

Ask children to predict what will happen next in the video.

Resume video.

3. 9:25—Sid and his three friends play behind the shape doors on a piece of playground equipment.

Encourage children to count the number of shapes/doors there are altogether, thinking out loud as you count.

- *Did you notice that the children are behind some doors? How many doors do you see?*
  (Count the number of doors/shapes there are altogether. Point to each shape as you count; hold up 4 fingers to indicate 4 shapes all together.)

Name and describe the shapes on the doors—square, circle, triangle, and hexagon—with an emphasis on the circle and triangle. Guide the children in discovering what is different about the shapes.

- *Did you know learning about shapes like circles, triangles, squares, and hexagons are part of learning about math? Math Detectives, how are these shapes the same as one another? How are the shapes different from one another?*
  (Practice wait time, and give children an opportunity to answer.)

- *Something that makes these shapes different from one another is that a triangle is made of three straight lines.*
  (Model tracing and counting the sides. Encourage children to count out loud with you.)

- *A circle is made of one curve that goes all the way around. Do you see any sides or straight lines on the circle?*
  (Trace the curve of the circle. Note the lack of straight lines or sides on a circle)

Encourage children to listen to the funny jokes Sid and his friends are going to tell.

Resume video. End 14:46

3. Wrap-Up

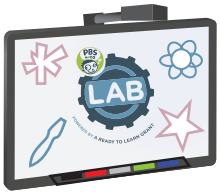
Encourage children to review the concepts covered in the video—counting and numbers, shapes and geometric properties, and the work of Math Detectives.

> *Let's think hard and think back to what we learned today. We talked about counting and numbers, we saw four different shapes, and we learned that we are going to be Math Detectives.* (Encourage children to tell you what they remember from the lesson.)

Practice counting out loud from 1 to 5, and have children count with their fingers.

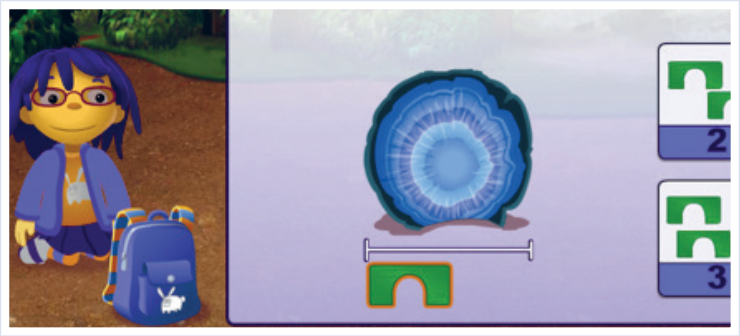
Have the children sky-draw triangles, squares, and circles.

Remind children that, for the next ten weeks, they're going to be Math Detectives, so to always listen carefully and keep their eyes open to find math all around!



Easy Game Play

Crystals Rule (Sid the Science Kid)



May loves to collect rocks, but needs help measuring them. Using every day objects, help May figure out how many paperclips long the purple rock is, or how many blocks long the green rock is. Helping May measure her rocks will help children review counting from 1 to 5 and introduce numeral identification.

Overview

During **Small Group Time,** demonstrate how to play ***Crystals Rule*** on the **Interactive Whiteboard** (IWB). Use game play as an opportunity to talk about **counting** and **numeral identification from 1 to 5** as you call on individual children to try out the game on the Interactive Whiteboard (IWB). Since this is the children's first time playing a game on the Interactive Whiteboard (IWB), establish **basic game play rules.**

Skills and other important points to cover

- Introduce numeral identification from 1 to 5
- Review counting from 1 to 5

What you will need

- Interactive Whiteboard (IWB)
- Sid the Science Kid: *Crystals Rule* game
- Classroom Number Line
- Sample Wireless Mouse

Easy Game Play

Timing Goal: 10 minutes

1. Warm-Up

Invite children to the Interactive Whiteboard (IWB) area and review counting from 1 to 5 and the shapes identified in *The Dirt on Dirt* video—triangle, circle, square, and hexagon (focus on circle and triangle) before playing Crystals Rule on the Interactive Whiteboard (IWB).

- *Today, we're going to play a game on the Interactive Whiteboard. But first, can you count with me to 5?*
  (Use your fingers to count from 1 to 5. Count a second time pointing to the numerals on the number line.)

- *Who remembers the shapes we saw Sid and his friends hiding behind when they told their jokes?*
  (Help children name circle, triangle, square, and hexagon, briefly elaborating on the number of sides of a triangle and that a circle is a curve that goes all the way around.)

2. Introduce Easy Game

Introduce some basic game play rules—only one child can touch the Interactive Whiteboard (IWB) at a time, and children have to take turns playing.

- *Remember that we watched the Sid the Science Kid video on the Interactive Whiteboard before? Well we can also play games on it! But we have to be careful, only one of us can touch the screen at a time, and we have to take turns.*
  (Model how touching the Interactive Whiteboard (IWB) makes things happen by loading the game *Crystals Rule*.)

Listen to May's explanation of how to play the game. Then, thinking out loud as you play the game, model how to play *Crystals Rule*: Slide the objects at the bottom of the screen to get an estimate; name the two number choices; and select the number you think is correct—reinforcing the concept of "altogether."

- *Now, let's play Crystals Rule! We can use our finger to move the objects on the Interactive Whiteboard to help us figure out the answer to May's questions.*
  (Model sliding the measuring object to decide how many are needed altogether. Name the two number choices, and model tapping on the correct answer.)

- *How do we know how many objects are needed altogether?*
  (Encourage children to count out loud to verify the total number of objects needed.)

Walk children through a couple of examples, being sure to model recovering from making a mistake. Then call volunteers up to play the game, encouraging children to think out loud during their turns.

- *Whoops! I made a mistake. That's not the right answer. Let's count carefully as I slide the object to figure out how many we need altogether!*
  (Model recovering from making a mistake. Then have children take turns playing.)

Remind children that during Computer Center Time, they will play *Crystals Rule* with a partner on a computer using a mouse.

- *During Computer Center Time, you can play this game again with a partner! But instead of touching the screen, you'll use the mouse to slide the objects and click on your answer.*
  (Hold up a wireless mouse for children to see.)

3. Wrap-Up

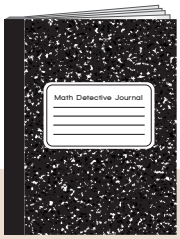
Review numerals 1 to 5 and the concept of altogether.

- *All right, Math Detectives! Let's think about what we learned today. What numerals did we spot while playing the game?*
  (Practice wait time, and give children an opportunity to answer.)

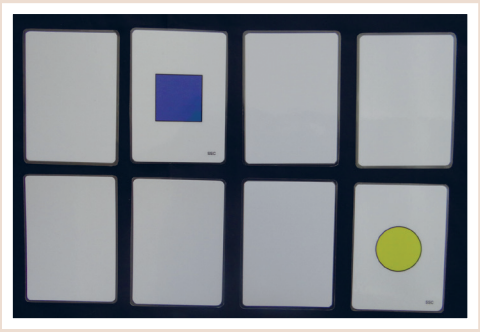
- *What can we do when we want to find out how many there are? What about when we want to know how many there are altogether? How did we figure it out for* Crystals Rule*?*
  (Review the meaning of "altogether" and that you can count to find out how many altogether.)

Model counting once with fingers, then count and point to numerals on the Classroom Number Line.

- *Let's finish by counting to 5.*
  (Practice counting out loud, and have children count with their fingers. Then count pointing to the numerals on the number line.)



Math Detective Journal



Math Detective Journal

During Math Detective Journal Time, help the children identify shapes and geometric properties—circles, triangles, squares, rectangles, lines, and curves—around the classroom. Then have children draw examples of what they find around the classroom in their journals.

Simple Shape Concentration

This game helps children match shapes by recognizing geometric properties. To introduce the game, name the shapes on each of the cards and talk about shapes' geometric properties (lines, curves, number of sides). Place the cards face down in two rows. Model flipping over two cards, thinking out loud about whether or not the cards are a match (i.e. two triangles) and how you know (count the number of sides). Model finding a pair that matches and a pair that does not match—flipping the cards back over and allowing the next person a turn.

Overview

During **Small Group Time**, introduce and review simple shapes and geometric properties with children in the first **Math Detective Journal** activity. Help children identify shapes around the classroom to draw in their journals. Then, introduce the **Hands-On Activity**, "**Simple Shape Concentration**."

Skills and other important points to cover

- Introduce simple shape: rectangle; review simple shapes and geometric properties—circle, triangle, square, line, and curve
- Introduce counting sides of simple shapes: triangle, square, and rectangle
- Introduce size and orientation of simple shapes: circle, triangle, square, and rectangle

What you will need

- Math Detective Journals (one per child)
- Crayons
- Dry erase boards, markers, and erasers
- Large shape and geometric properties cards (circle, triangle, square, rectangle, line, curve)
- Simple Shape Concentration card game

Math Detective Journal

Timing Goal: 20 minutes

1. Warm-Up

Invite children to the Small Group area to review concepts from last week's video, including being detectives and identifying shapes (circle, triangle, square) and geometric properties (line, curve, number of sides).

- *Remember we had a special job while watching the Sid the Science Kid video last week? We were Math Detectives. Who remembers what Math Detectives do?*
  (Review being a Math Detective, who looks for information to answer a question or solve a problem with math.)

- *We saw different shapes in the video. Who remembers what shapes we saw?*
  (If children are having trouble naming shapes, use the dry erase board to draw the shapes or hold up shape cards encouraging children to name the circle, triangle, and square shapes from the video.)

Introduce the rectangle by showing the rectangle shape card or drawing one on the dry erase board. Help children describe what they see, using what they know about geometric properties (line, curves, number of sides).

- *Today we have a new shape to talk about. It's a rectangle. Who can tell me what you see when you look at this rectangle?*
  (Encourage children to talk about lines, sides, and how this shape might be similar to or different from a square.)

Introduce the concept that the different sizes and orientations of shapes—triangles as an example—still make them triangles . Do this by drawing a small "regular" triangle and a large triangle with each side a different length on the dry erase board.

- *Let's count the number of sides on this small triangle. Let's count the number of sides on this big triangle. They both have three sides, so they are both triangles!*
  (Be sure children count along with you as together you confirm that the two shapes are both triangles with the same number of sides.)

- *Now suppose I turned them upside down. Let's count the number of sides again. What do we think now, are they still triangles?*
  (Have children count the number of sides again to confirm the two shapes are still triangles no matter what direction they face. Count the sides one more time, reminding children that triangles always have three sides, and three sides on a closed figure always mean a triangle.)

2. Introduce Math Detective Journal Activity

Tell children their job as Math Detectives today is to hunt for shapes in the classroom (circles, triangles, squares, rectangles). Model identifying a shape from the classroom—a table in the shape of a circle, or a book in the shape of a square—and drawing it before the hunt.

- *Today, we're going to hunt for circles, triangles, squares, and rectangles around the classroom. I see a circle. It's the _____ (e.g., top of our table). Do you see any shapes around you?*
  (Guide discussion to talk about shapes of named objects. Model drawing shapes on the dry erase board.)

Leave shape cards on the table to help children draw the shapes of the objects they find in their Math Detective Journals.

- *Each time you find a shape, come back to the Math Detective table to draw it in your journals.*
  (Help children find examples in the room. Some may be found in places like the block area and dramatic play area. Help children draw shapes found, using shape cards as necessary.)

Have children share drawings and talk about what they found. Use this discussion as a transition into playing Simple Shape Concentration.

- *Math Detectives, who wants to share the shapes you found in the classroom?*
  (Use the large shape cards or dry erase board to review shapes the children found. Point out the continuous curves of circles and the lines of triangles, squares, and rectangles.)

- *I also have another place where I see shapes—on a new game we will learn to play today!*
  (Hold up some of the Simple Shape Concentration cards.)

3. Introduce Simple Shape Concentration

Introduce the card game Simple Shape Concentration by holding up each card in the deck, naming each shape (circle, triangle, square, rectangle), and describing each one's geometric properties (lines, sides, and curves).

- *Let's name all of the shapes on our cards! Who sees a shape they know?*
  (Encourage children to identify shapes they know on the cards, and assist in naming shapes they do not know. Focus on key geometric ideas, like counting sides, and that squares have all sides the same length. Some children may note that triangles *can* have sides that are the same length, but can also have sides of different lengths.)

Explain how to play the game, and remind children that it will be available during Center Time.

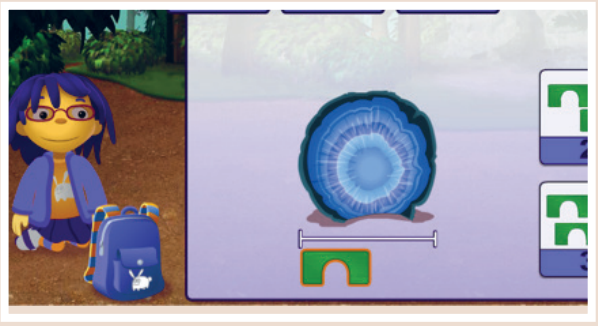
- *Now, let's learn how to play the game! First, mix the cards and put them with the shape side down on the table in rows.*
  (Align the cards in two even rows.)

- *When it's your turn, turn over two cards, and say the name of the two shapes. Then figure out if they match.*
  (Model turning cards face up, saying the shapes' names, and thinking out loud how you know the cards match or do not match. Focus on geometric properties, such as the number of sides, noting that squares have sides of the same length, and that circles are a curve that goes all the way around.)

- *If the cards match, pick them up and put them in front of you. If they don't match, turn them back over, but try to remember them for your next turn! You can play this with a partner during Center Time this week!*
  (Model picking up two matching cards and two non-matching cards.)

Computer Center

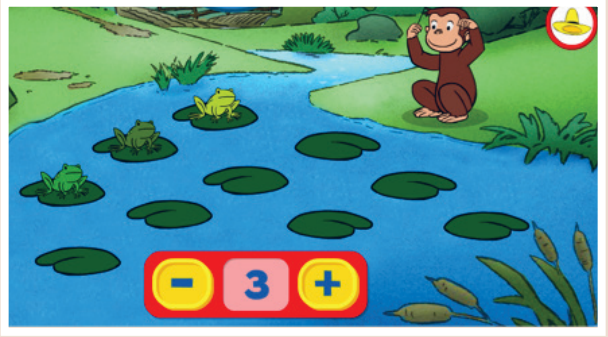
Crystals Rule



Skills

- Review counting from 1 to 5
- Review numeral identification 1 to 5

Ribbit



Skills

- Review counting from 0 to 10
- Review numeral identification 0 to 10

Overview

During **Computer Center Time**, pairs of children play focus games, reviewing math skills covered during the week. This week the focus games are ***Crystals Rule*** and ***Ribbit***. Since this is the first time children are using laptops to play games, model how to use the mouse to move and choose objects on the screen. Compare and contrast the movement of the mouse to the use of their fingers to move or choose objects on the Interactive Whiteboard (IWB). Encourage partner game play and help children focus on the math in the games.

1. Introduce the Computer Center

Introduce children to the area where they will regularly use the laptop computers, and establish Computer Center rules, such as: two children can play per computer; children should use headphones so they can hear the games; children should take turns choosing games and controlling the mouse.

Tell children that pairs are expected to collaborate, share, and take turns as they play, counting out loud or talking to each other to point out math in the games.

- *This is where we will set up laptop computers during Computer Center Time. You can work with a partner to play the games we try out on the Interactive Whiteboard. Here's how you get to the games.*
  (Model how to select a game from the website.)

- *Remember to work together and take turns using the mouse and choosing a game to play. I want to hear some good Math Detective talk when I come over, so be sure to talk to each other about the numbers, and shapes, and other math you see in the games.*
  (Model moving the mouse back and forth between the two children and make sure they know how to put on headphones.)

Model one example of how to count out loud while playing *Crystals Rule*, and how using a mouse is different than using your finger on the Interactive Whiteboard (IWB).

- *To answer May's question, I can use the mouse to click on the die and count as I slide it over to figure out how many I need altogether. One, two. I need two dice altogether. Now I need to click on the picture with the numeral 2 and two die.*
  (Model how to play one round of the game, talking about "clicking" the mouse and thinking out loud to figure out how to answer the question of "how many.")

Model one example of math talk out loud while playing *Ribbit*.

- *Let's count the frogs. One, two, three. There are three frogs altogether. Let's add one frog. Now there are four frogs altogether. Let's add another. Now there are five frogs altogether.*
  (Model counting as you add frogs.)

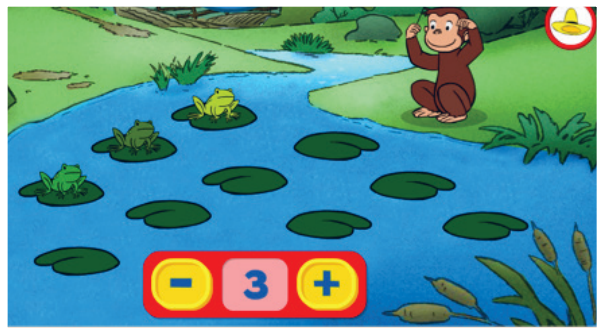
- *Let's take away one frog. Now there are four frogs altogether. Let's take away another frog. Now there are three frogs altogether.*
  (Model counting as you take frogs away.)

Encourage children to work independently in pairs.

- *Now you try with a partner!*

Challenge Game Play

Ribbit (Curious George)



George is playing maestro with an orchestra of frogs. Help him create music by changing the number of frogs on the pond—you can add frogs to the pond orchestra with the + sign or subtract them with the – sign. Adding up to 10 frogs to the pond will help children review counting from 0 to 10.

Overview

During **Circle Time**, play ***Ribbit*** with children on the ***Interactive White Board*** (IWB). As you demonstrate how to play the game, use this opportunity to talk about **counting** and **numeral identification from 0 to 10** using a number line.

Skills and other important points to cover

- Introduce number line from 0 to 10
- Introduce counting from 0 to 10
- Introduce numeral identification from 0 to 10

What you will need

- Interactive Whiteboard (IWB)
- Curious George: *Ribbit* game
- Classroom Number Line

Challenge Game Play

Timing Goal: 25 minutes

1. Warm-Up

Invite all children to the Interactive Whiteboard (IWB) area to play Ribbit, a new game on the Interactive Whiteboard (IWB).

Begin by reviewing counting from 1 to 5. Encourage children to count using their fingers. Then, introduce counting from 0 to 10 using a number line and then your fingers.

- *Let's practice counting to 5. How many fingers do we have altogether on this hand?*
  (Model counting pointing to your fingers on one hand from 1 to 5. Review the meaning of "altogether," using your fingers as an example.)

- *Okay, now, let's count higher, up to 10! Can you try counting with me?*
  (Model counting, pointing to the numerals on the number line first. Then count from 0 to 10 using your fingers. Remind children that 0 fingers means none of your fingers.)

2. Introduce Challenge Game

Model counting how many frogs there are altogether. Encourage children to count out loud with you.

- *Let's count the frogs. One, two, three. There are three frogs altogether.*
  (Model counting and pointing to each frog, emphasizing how many frogs there are altogether.)

Model adding and subtracting frogs to play *Ribbit*. Encourage children to count out loud with you when deciding how many frogs there are altogether.

Point to the numeral on the bottom right as a way to check how many frogs there are altogether on the screen.

- *Let's add one frog using this "+" sign. Now there are four frogs altogether. One, two, three, four. Let's add another. Now, there are five frogs altogether.*
  (Model counting as you use the "+" button to add frogs all the way up to 10. Say the new number of frogs and point to the numeral on the screen each time you add a frog.)

- *Now, let's take away one frog. One, two, three, four, five, six, seven, eight, nine. Now, there are nine frogs altogether. Let's take away another frog. Now, there are eight frogs altogether.*
  (Model counting as you use the "-" button to subtract frogs one at a time. Say the new number of frogs and point to the numeral on the screen each time you subtract a frog.)

Allow children, or several volunteers, to have a turn playing *Ribbit*.

3. Wrap-Up

Review the concepts covered in the challenge game—counting and numeral identification from 0 to 10.

- *Let's think back to what we learned today. We talked about counting, numbers, adding, taking away, and altogether.*
  (Encourage children to tell you what they learned from playing the game.)

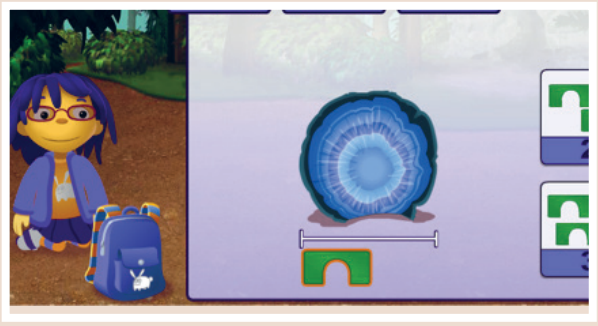
Count out loud from 1 to 10, and have children count with their fingers. Model counting using a number line.

Remind children they will have another chance to play the game with a partner during Computer Center Time.

- *Remember you can play this game with a partner during Computer Center Time!*

Computer Center

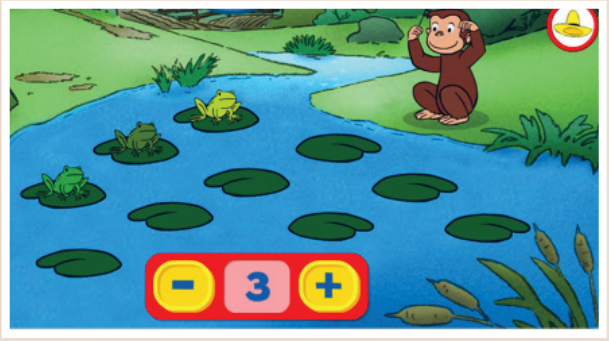
Crystals Rule



Skills

- Review counting from 1 to 5
- Review numeral identification 1 to 5

Ribbit



Skills

- Review counting from 0 to 10
- Review numeral identification 0 to 10

Keep in Mind...

During **Computer Center Time**, pairs of children play focus games ***Crystals Rule*** and ***Ribbit***. Children review math skills covered in the week.

Remind children to count out loud and to talk to each other about the math while playing the games. Encourage partner game play, and help children focus on the math in the games.