Welcome to Stuart Little: His Adventures In Numberland

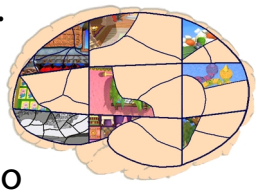
Why is Numberland so fun?

It's because Numberland is a big animated cartoon, but in *this* cartoon the child gets to **be** one of the characters -- Stuart!

And what's going on in Numberland?

Pretending they are Stuart, children explore Numberland and discover hidden places, a secret playground, and Numberland's games. A group of cartoon playmates makes the children feel at home in Numberland, playing games with them and patiently helping them correct any mistakes.

As the children play the games with the cartoon playmates, they earn "brain power," which they see filling up Stuart's brain.



When they have enough brain power, they can use Numberland's powerful Imagination Machine! This machine turns "imagined" toys into "real" toys, which the children can then sell in Bee's toy store.

So in a nutshell - - they explore and explore, learn how to play games from cartoon playmates, earn brain power, make toys, sell them to customers, and learn math the whole time... And they never seem to get tired of it!

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STUART LITTLE:
Special thanks to Sony Pictures Imageworks for the Original 3D model of Stuart Little

Table of Contents

1 Getting Started

Because Stuart Little: His Adventures in Numberland is a Windows 95™ (or higher) application, getting started is easy… just start our installation Wizard, answer a few routine questions (99% of users take the default answers), restart the computer, and play with Stuart!

First of all, you will need to meet the following minimum computer system requirements:

You need at least:

- **200 Mhz Pentium computer**
- **16 MB RAM**
- **45 MB free hard disk space**
- **8X CD-ROM drive**
- **Windows 95 (or higher)**
- **Windows-compatible sound card.**

Of course, sometimes things go wrong and if they do, then the Troubleshooting section will help. There are several simple things that can go wrong (like not enough hard disk space), and there are several more complicated things that can go wrong, which have to do with the Windows software needing to run one of the main engines in Stuart – Microsoft DirectX™.

Installation Instructions

Section 1 If this works, skip section 2.

1. Close all applications before installing.
2. Insert the CD-ROM. The set-up program should start automatically. If not, then go to **Run** in the **Start** menu and under your CD-ROM drive letter type **setup.exe** (for example, **d:\setup.exe**, if d: is your CD-ROM drive) and click **OK**. Then follow the instructions on the screen.
3. If a dialogue box appears with the question asking whether you want to install a new driver (see picture below), do one of the following:

   Press **No** if the text says (**not recommended**).

   Press **Yes** if the text says (**recommended**).

4. When the installation program is finished, restart the computer.
5. The game is now installed. You will find a StuartLittle: His Adventures in Numberland icon on the Windows desktop (see icon below).
6. Double click the icon to start playing.

Section 2 Read this section only if Stuart doesn't run after installation.

Using Section 1 alone, Stuart will run on most computers. However, if the game does not run properly (it freezes or crashes in the middle of the game), then you might need to replace some drivers. Stuart utilizes Microsoft DirectX™ 5, which requires that your audio and display have the appropriate DirectX™ drivers. You will need to rerun the DirectX™ Setup program to replace the drivers.

1. Go to **Run** in the **Start** menu and under your CD-ROM drive letter type **dxset.exe** (for example, **d:\dxset.exe**, if d: is your CD-ROM drive) and click **OK**.
2. When the dialogue box appears with the question asking whether you want to install a new driver, always answer **Yes**. Please make a note to yourself as to which driver is being installed or replaced (display driver / audio driver / both), so you can restore them later. Microsoft DirectX™ Setup will detect the drivers that best matches your audio and display cards and install them (click **OK** as it asks you about each separate driver). This process is reversible.
3. Once the DirectX™ Setup is complete, restart your computer and rerun Stuart.

If after following the steps above the program still doesn't run, then **Stuart Little: His Adventures in Numberland** will not run on your computer. At this point you should restore your original drivers using the following steps.

1. Double click **My Computer** and double click **Control Panel.**
2. Within **Control Panel,** double click **Add/Remove Programs** icon.
3. Find **DirectX™ Drivers** on the list and select it (scroll if you don't see it), then press **Add/Remove** button. A **DirectX™ Setup** window will appear.
4. In **DirectX™ Setup** window, depending on which driver had been replaced by the previous installation (display driver / audio driver / both), click **Restore Audio Drivers** and/or **Restore Display Drivers** button if active, then click **OK**.
5. Restart computer if not restarted automatically.

For more information about DirectX™, visit:

http://www.microsoft.com/directx/

Uninstall Guide

Please follow these steps to uninstall Stuart Little: His Adventures in Numberland from your computer:

Go to the Windows **Program Group** where the game is located (the default is called **Stuart Little: His Adventures in Numberland**), you should find an item called: **unInstall Stuart Little: His Adventures in Numberland**. Double click/run that item to uninstall.

Having Trouble Running The Game?

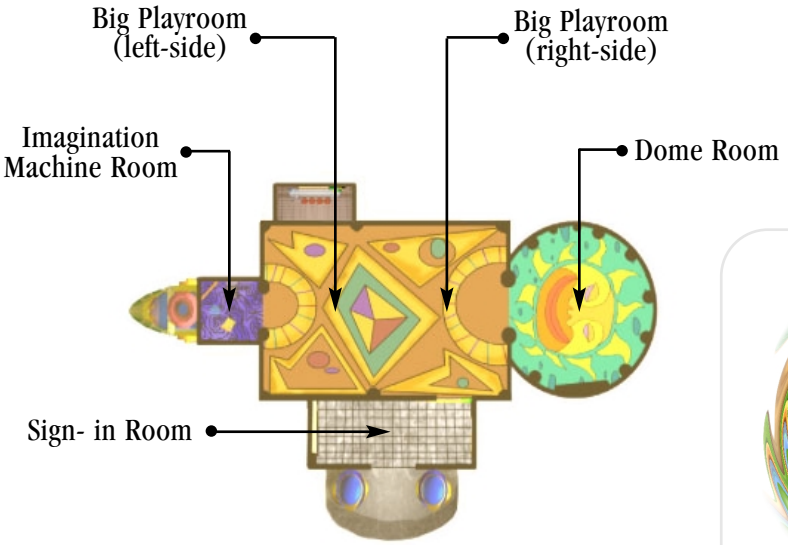
If you encounter a problem running the game (e.g., the game freezes or stops unexpectedly), first make sure that your Sound Card Acceleration is set correctly. The easiest way is to disable the acceleration with the following steps:

1. Go to **Start > Run**, then type **dxdiag.exe**, then click **OK**.
2. Click **Sound** tab.
3. Set the **Hardware Sound Acceleration Level** to the lowest setting by dragging the slider all the way to the left to "**No Acceleration**."
4. Click the **Exit** button, then restart the game.

If this does not help, refer to the Troubleshooting section of this manual

2 Inside Numberland

Numberland is designed to stimulate children's natural enjoyment of exploration and love of surprises, so this Numberland map is really for adults only. When children play, learning about Numberland is easy and self evident from the context. The games are self teaching with the help of the animated playmates. Thus, in the games, there are no words the child must read and almost no icons to explain. In our experience, children really enjoy spending several days of exploration, maybe even longer, discovering all the different locations, games, and surprises in Numberland. But as a parent or teacher, you may want to use the maps and pictures below to get an immediate idea of what's in Numberland at a glance.



Numberland Map

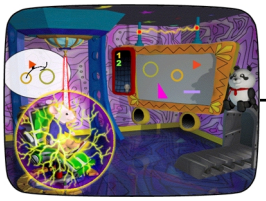
Stuart's Secret Playground

At a Glance

Bee's Toy Store

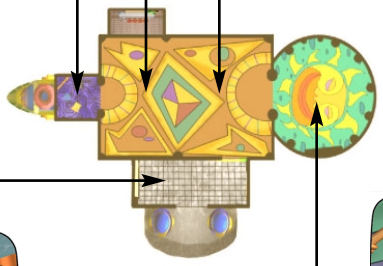
Big Playroom (left-side)

Dot-to-Dot (2 secret games will be revealed upon completion of Dot-to-Dot)

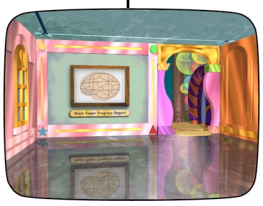


Imagination Machine Room

Big Playroom (right-side)



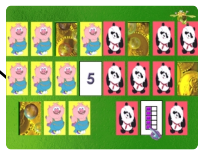
Numberland Map



Sign-in Room

Dome Room

Falling Blocks Subtraction



Treasure Chest Card Game

Tree Climbing Game

Dinoroo's Bridge Game

Falling Blocks Addition and Subtraction

Stuart's Secret Playground

Flower Game (Bug Races)

Getting Around

In Numberland, getting around is so simple most kids learn how without even realizing it. You only need to know three "traffic rules":

When this little open doorway appears in the lower left hand corner of the screen, you may click it to leave the entire game. (The escape key on the keyboard does the same thing)

During a specific game, this icon can be clicked to return to wherever you came from – to go back one level.

These little footprints appear on the floor of three rooms. Follow the footprints (click them) to go back through a door you just came in from. The footprints are just a marker to help you remember the door is behind you and not in sight.

During any animation you may click the mouse to jump to the end of the animation. For example, during the introductory flight around the island, you may click to jump to the sign in.

Numberland Secrets

Exit	Click the open-door icon in the lower left corner of the screen; you will leave Numberland. During a game, click the little toy soldier beside the closed-door icon and the toy soldier will take you back to where you came from. You can also use the "Esc" key on the keyboard to exit.
Pause	Press the "spacebar" on the keyboard to pause the game for as long as you want. Press the space bar again to continue playing where you left off.
Music	Press the "M" key on the keyboard to turn off the music. Press it again to turn the music back on.
Skip	Click the mouse during most long animations to skip to the end of the animation. For example, click during the introductory flight around the island to skip immediately to the sign in.
Printing	If you are going to print in Numberland, be sure to turn your printer on after you start Stuart Little: His Adventures in Numberland. If you try to print while your printer is not connected or not turned on, the program will be minimized. To continue playing, click the minimized "Stuart" icon on the menu bar at the bottom of the Windows screen.
Surprises	Look for surprises and hidden games. What happens when you finish all the pictures in Dot-to-Dot? What do you do in the cave to get to ride the roller coaster around the top of the toy factory? What happens if you fill your brain with brain power?

3 Playing and Learning

Overview

One effective way for children to first learn about math is through everyday experiences: where knowing about numbers makes sense to the child; where the child has a reason to be interested; where each new challenge is just "two or three inches" beyond the child's level, instead of "20 to 30 yards" beyond; and where an adult patiently interacts with them, creating the realization that someone important to the child values math and enjoys using numerical concepts.

So, these are the main ingredients in Numberland:

- meaningful contexts where knowing about numbers makes sense;
- motivating, attention-keeping activities;
- a progression of overlapping math content -- inches apart, not yards apart;
- and many opportunities for the child to learn and self-correct mistakes by imitating the animated playmates, and many opportunities for the parent and teacher to explain a concept as it is presented in a game.

Motivation and Attention

Children are instinctively curious, fun-oriented, and interested in learning about almost everything they're ready for. A good educational game is designed to hold their attention, motivate them, and help them to enjoy learning.

The motivating structure in Numberland is the application of knowledge from several sources – numerous applications of systematic knowledge on attention and motivation; the common-sense knowledge of the authors, artists, and musicians who love children; the not-so-common sense knowledge of kindergarten teachers who have had years of experience teaching children; and most importantly the children themselves, who played the hundreds of versions of the games and told us by their actions what will motivate them and what will not. It took all of these sources combined to create the several layers of motivating and attention keeping structure in Numberland.

Brain Power

In Numberland, the top of the motivation "food chain" is Stuart's brain power. As children play the games, they learn they are accumulating "brain power", which is displayed visually in Stuart's brain. After they have played a game several times, a corresponding section of Stuart's brain becomes full of brain power. Then they can go to the imagination machine room and turn an "imagined" toy into a "real" toy. What's more, they can then sell the toys to customers in Bee's toy store. The accumulation and harnessing of Stuart's brain power in the imagination machine encourages children to play all the games, not just the easiest ones, because they can fill and refill Stuart's brain many times.

Role Playing

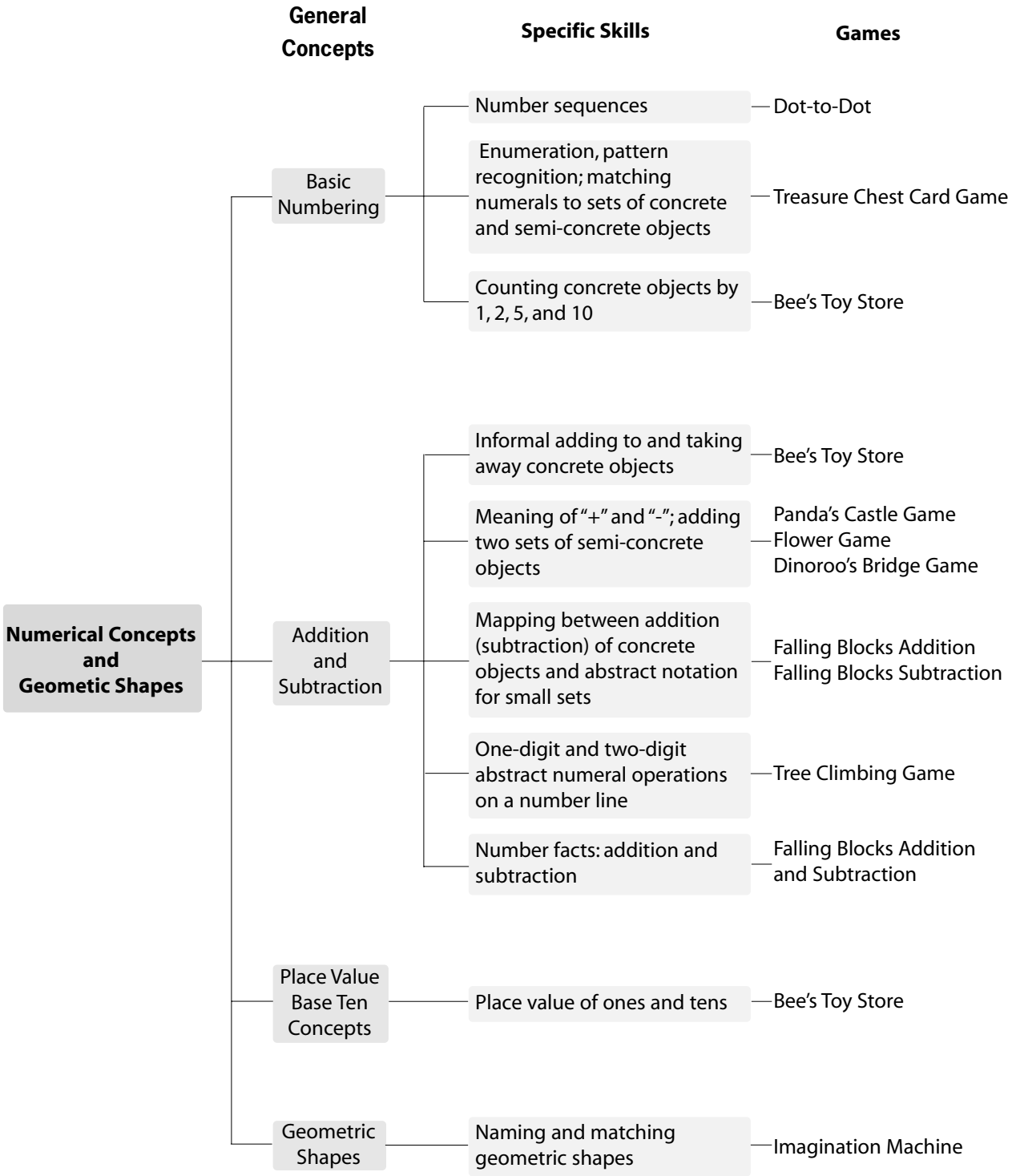
Children love role playing and pretending. And especially they love cartoons. We have combined these -- Numberland is just a special kind of cartoon where the child can actually play the role of one of the characters – Stuart!

Meaningful Contexts	Meaningful contexts are important for math learning, not only from the standpoint of cognition and assimilation of new information, but also because meaningful contexts are motivating. To the best of our ability, numerical information is represented in Numberland in meaningful situations where there is a reason to know about the concept or skill.
Internal Rewards	Each game and activity was designed so that completion of a task itself is a reward.
Surprises	There are hundreds of little sights and sounds that surprise the child, creating a "what's next" expectation.

Inside the Games

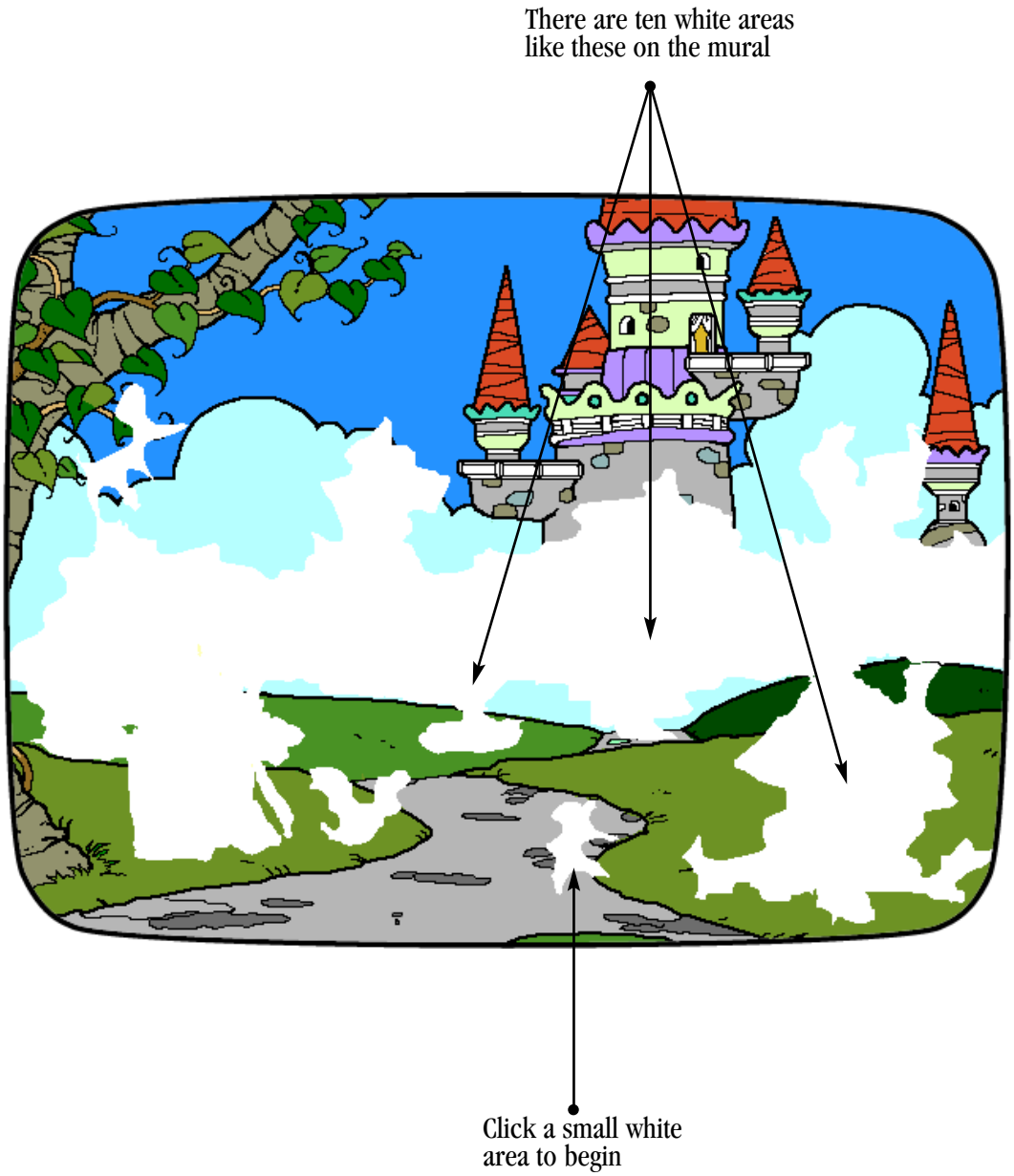
What kind of math content should be learned by preschool and kindergarten children, and in what order? Our answers to these question were taken from educational research, including a body of scientific knowledge called Cognitive Development Research. The blue print for Numberland's content is shown on the following pages.

Figure 1: Conceptual framework for games in Stuart in Numberland



Some of the specific concepts and skills taught by Numberland's games are shown in the table below.

Concepts and Skills	Games: Ages 3-5				Ages 4-6				Ages 5-7	
	Imagination Machine	Dot-to-Dot	Treasure Chest Card Game	Bee's Toy Store	Panda's Castle Game	Falling Blocks Addition	Falling Blocks Subtraction	Flower Game	Tree Climbing Game	Dinoroo's Bridge Game	Falling Blocks Addition and Subtraction
Naming and matching geometric shapes size comparison	●										
Eye-hand coordination		●									
Number sequences		●									
Numeral naming		●									
Enumeration			●								
Pattern recognition			●								
Association of numerals to concrete objects			●								
Association of numerals to semi-concrete objects			●								
Focusing attention and following a sequence of directions			●	●							
Counting objects by 1's, 2's, 5's, or 10's				●							
Informal adding to and taking away concrete objects				●							
Place value of 1's and 10's				●							
Base 10 concept				●							
Counting semi-concrete objects					●			●		●	
Adding two small sets (0-3) of semi-concrete objects					●			●			
Exposure to meaning of "+" or "-"					●	●	●	●	●	●	●
Reading a "+" or a "-" symbol and moving forward or backward on a path					●			●		●	
Modeling addition/subtraction by mapping abstract notation on to concrete blocks						●	●				
1±0=1, 2±0=2...n±0=n						●	●				●
Commutativity of addition, e.g., "2+3" = "3+2"						●					●
Getting the answer to n±1, n±2, n±3						●	●				●
Representing quantity on a numbered path									●	●	
One digit and two digit addition and subtraction on a number line									●	●	
Numerical reasoning										●	
Explicit memorization of addition and subtraction number facts with sum or difference not exceeding 10											●


There are ten white areas like these on the mural
Click a small white area to begin

Close Ups
Let's take a closer look at the games...

Dot-to-Dot

Overview

For the Kids

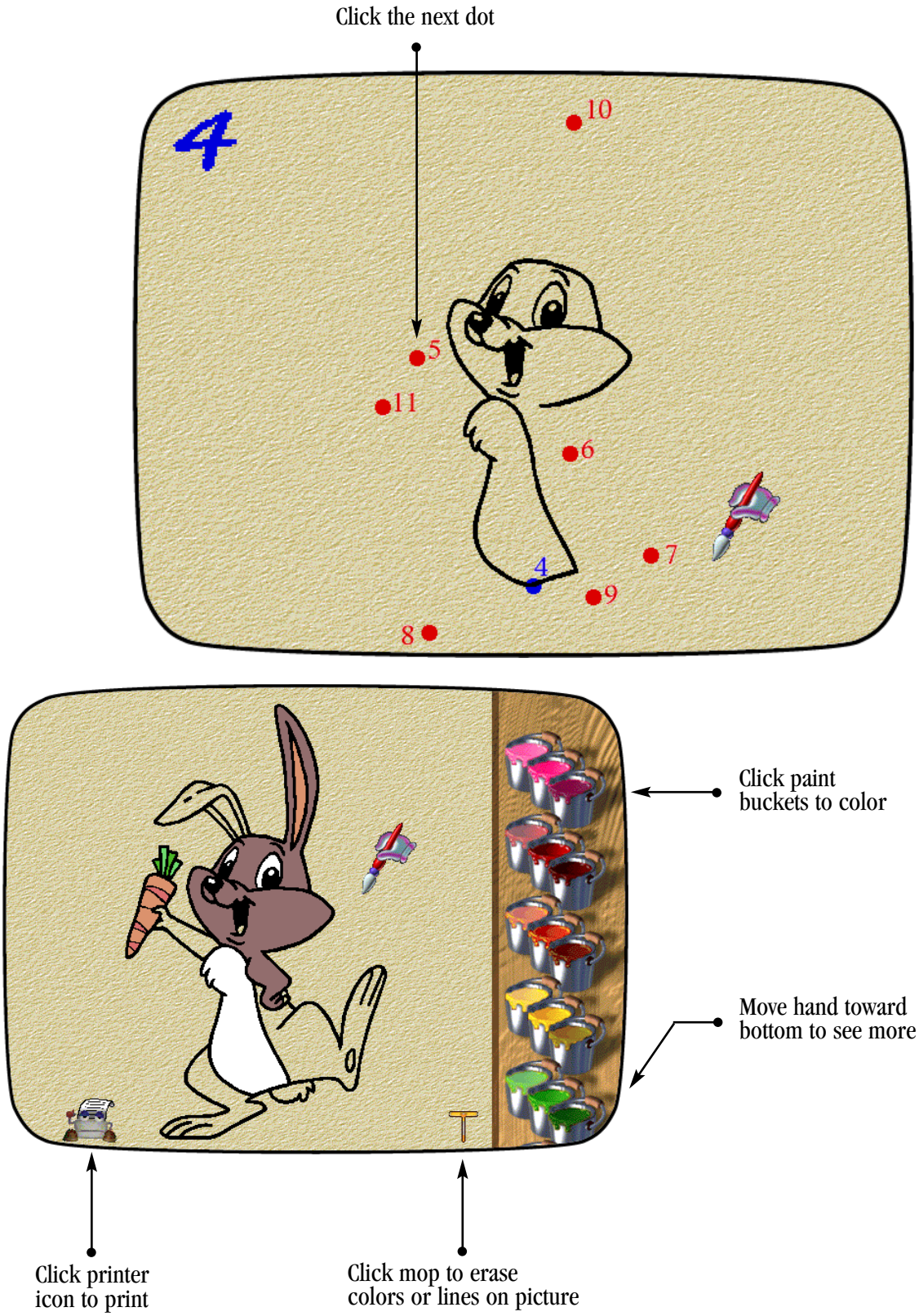
Dot-to-dot gives you the chance to draw like an artist by simply connecting the dots. Ten white areas appear on the colored background of a mural. Clicking on a white area will display dots that can be connected to form a picture, which can then be colored. Just connect the dots, and color your picture like a pro. What a joy to see your artistic work shown on the mural in Numberland! When all the pictures are completed, the door of the castle and the mushroom house open - - you can go inside and play games with cartoon playmates.

Concepts and skills

- Number sequences
- Eye-hand coordination
- Reading numerals, one digit or two digit not larger than 20

Cognitive corner

Dot-to-dot is the easiest, but most fundamental game in Numberland. Children must memorize the sequence "one, two, three…." before they can have fun with the other math games. A toddler already has enjoyed reciting the number sequence, before understanding that the number "one" represents one thing. At this time, number sequence is no different to them than the alphabet sequence. The quantitative meaning of the numbers gradually will sink in as the child

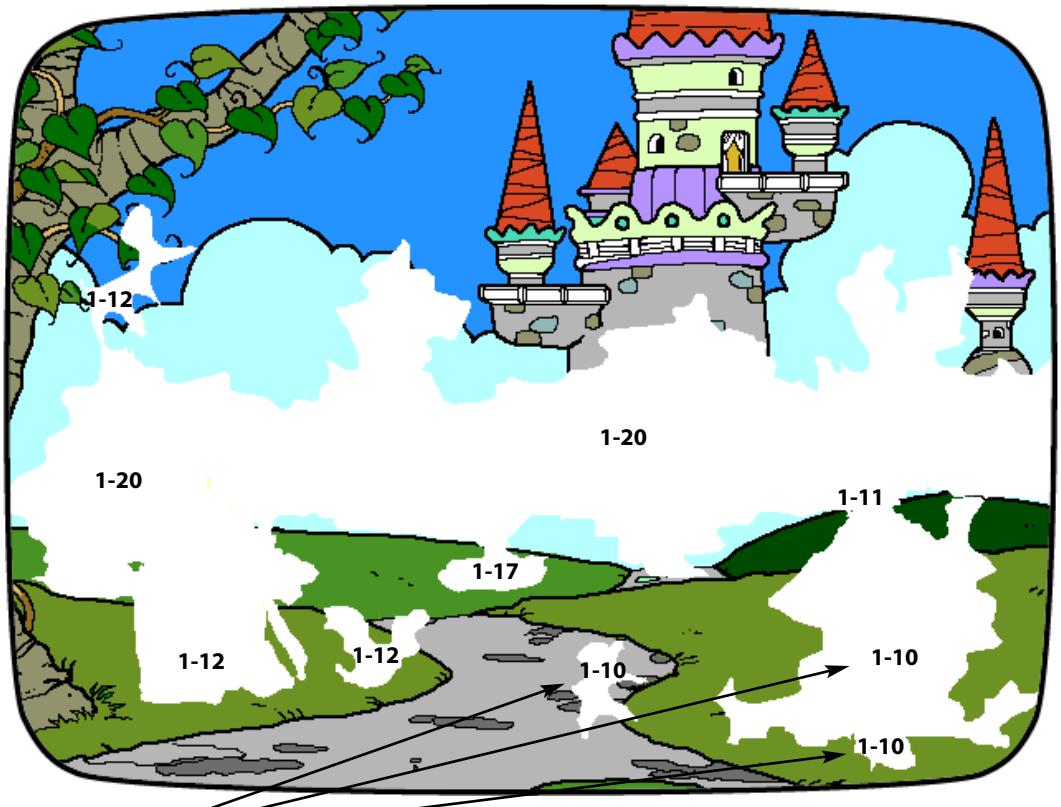

Click the next dot
4
10
5
11
6
7
4
9
8
Click paint buckets to color
Move hand toward bottom to see more
Click printer icon to print
Click mop to erase colors or lines on picture

applies the number sequence to actual counting situations. If you think memorizing the number sequence is a simple task for young children, just give the following arbitrary sequence a try: "lul, laa, buy, bay, bee, lol, lee, pop, taa, boo." Now you probably have a taste of what the little guys are going through. The sequence would be difficult to memorize because there is no meaning attached to it, which is what the child experiences during early exposures to the number sequence. But if you were told that sequence was made from "Lullaby baby, lollipop taboo", you could remember the sequence instantly, because meaning has been attached to it. (Stern, 1949, p.12, Children Discover Arithmetic). In a similar way, all the games in Numberland are designed to help the child attach meaning to numerical information.

Corrections

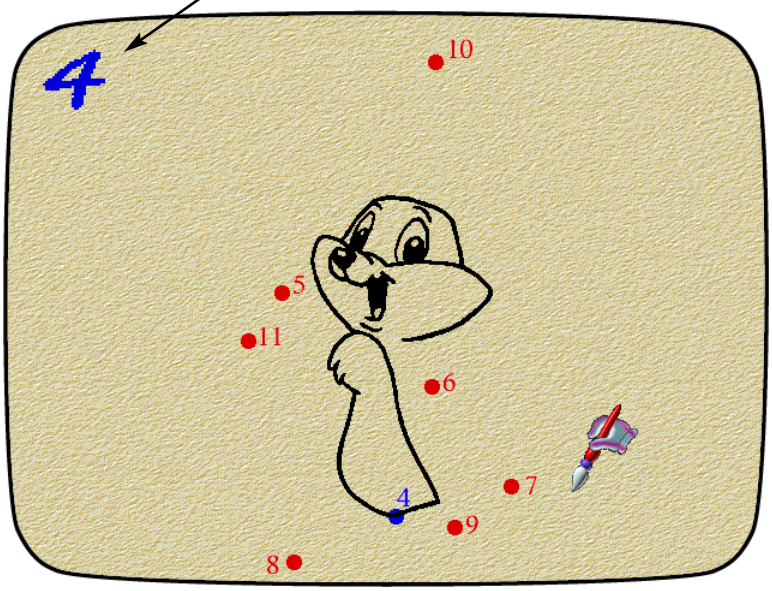
If children click a wrong number, I'll gently say "mm, mm". If the next number is not clicked after 30 seconds, I will sparkle the correct number as a hint.

When you complete all the dot-to-dot pictures, there are two hidden games waiting for you!



1 Start with easiest number sequences from 1 to 10

2 Numeral recognition and naming



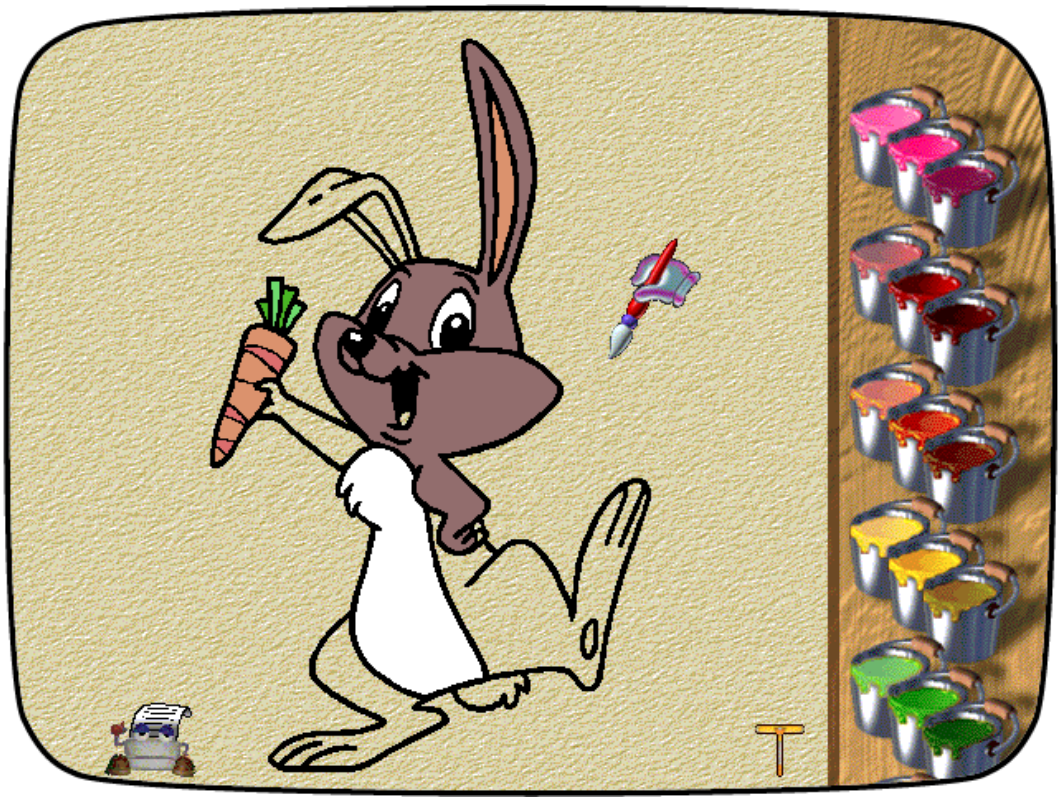
Using the Game to Teach
Focal Points for Parents and Teachers

1 **Start with easiest number sequences from 1 to 10**

The size of the number sequence is written in each of the 10 white areas in the picture on the preceding page. For children just learning to recognize the written numerals from 1 to 10, you can help them start with the small white areas, which are labeled 1-10 in the pictures.

2 **Numeral recognition and naming**

To help reinforce numeral recognition and numeral naming, point out the large blue numeral that appears in the upper left corner each time a dot is connected. As children begin to work on the more difficult pictures, this is a good opportunity to show them how to recognize two digit numbers – first by looking at the left digit, then looking at the right digit, and saying the numeral name.



3 Connecting the dots again

4 Coloring a picture again

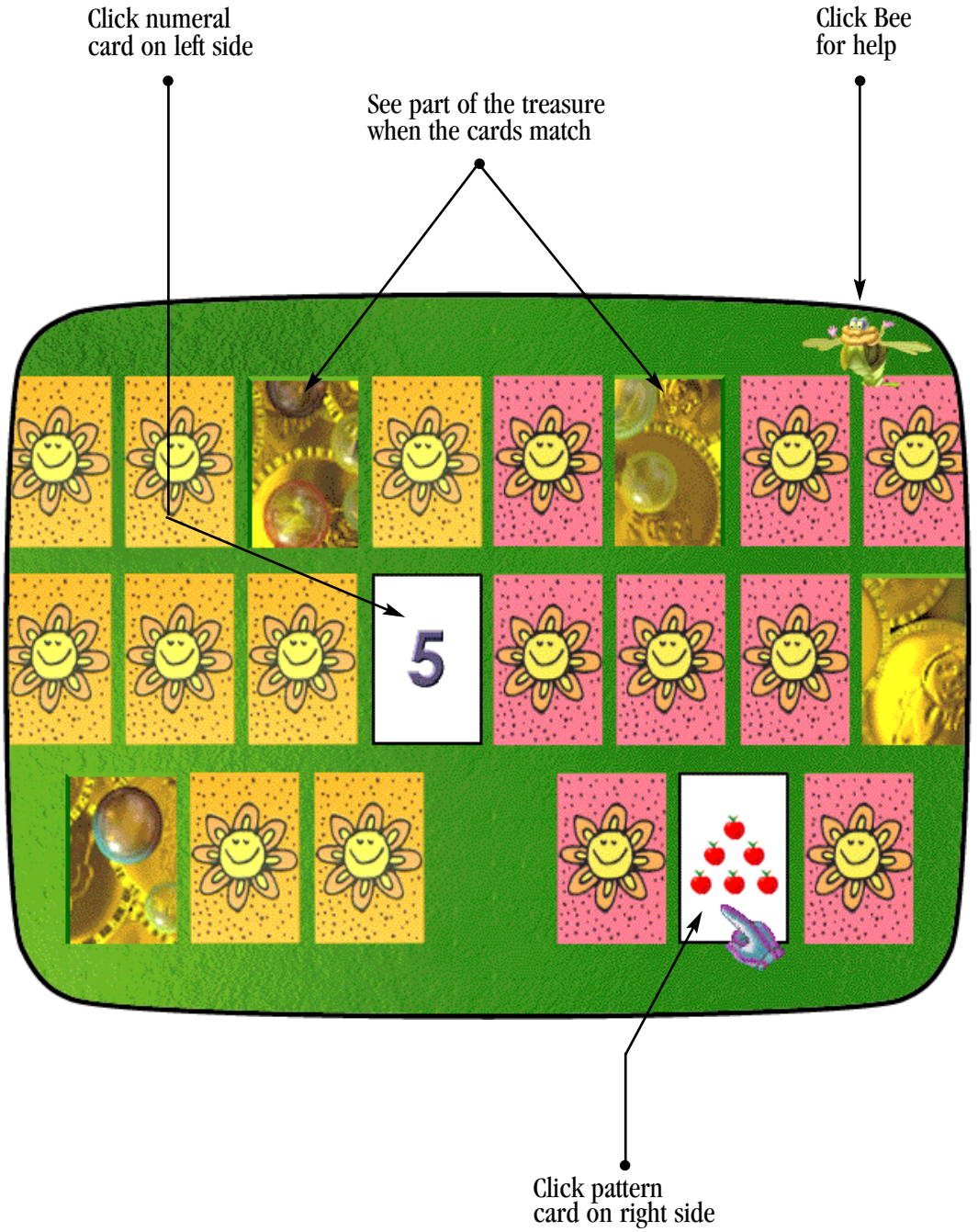
3 Connecting the dots again

After the dots are all connected, ask if the child would like to connect the dots again. You can erase the connections between the dots by clicking the little yellow mop in the bottom right-hand side of the screen.

After the dots have been connected, ask if the child wants to click the printer icon in the lower left-hand side of the screen. The picture can then be printed and colored by hand.

4 Coloring a picture again

After coloring a picture, ask if the child would like to color it again. You can erase the colors by clicking the mop in the bottom right-hand side of the screen. You may need to help children with very small areas, and show them that coloring can be made easier by dragging the paint brush over several areas. If you have a color printer, ask if the child wants to click the printer icon in the lower left-hand side of the screen to print their color picture.


Click numeral
card on left side
Click Bee
for help
See part of the treasure
when the cards match
5
Click pattern
card on right side

Treasure Chest Card Game

Overview

For the Kids

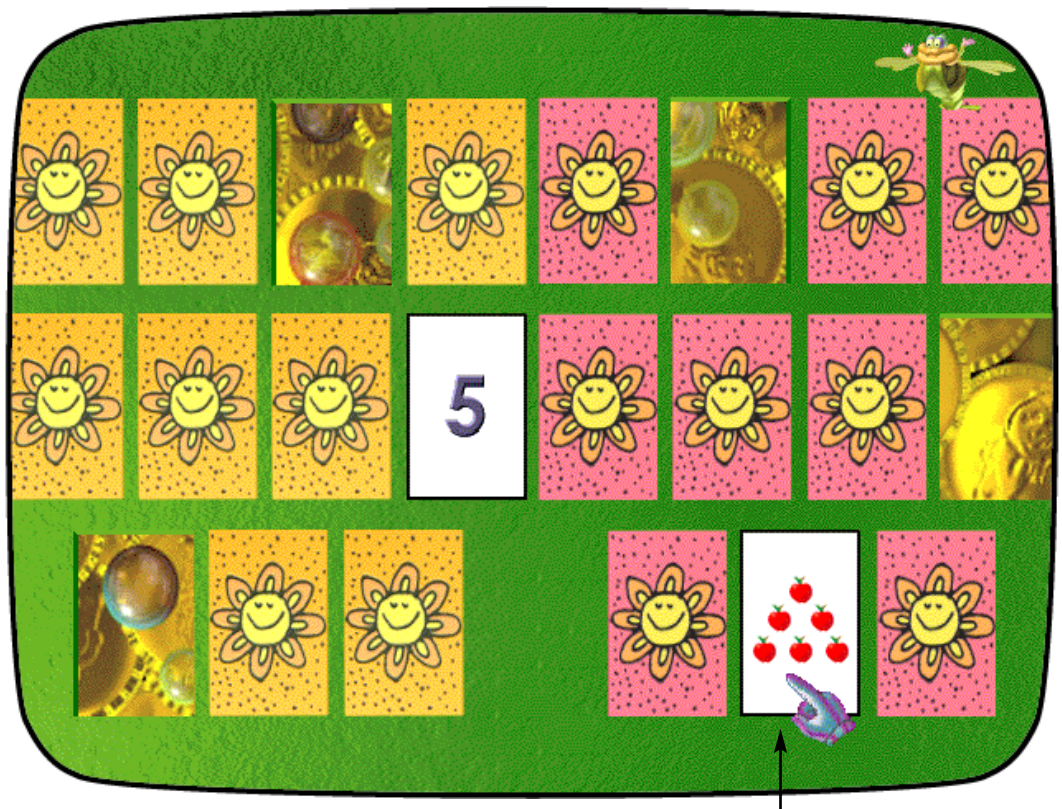
The treasure chest card game is a time-tested favorite concentration game. Open the treasure chest, watch the dealer deal the cards, play the game, then dig out the treasures! Every time you match a number card and a pattern card, you'll see more of the treasure inside the treasure chest. If you have any trouble remembering the cards, just ask the bee, who is always there to help.

Concepts and skills

- Enumeration
- Pattern recognition
- Association of numerals to concrete objects (e.g., apples)
- Association of numerals to semi-concrete objects (e.g., tiles)

Cognitive corner

People use numbers to quantify objects. For example, we say "Here's 5 apples" or "There are 8 rabbits". Numbers are abstract entities that can be used to refer to different kinds of objects in different configurations. In this game, we use two kinds of representations for numbers: structure and variety. In the variety representation, numbers are associated with concrete objects arranged differently from trial to trial (e.g., 6 apples in a triangle or 4 butterflies in a square); the child has to rely on counting to find out if the numeral card matches the pattern card it represents. In the structure representation, numbers are represented in a grid with two columns of five, containing semi-concrete objects such as tiles. The child can take advantage of the structure of the 2 by 5 grid to quickly figure out the number of tiles in all. The variety cards encourage counting whereas the structure cards help the child develop a flexible numerical sense.



1 Focusing attention and following directions

2 Helping children use their memory

Corrections

Each time the child makes an incorrect match, I'll softly say "aww", then the cards turn over again. After five incorrect matches in a row, I'll say "You've missed a bunch, want some help matching cards? Just click me". If the child clicks me at that time, I will turn over the largest remaining matching pair, explaining how to play. If the child tries to turn over two cards from the same deck, I will gently say "mm mm".

Using the Game to Teach

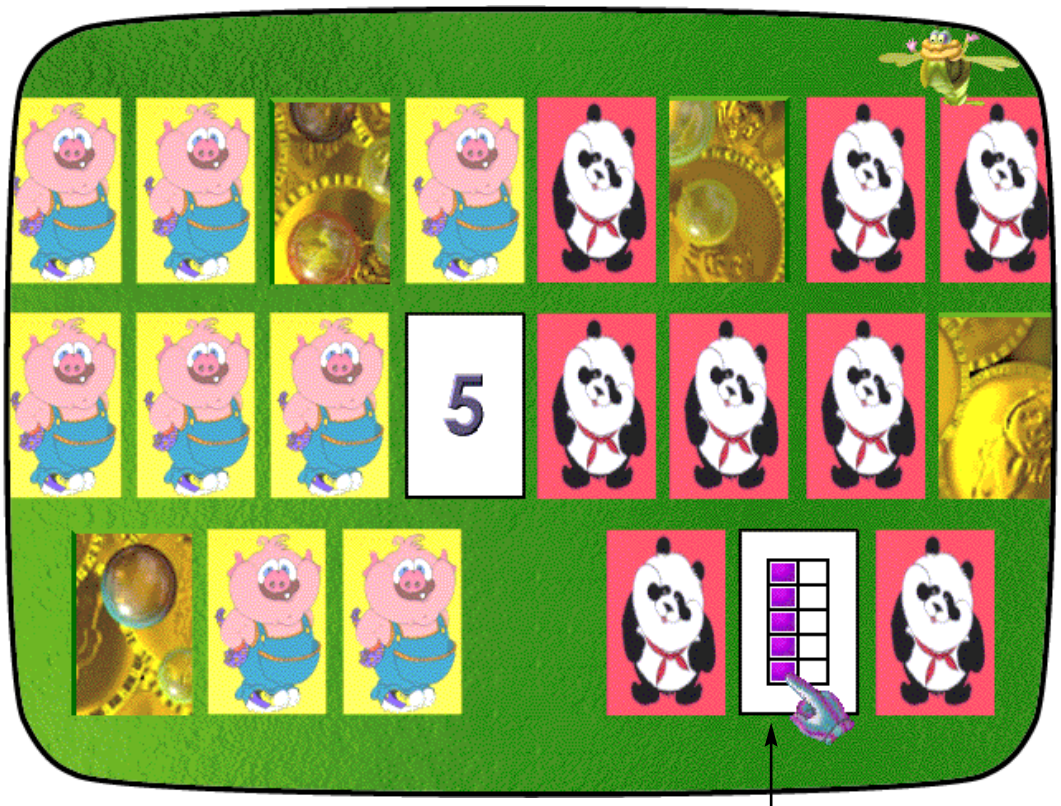
Focal Points for Parents and Teachers

1 Focusing attention and following directions

Some children may have trouble easily following the instructions and repeatedly will try to turn up a card from the same set. This is a good opportunity to help the young child learn to focus on the task of picking one card from each set.

2 Helping children use their memory

Young children, in particular, at first feel overwhelmed by the number of cards and do not know how to use their memory to play the game. In this case, it may help if an adult asks, as an example, … "Where is the six?"… immediately after the six is turned back over, to help them understand that they should try to remember where things are. Even remembering the location of just one pattern card can help establish a clear idea of what to do and will help build confidence.

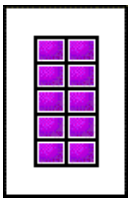


3 Using the tile pattern cards

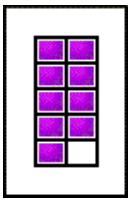
3 Using the tile pattern cards

This game alternates between pattern cards with concrete objects and pattern cards with an array of 10 tiles, arranged in two columns of 5. To show the child how quickly they can recognize the number of tiles, point out the regular shape. For example, show the child that when both columns of five are full, it's 10; or when all but the last are filled, it's 9; when only the left column is filled, it's 5; or when all in the left column but the last is filled, it's 4.

This is 10

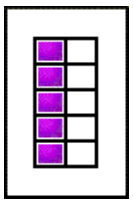


This is 9

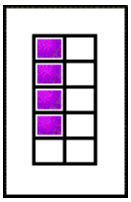


9 is 10 take away 1, or
9 is 5 and 4.

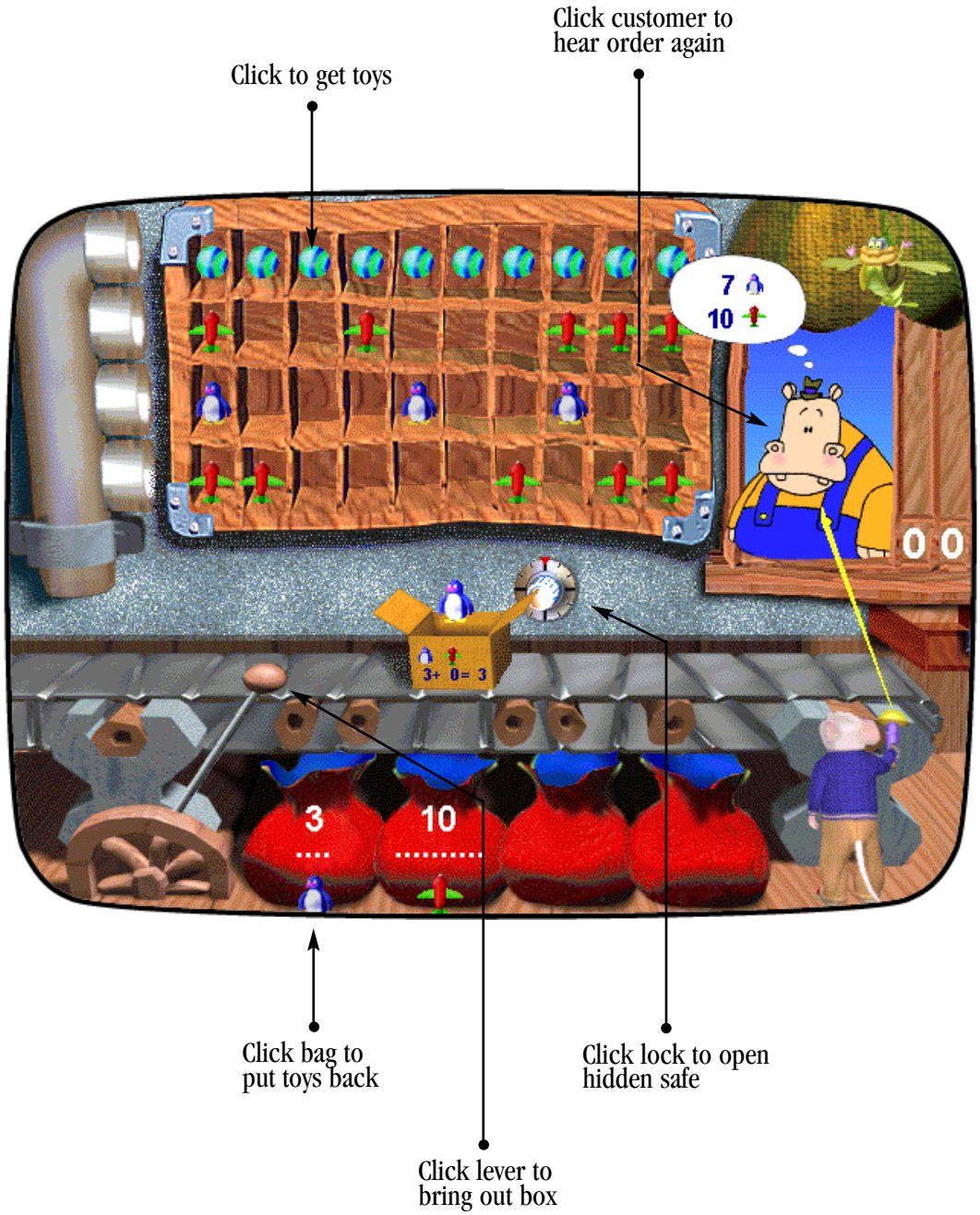
This is 5



This is 4



4 is 5 take away 1, or
4 is 10 take away 6.


Click customer to hear order again
Click to get toys
7
10
0 0
3+ 0= 3
3
10
Click bag to put toys back
Click lever to bring out box
Click lock to open hidden safe

Bee's Toy Store

Overview

For the Kids

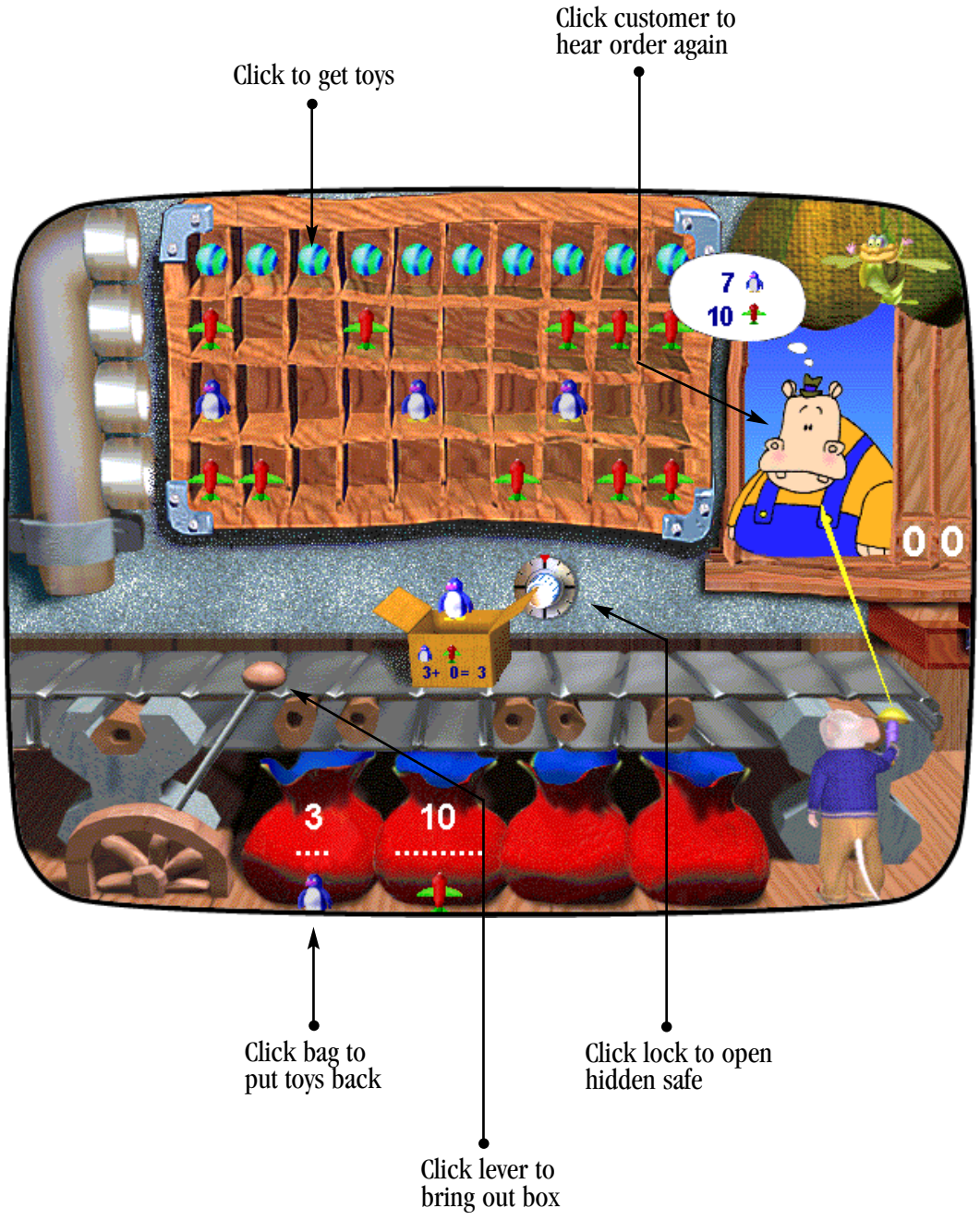
Come play in Bee's pretend toy store. Give Bee a hand taking orders from the customers, getting toys from the toy bin, and putting them back from the toy bags. Then box up the toys and collect money from the customers. Watch how the coins turn into rolls of ten in the register.

Concepts and skills

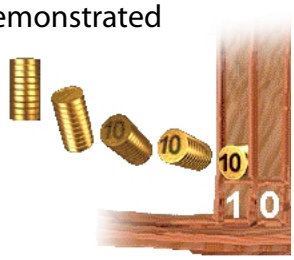
- Counting concrete objects by 1, 2, 5, and 10
- Informal adding to and taking away concrete objects
- Place value of ones and tens
- Base ten concept
- Exposure to two-digit and three-digit numbers

Cognitive corner

Before having formal math education in school, children already have developed fairly solid informal numerical senses from everyday situations. Bee's toy store simulates a real life situation where the child needs to count and add to/take away toys following customers' requests. These experiences will be helpful later when the child is ready for the abstract operations of addition and subtraction. As the child continues, the counting will automatically progress from counting by 1's to counting by 2's, 5's, and 10's as the customers' order gets bigger. This experience helps the child appreciate and realize the usefulness of counting by larger number units. This game also exposes the child to unique aspects of our numeration system: the base ten and place value concept. One difficult concept the child needs to learn is that the position of numbers makes a difference. The number


Click customer to hear order again
Click to get toys
7
10
0 0
3+ 0= 3
3
10
Click bag to put toys back
Click lever to bring out box
Click lock to open hidden safe

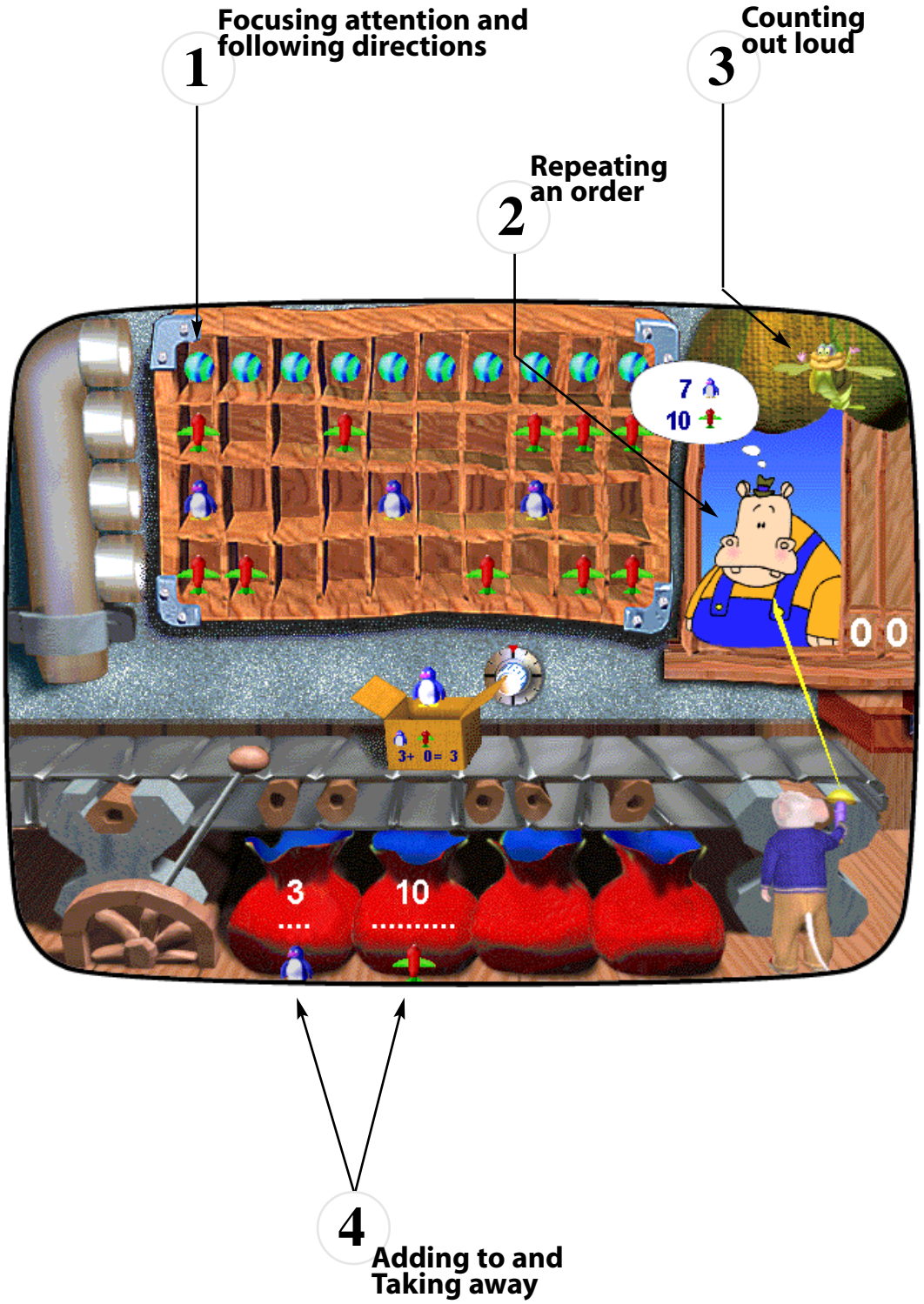
"23" is not the same as "32", and "23" is called "twenty three" not "two three", meaning there are two tens and three ones. These concepts are demonstrated when coins fly into the register. The coins first land in the right-hand column and count the "ones". When ten coins have accumulated, they snap into a role and fly over to the left-hand column, where the roles of ten are counted. So the child learns that the left-hand digit counts the tens and the right-hand digit counts the ones.



Corrections

If children forget the next step, I'll tell them what to do after a short wait. If they incorrectly count out the toys, the customer will tell the child "That's not what I wanted, I want 5 rocking horses", then they are given an opportunity to try again. If they do not get the correct order after three tries, I will show them how to count out the correct order.

Each customer has a sensitive area. Can you find it? There is a safe where the child can deposit the money collected from the customers.


1
Focusing attention and following directions
2
Repeating an order
3
Counting out loud
4
Adding to and Taking away
7
10
3+ 0= 3
3
10
0 0

Using the Game to Teach
Focal Points for Parents and Teachers

1 Focusing attention and following directions

This activity is useful in helping children focus their attention and follow a sequence of simple directions. When a customer orders a specific number of toys, the first thing a child must do is bring down the correct number of toys from the toy bin. At this point, many children will bring down too many of one toy, or lots of toys of every type, just to play. This first step is an opportunity to practice focusing the child's attention by explaining … "The customer is waiting for the toys they ordered… If you can give him the 5 rocking horses he wants, he will pay you some money and you can help the bee count it," and so on. Some children must help several customers before they are able to follow all the directions.

2 Repeating an order

If the children cannot remember what the customer ordered, remind them to click the customer to have the order repeated.

3 Counting out loud

After your child collects the money, the Bee will ask the child to "Count with me", as the coins fly into the money holder. This is a good time to encourage your child to practice counting out loud.

4 Adding to and Taking away

Sometimes a customer will change their order and want more or fewer toys than they originally asked for. The customer might say "Oh, I changed my mind, I want 6 rocking horses please, not 10 rocking horses". Rather than just "taking away" 4 rocking horses to leave 6, some children will put back all 10 rocking horses, then start over. This is an opportunity to teach "take away" in a meaningful context where it saves time and effort to simply put some toys back, instead of starting over.


6
Counting by 2s, 5s, and 10s
7
How do we count rolls of 10 coins?
7
10
0 0
3+ 0= 3
3
10
5
How many dollars will we collect?

5 How many dollars will we collect?

Occasionally a customer will ask for two kinds of toys in one order –"Can I have 7 penguins and 10 airplanes?". After the child has clicked the lever to box up the toys, you can ask …"How many dollars will we get for this order?". As the toys are boxed up, you can point out the numbers on the front of the box that change as each toy jumps into the box, so when all the toys are in the box the numbers will print "6 + 4 = 10".

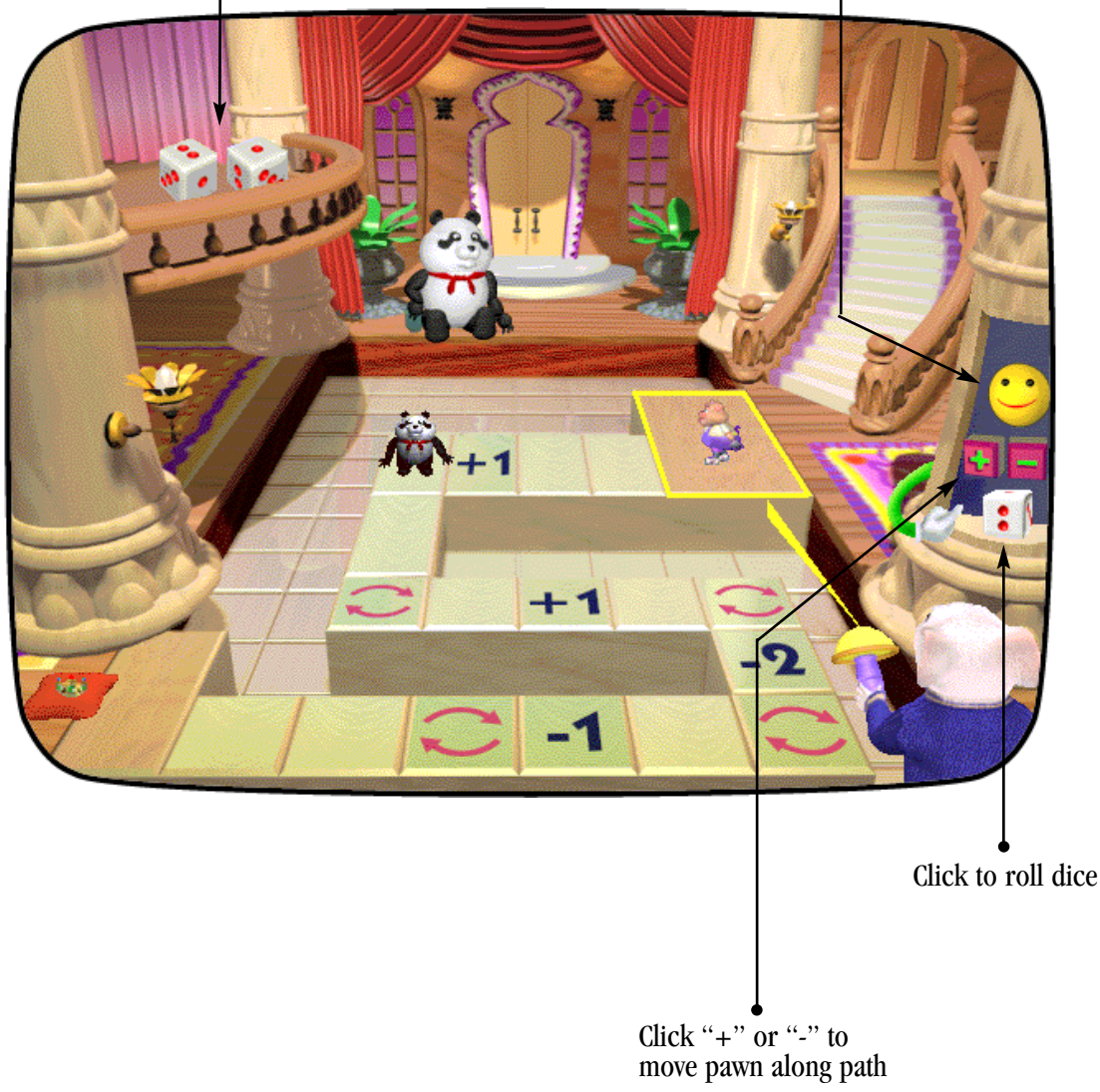
6 Counting by 2s, 5s, and 10s

As the child continues to play, the orders get larger and larger until some customers will ask for 20 to 40 toys. For the large orders, the toys move from the toy bin into the bags by 2s, 5s, and 10s. This presents a meaningful context in which to show the child how to count by these larger units. You can encourage the child to count along with Bee and explain the time saving advantage of counting by units larger than 1.

7 How do we count rolls of 10 coins?

When 10 or more coins are collected from the customer, the roll of 10 coins will move from the right-hand money slot to the left-hand slot and the number below the roll of 10 will read "1". This operation allows you to visually illustrate the concept of place value, where there is a "10s" digit and a "1s" digit. You can ask the child …"How many rolls of ten do we have, and where are the numbers that show how many rolls of ten there are?", then …"How many coins do we have altogether?"

How many surprises will pop out of the money drawer? What's inside the safe? What is the prize the cricket banker awards for collecting $100? Where do the toys come from? How do you find out how many dollars worth of toys you've already sold?


Display results of dice roll
Click happy face to change turns
+1
+1
-2
-1
Click to roll dice
Click "+" or "-" to move pawn along path

Panda's Castle Game

Overview

For the Kids

"Open sesame!" Welcome to Panda's castle. There's no royal road to get here. You just have to complete the mural before coming in the castle to play with Panda. Panda will explain her hidden board game, which is a sister game to the Flower Game, and play with you. Wait until the secret control panel opens, then use it to race Panda to the crown. Ready? Stretch your number muscles and make it count!

Concepts and skills

- Counting with semi-concrete objects (e.g., dots)
- Adding two small sets (from 0 to 3) of semi-concrete objects with sum of up to 6
- Meaning of "+" and "-"

Cognitive corner

Once children are fluent with the number sequence, they enjoy counting two sets of small numbers of objects such as the dots on two dice. Dots and tiles are called semi-concrete objects, meaning that they are not as concrete as apples or oranges, and not as abstract as numerical symbols. Research has shown that counting semi-concrete objects is useful because it helps the child to generalize their number senses from concrete counting eventually to the use of abstract symbols. When counting two dice, some children count all the dots from the beginning, others will pick the largest die, and count on from there. In addition to adding objects, this simple board game exposes the child to the meaning of "+" and "-". When the child lands on special squares containing a "+2" or "-1", Panda tells them that "+2" means "go forward 2" or "-1" means "go back 1". This contextual learning prepares the child for the later learning of the formal operation of symbols such as "+" and "-".

1 Counting the dots on the dice

2 Moving the correct number of squares

Corrections

If the child makes an incorrect move, I'll first say "Oops, you got 2 and 3. Let's see, how much is 2 plus 3 altogether?", the dice will then sprout little arms and hands which point to each dot as it counts to five. Then I will show the child exactly how to move by putting the piggy pawn at the starting position and saying, "so you start here, and count 5". The piggy pawn will move forward five as I count. If the child lands directly on a special square, like one labeled "-2", they should go back two on their own. If they do not yet understand that minus means go back, I will tell them "you landed on -2, so you should have gone back 2 steps," and the piggy pawn will jump back two steps.

Using the Game to Teach

Focal Points for Parents and Teachers

1 Counting the dots on the dice

The child may have trouble counting two dice and arriving at the sum. You can help them by pointing at the dots and counting with them to arrive at the total number of squares they should move after counting. You may say something like, …"See, 2 and 1 makes 3 altogether".

2 Moving the correct number of squares

When the child has rolled the dice, some children will just click the plus-sign button once, and then wait for the little piggy pawn to move the correct number of squares. You can then show them how to click the plus-sign button on the control panel, once for each dot on the two dice.


3
Counting dice to the correct sum
+1
+1
-2
-1
4
Moving backward
5
What do the special squares mean?

3 Counting dice to the correct sum

As the child moves the little Piggy pawn forward, some children will count the number of the first die…"one, two, three" and then start over counting the dots on the second die…" one, two", still arriving at the correct location of five. Once the child is comfortable moving forward the correct number, you can suggest that the child count the number of dots, beginning with the first die and continuing on through the second die…"one, two, three, four, and five".

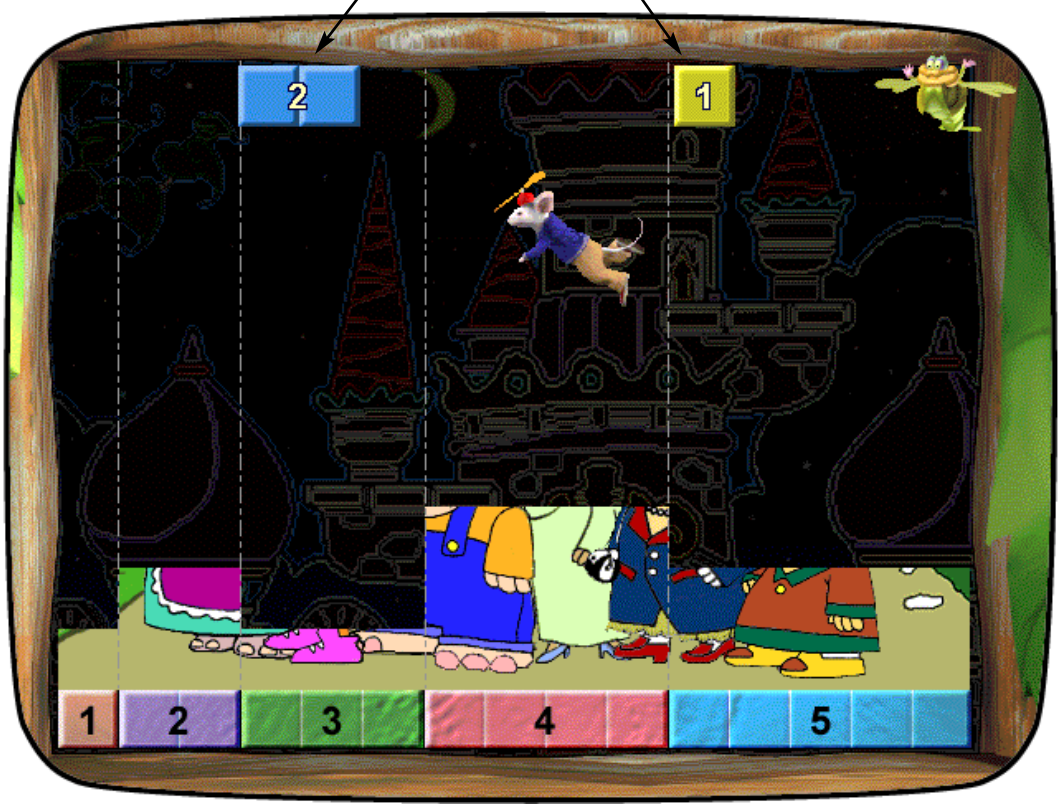
4 Moving backward

When the child moves farther than the sum of the dots on the dice, you can show them how to click the "minus-sign button" on the control panel to go back to the correct square. This illustrates that minus ("-") means go back in the context of walking along a path.

5 What do the special squares mean?

There are special squares labeled "-1", "+1" and "+2". These provide another context in which to show the child that "-1" means "go back 1 square"; "+1" means "go forward one square", and so forth.

Two blocks came out from the left and one block came out from the right



Falling Blocks Addition

Overview

For the Kids

When do kids enjoy doing forty addition problems in a row? When they play with Stuart! Watch the blocks come out from each side of the window and connect in the center, then grab them with the flying Stuart, and move them over the correct answer at the bottom .

Concepts and skills

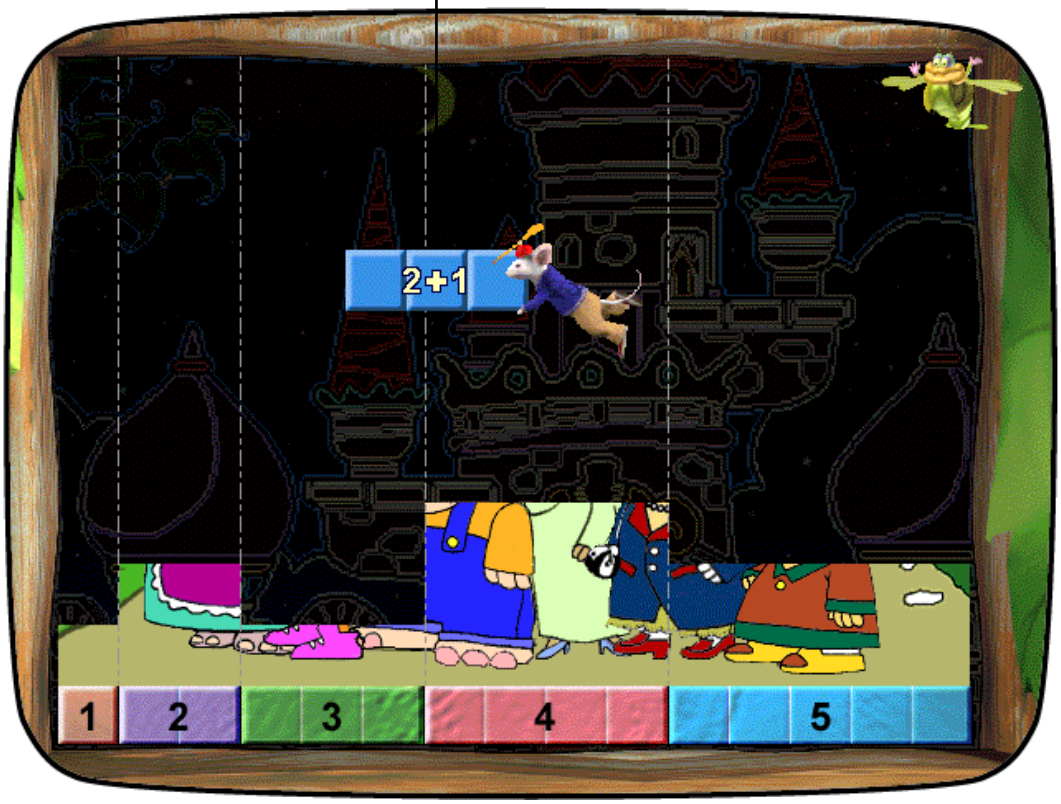
- Modeling addition by mapping abstract notation onto concrete blocks
- Numerical patterns and elementary rules of addition
- Addition facts with sums not exceeding five

Cognitive corner

When children begin to learn the addition number facts, they start from a point where many things obvious to grown-ups are not at all obvious to them. To see how this feels, try this. Suppose you visited a country where they use "A, B, C…." instead of "1, 2, 3,…." to represent numbers. Now, could you quickly find out how much is "A + D" or "F + J" without translating it into the numbers you already are familiar with? As you can see, without a really clear physical model of addition, learning the addition facts can be difficult and even aversive. Prior to learning the addition facts, it is helpful for a child to see over and over again the underlying physical model of addition.

Falling blocks addition allows the child to see sets of blocks being added together and to associate this with the abstract notation of addition. Without effort, they can arrive at the correct answer to questions like "2 + 3 is ?" simply by counting

Blocks get connected with symbol "2+1" then they start falling



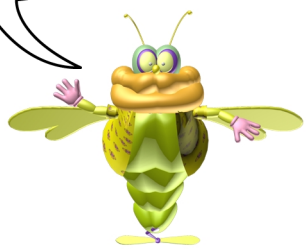
Physical length of answer blocks is proportional to their quantity

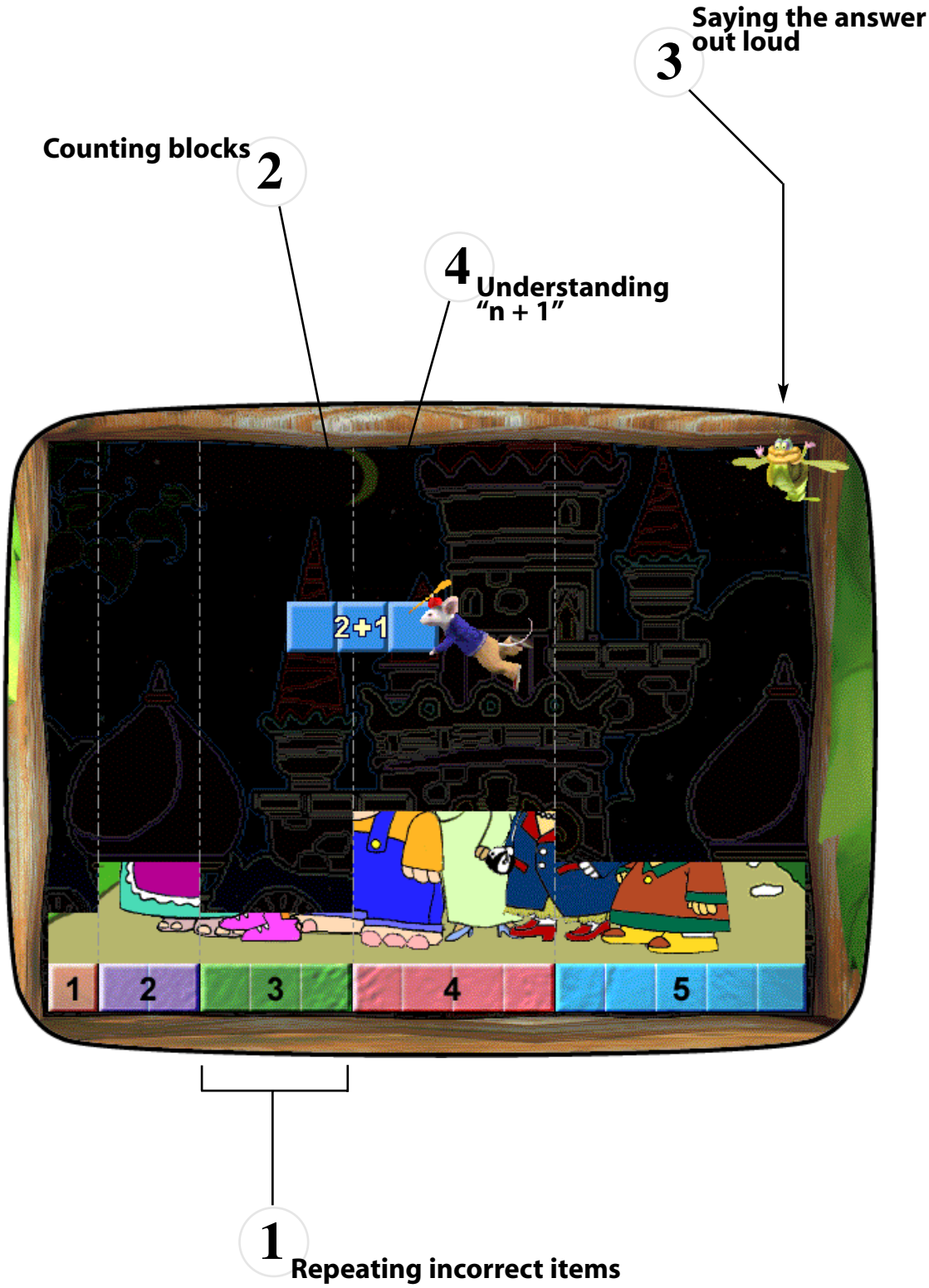
the number of falling blocks after they are added together and matching their length to the length of the answer bar at the bottom. So in this way, even very young children can enjoy being exposed to 40 or more addition questions at a time as they go about revealing the hidden picture.

Being able to expose young children to this volume of addition questions not only has the advantage of associating the physical model with the abstract notation of addition, but it also allows us to present series of items that reveal patterns and structure of addition. At first, the child has no knowledge that "n + 0" is equal to the same number "n"; that "2 + 3" is exactly the same as "3 + 2"; and that "n + 1" is equal to the number right after "n". Thus, the addition items are presented in sequences designed to help them induce certain fundamental addition rules. You may see a "light bulb" come on over the child's head as they see "1+0","2+0","3+0","4+0", and "5+0" in a row and suddenly realize that "n+0" equals "n", no matter what the value of "n". As the game advances to the next levels, the presentation of the items becomes less predictable and eventually is presented in a random order so the child will feel more challenged.

Corrections

If the child places the falling blocks over the wrong answer, the correct answer will blink briefly as I say "Uh, oh, try again". I will always give them an immediate opportunity to try the same item again. If they miss it again, then I will give them another chance after all 40 addition items have been presented. If the child still misses it, then I will give them one final chance after all of the missed items have been presented again. If the child has missed five items in a row, I'll say, "Count the blocks to get the answer."




3
Saying the answer out loud
Counting blocks
2
4
Understanding "n + 1"
2+1
1
2
3
4
5
1
Repeating incorrect items

Using the Game to Teach
Focal Points for Parents and Teachers

1 Repeating incorrect items

If a child misses one, then the correct answer is briefly blinked at the bottom and that item immediately is presented again. So, when they get the wrong answer you can say … "Try to remember the correct answer because you'll get another chance on this one in a second".

2 Counting blocks

After the blocks connect into one set and symbols such as "2 + 1" appear on the front, some children may not realize that they can count the blocks to get the answer; some children may feel more "secure" to count on their fingers. You can suggest… "To get the answer, just count the number of blocks".

3 Saying the answer out loud

As the child moves the falling blocks to the answer, encourage them to say out loud what they think the answer might be before hearing Bee say the right answer. This simple oral practice helps strengthen their memory of the addition facts.

4 Understanding "n + 1"

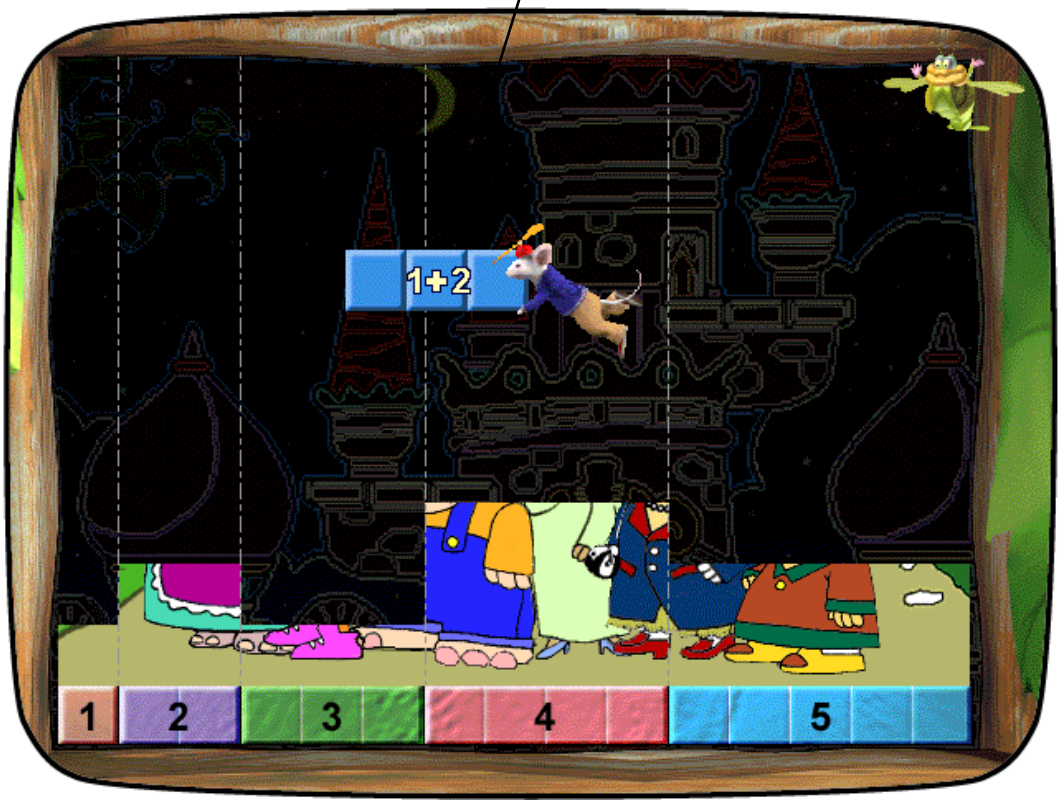
Sometimes there is a repetition of the series "1 + 1", "2 + 1", "3 + 1", and so forth. At first, children do not know that the answer to "n + 1" can be reached by simply counting forward from the larger number in the expression. If the child does not discover the easy way after a long time you can ask… "Is there an easy way to get the answer?" and show them that the answer can be found by counting forward 1.

Realizing that "n + 0 = n"

5

6

Realizing that numbers can be added in either order

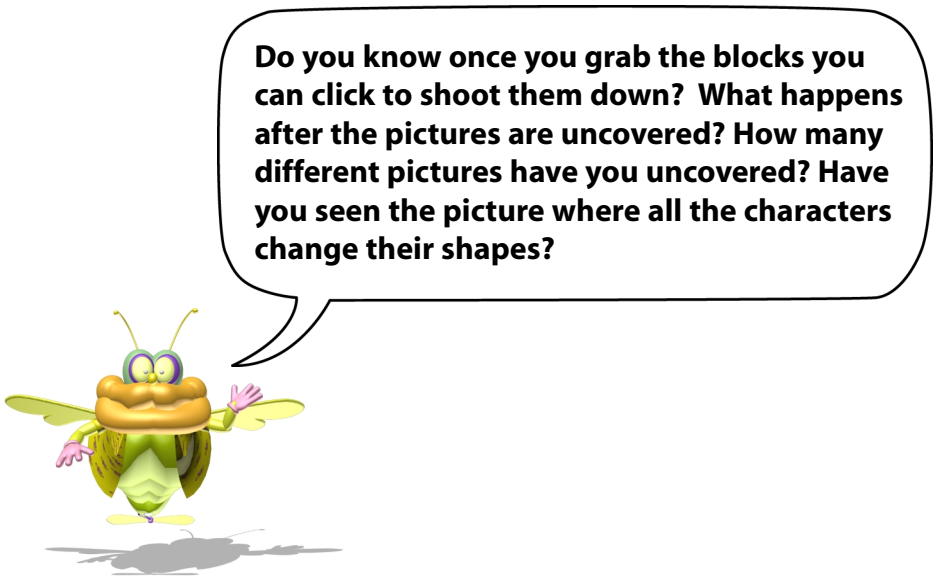


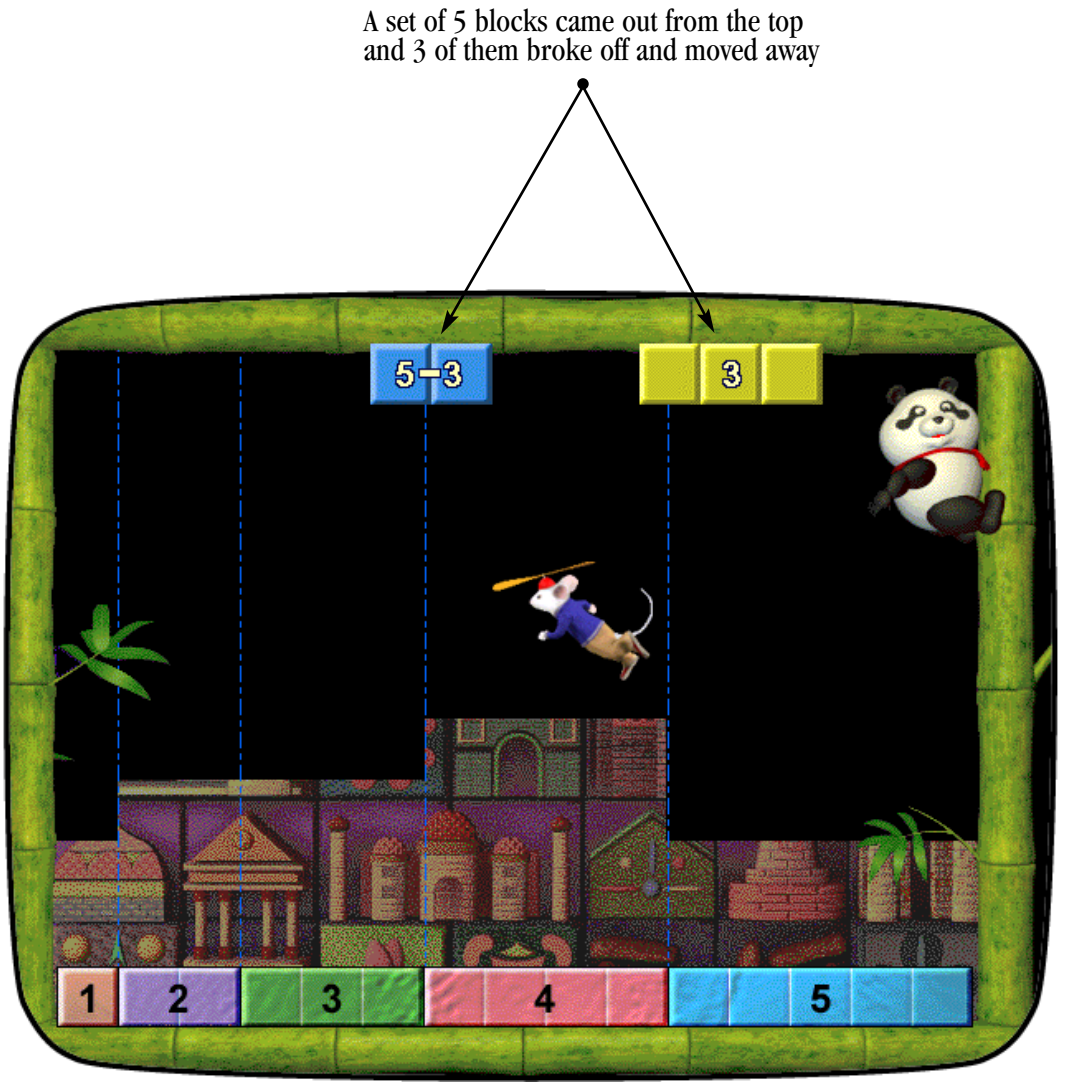
5 Realizing that "n + 0 = n"

Many young children do not understand the concept of adding "0". The number "0" is used frequently in this game to provide a physical image of what adding zero means. After seeing "1 + 0","2 + 0","3 + 0", and so forth, ask the child… "What happens when you add zero blocks to one block, … to four blocks? Does it change the number of blocks?". By calling attention to this concept, the child eventually will conclude that "n + 0 = n", whatever the value of n is.

6 Realizing that numbers can be added in either order

Sometimes a series of pairs is presented like "1 + 3", and immediately afterwards "3 + 1", then "2 + 3" followed by "3 + 2", and so forth. After several repetitions of such pairs you can ask the child … "Is 2 + 3 the same as 3 + 2?". These repetitions will allow the child to see and verify that numbers can be added in either order without changing the answer.




A set of 5 blocks came out from the top
and 3 of them broke off and moved away
5−3
3
1
2
3
4
5

Falling Blocks Subtraction

Overview

For the Kids

Welcome to Panda's falling blocks gallery. This Panda not only eats bamboo shoots, but also grabs blocks. Watch her take away blocks and shoot down the remaining ones. Fly Stuart around to grab the remaining falling blocks and make them land on the right answer. After stacking all the blocks, take a trip to our mini United Nations.

Concepts and skills

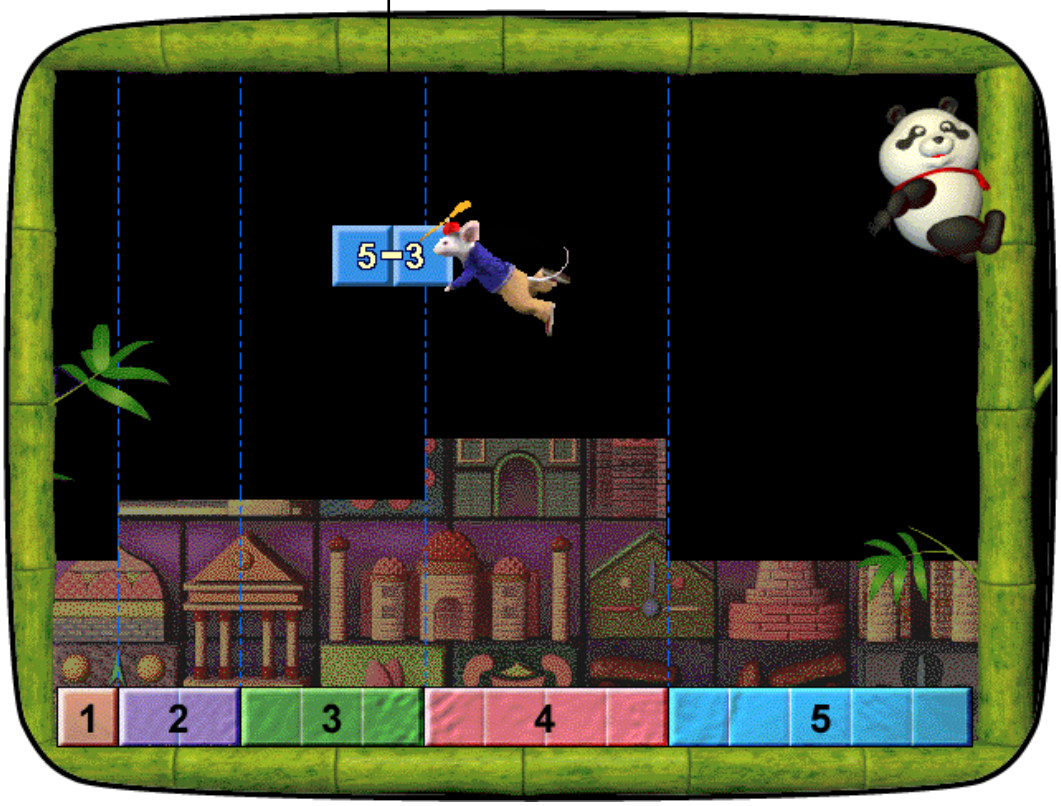
- Modeling subtraction by mapping abstract notation onto concrete blocks
- Single-digit subtraction facts with differences not exceeding five

Cognitive corner

Subtraction normally is taught later than addition in school. But the concept of taking away a small set from a larger set of objects is not newer or more complex to kids than the idea of adding one set of objects to another. Therefore we present Falling Blocks Subtraction and its sister game Falling Blocks Addition in parallel.

Instead of presenting kids with randomly ordered drills we present sequences of items designed to convey understanding of what "subtraction" means and to help the children discover patterns. Many patterns and rules that are embedded in the subtraction facts are not obvious to the beginner and we elucidate these by presenting carefully designed sequences of items. As in the sister game Falling Blocks Addition, we map the abstract notation of subtraction onto the remaining blocks themselves to connect the physical model with that notation. Learning becomes easier and more fun because the child can easily get the right answer by simply

Renamed blocks with
symbol "5-3" starts falling.



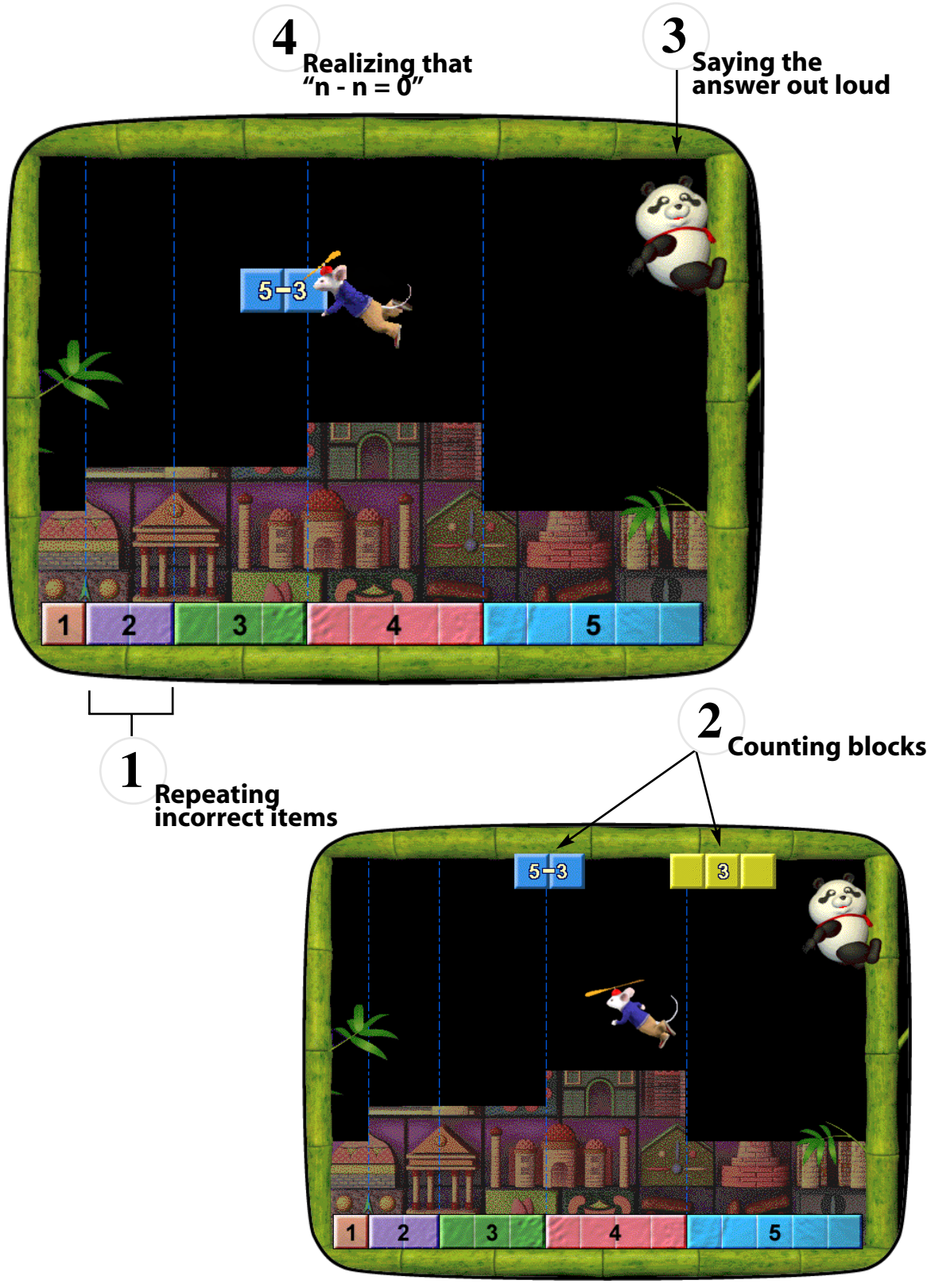
Physical length of answer blocks
is proportional to their quantity

matching the size of the question blocks to the answer blocks. The items are presented in series that help the child induce rules like, "n - n = 0", "n - 1", and "n - 0 = n. If they miss the item the first time, the correct answer is blinked and then that item is immediately presented again. By seeing the correct answer blinked, the child has the opportunity to practice remembering the item on the second presentation.

Children as young as two years old are already responsive to rhymes and have little problem remembering them. So in the mini United Nations we combine rhymes and number facts. Give them a try. For example, fill in the following blank and say it out loud. "Piggy's a swine, 6 + 3 is _____." These rhymes may provide some children with an easy way to remember these number facts.

Corrections

If the child places the falling blocks over the wrong answer, the correct answer will blink briefly as I say "Uh oh. I will always give them an immediate opportunity to try the same item again. If they miss it again, I'll give them another chance after all 40 subtraction items have been presented. If the child still misses it, I will give them one last try after all of the missed items have been presented. After the child has missed five items in a row, I'll say "To get the answer, count the left over blocks," to let them know that they can use the visual cue to arrive at the answer.


4
Realizing that
"n - n = 0"
3
Saying the
answer out loud
5−3
1
2
3
4
5
1
Repeating
incorrect items
2
Counting blocks
5−3
3
1
2
3
4
5

Using the Game to Teach
Focal Points for Parents and Teachers

1 **Repeating incorrect items**

If a child misses one, then the correct answer is briefly blinked at the bottom and that item immediately is presented again. So, when they get the wrong answer you can say … "Try to remember the correct answer because you'll get another chance on this one in a second".

2 **Counting blocks**

After some blocks are taken away and symbols such as "5 - 3" appear on the front, some children may not realize that they can count the blocks to get the answers; some children may feel more "secure" to count on their fingers. You can direct their attention to the remaining blocks and say: "To get the answer, just count the number of blocks that are left".

3 **Saying the answer out loud**

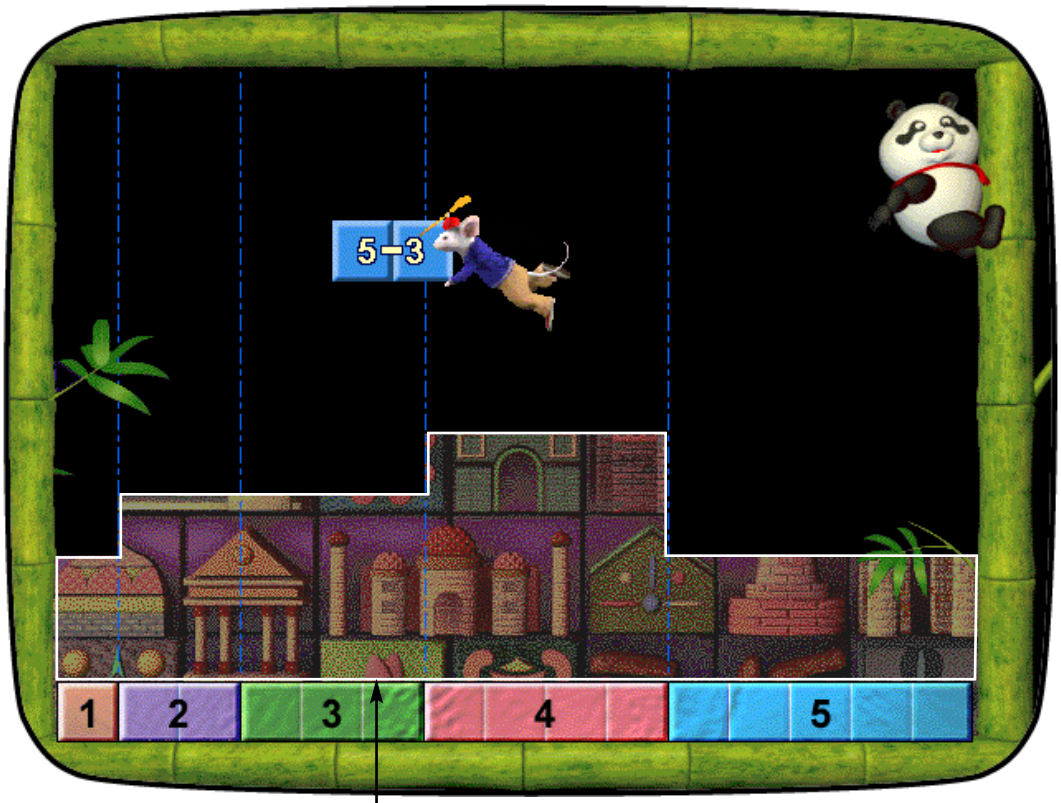
As the child moves the falling blocks to the answer, encourage them to say out loud what they think the answer might be before hearing Panda say the right answer. Even though the child's answer might be wrong, this simple oral practice helps strengthen their memory of the subtraction facts.

4 **Realizing that "n - n = 0"**

Occasionally, all the blocks will break off and move away, so zero blocks remain. As an example, when four blocks move out from the top and all of them break off and move away, the symbol "4 - 4" remains for a second, then pops and disappears, symbolizing that nothing is left. At this point it could be helpful to point out what the child sees, which is… "If you have 4 blocks and you take all of them away, you have nothing left. So four take away four equals zero".

5 Getting the answer to "n - 1" by counting backwards

6 Realizing that "n - 0 = n"



7 Mother Kangaroo's Numerical Rhymes

5 Getting the answer to "n - 1" by counting backwards

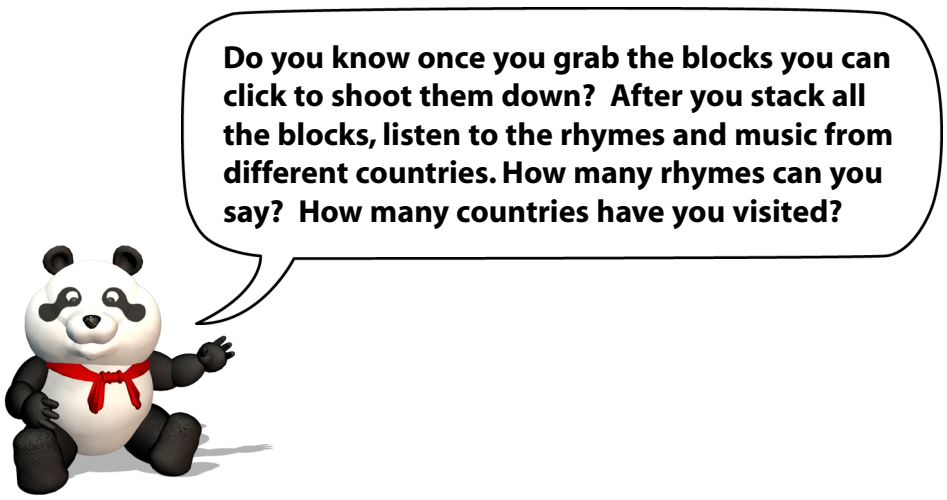
Sometimes, several series will be presented like "2 - 1", 3 - 1", 4 - 1" and so forth. You may point out that… "Minus 1 is the same as counting backwards 1". After enough repetition of these series, some children are ready to grasp the concept of counting back by one to reach the answer.

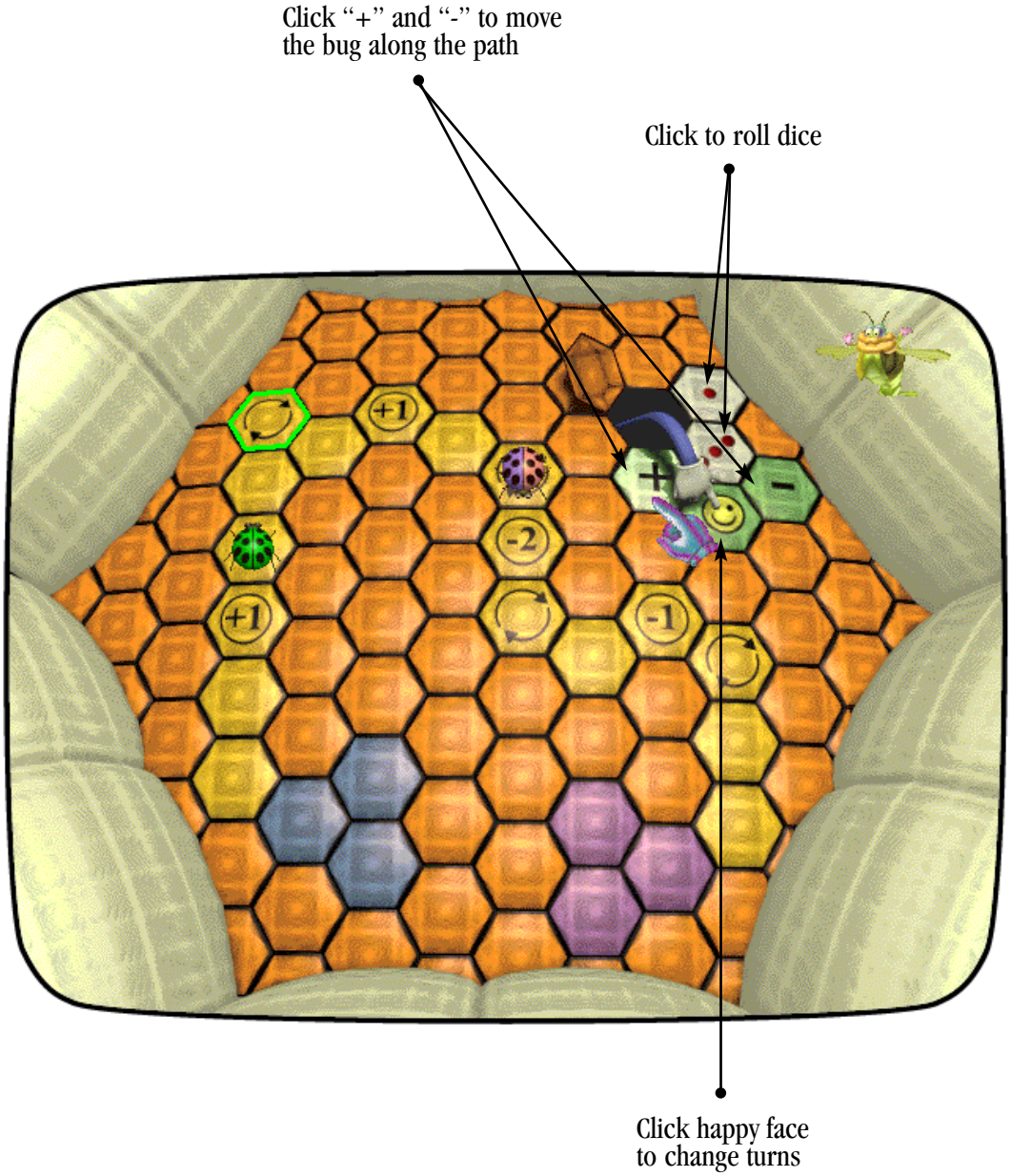
6 Realizing that "n - 0 = n"

Many young children do not understand the concept of subtracting "0". The number "0" is used frequently providing a physical image of what subtracting zero means. After seeing "1 - 0","2 - 0","3 - 0", and so forth, ask the child "what happens when you take zero blocks away from three blocks? Does it change the number of blocks?". By calling attention to this concept, the child will eventually conclude that "n - 0 = n", whatever the value of n is.

7 Mother Kangaroo's Numerical Rhymes

At the end of each Falling Blocks Subtraction Game the child goes to our mini United Nations and hears several rhymes like "Squeeze my knee, 2 + 1 is _____". All 22 of these rhymes are contained in the section entitled Mother Kangaroo's Numerical Rhymes at the end of the manual. You can practice reading out each rhyme to see if the child can answer.




Click "+" and "-" to move the bug along the path
Click to roll dice
+1
-2
+1
-1
Click happy face to change turns

Flower Game The Bug Races

Overview

For the Kids

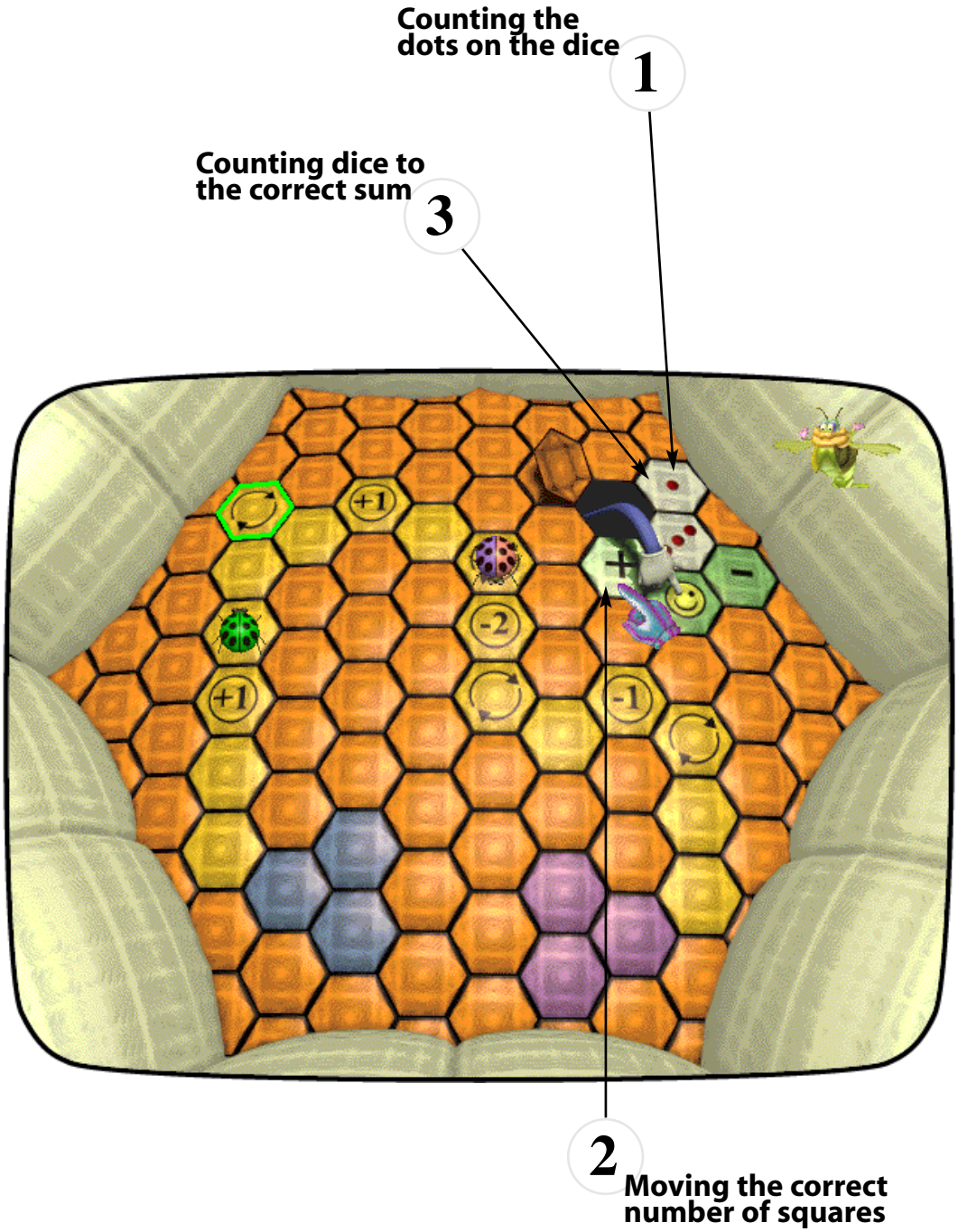
Flower game is a sister board game to Panda's castle game. Just wander around the meadow, and enjoy the splendid outdoor scene. Then take a caterpillar ride to the flower game. Click Bee if you are the only one around, or click Snouty if you want to play with a friend. Watch the bugs race on the flower and join the critters when they come out to cheer for you.

Concepts and skills

- Counting with semi-concrete objects (e.g., dots)
- Adding two small sets (from 0 to 3) of semi-concrete objects with the sum of up to 6
- Meaning of "+" and "-"

Cognitive corner

Once children are fluent with the number sequence, they enjoy extending their counting skills to the task of calculation. At first, there is only a thin line between counting objects and adding objects. However, it is important to expose the child to two small sets of objects to begin with so that they understand addition involves more than one set of objects. In addition to adding objects, this simple board game exposes the child to the meaning of the "+" and "-". When the child lands on special squares containing a "+2" or "-1", Bee tells them "+2" means "go forward 2" or "-1" means "go back 1". This contextual learning prepares the child for the later learning of the formal operation of symbols such as "+" and "-".


Counting the dots on the dice
1
Counting dice to the correct sum
3
+1
-2
+1
-1
2
Moving the correct number of squares

Corrections

If the child makes an incorrect move, I'll first say "Oops, you got, 2 and 3. Let's see, how much is 2 plus 3 altogether?", the dice will then sprout little arms and hands and point to each dot as it counts to five. Then I'll show the child exactly how to move by putting their bug at the starting position and say "so you start here, and count 5". The child's bug will move forward five as the Bee counts. If the child lands directly on a special square, like one labeled "-2", they should go back two on their own. If they do not yet understand that minus means go back, I will tell them "you landed on minus 2, so you should have gone back 2 steps," and the child's bug will jump back two steps.

Using the Game to Teach

Focal Points for Parents and Teachers

1 Counting the dots on the dice

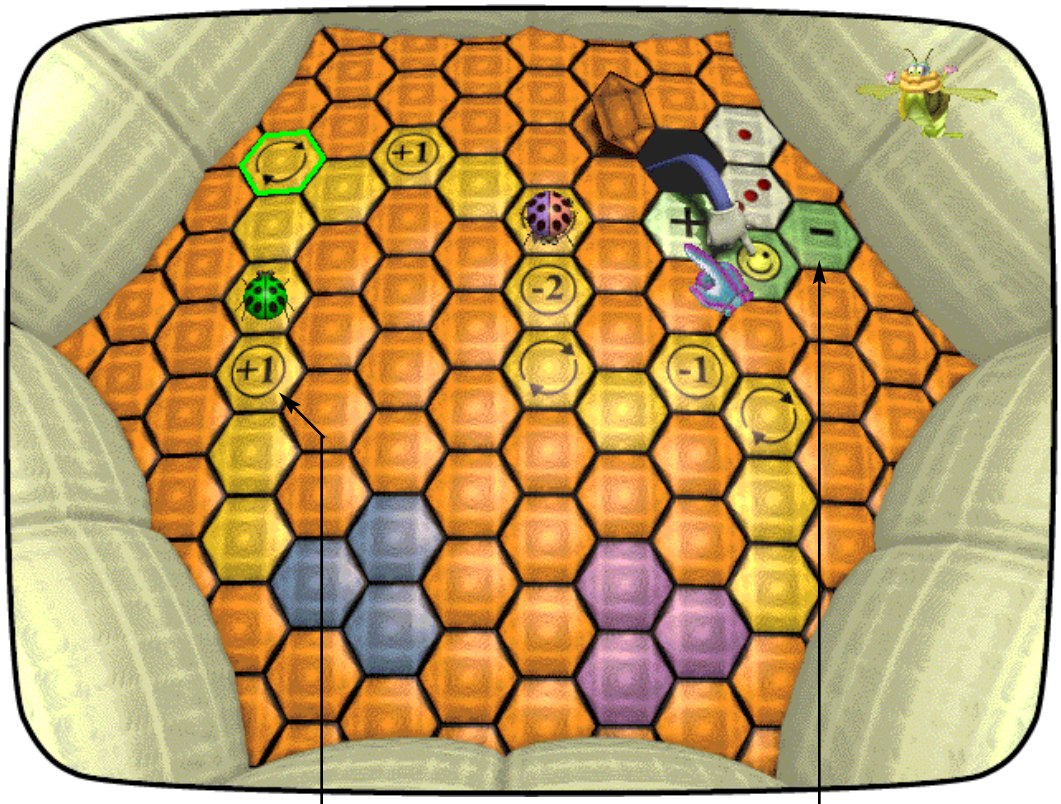
The child may have trouble counting two die and arriving at the sum. You might help them by pointing to the dots and counting with them to arrive at the total number of squares they should move after counting. Then you might say "See, 3 and 1 makes 4 altogether".

2 Moving the correct number of squares

When the child has rolled the dice, some children will just click the plus-sign button once, and then wait for their bug to move the correct number of squares. You could show them how to click the plus-sign button, once for each dot on the two dice.

3 Counting dice to the correct sum

As the child moves the little bug forward, some children will count the number of the first die…"one, two, three" and then start over counting the dots on the second die…"one, two", still arriving at the correct location of five. Once the child is comfortable moving forward the correct number, you can suggest that the child count the number of dots, beginning with the first die and continuing on through the second die…"one, two, three, four, and five".



5 What do the special squares mean?

4 Moving backward

4 Moving backward

When the child moves farther than the sum of the dots on the dice, you can show them how to click the "minus-sign button" to go back to the correct square. This provides a meaningful context for illustrating that minus means go back.

5 What do the special squares mean?

There are special squares labeled "+1", "-1" and "+2". These provide another meaningful context in which to show the child that "-1" means "go back 1 square, or take away one square"; "+1" means "go forward one square, or add one square," and so forth.


25
24 23 22
21
20 19 18
17
12 13 14 15 16
11
10
9
8 7 6 4 3
2
1
0
2
+5
Starting point
Current Roll

Tree Climbing Game

Overview

For the Kids

Have you dreamed of climbing up a tree and playing in a tree house? This is a special tree with a ladder numbered from 1 to 25. You'll climb up or down the ladder with the help of the Bee. The bee spins one sign spinner and one numeral spinner to determine your next move. Don't be afraid when you're hanging out there on the tree. As long as you remember to click to hold on to the tree, you'll be fine. Click Panda, if you want to play with her, or click Snouty to play with your friend. Ready? Ask Bee to get you a big positive number and see who can get to the tree house first.

Concepts and skills

- Number line from 1 to 25
- Meaning of "+" and "-"
- One-digit and two-digit addition and subtraction operation
- Relative magnitude and position of numbers
- Reading numerals: one-digit, teen words, two-digits not larger than 25

Cognitive corner

A number line is a good way to illustrate an important aspect of our numeration system: relative magnitude and position of numbers. Using tree-climbing as an analogy, it is intuitive for the child to develop a feel for which numbers are bigger than others and which numbers are closer to each other. It also would be easy for them to associate "+" with "more", and "-" with "less". They will understand that the numbers toward the tree house are bigger or have "more" than the numbers at

Sign spinner:
"+" for climbing up;
"-" for climbing down

Numeral spinner

To exit:
climb down the ladder
and click the Toy Soldier

the bottom of the tree because it takes longer to get to the tree house from the bottom. With the help of the tree ladder they also will grasp that 14 and 8 are farther apart than 5 and 3. These numerical senses are important because they are the building blocks of the symbolic world of math. As the child gets more comfortable with the number line, they no longer need the aid of concrete or semi-concrete objects to do addition or subtraction.

Corrections

If the child counts out their move incorrectly, I'll say "Hmm, let's think about this. You got + 4, and you started at 6," Stuart is then moved back to the number six on the tree. Then I'll say, "So you start here, and count 6", Stuart is moved forward as Bee counts to six. I then reinforce the addition operation by saying "See, 6 + 4 makes you land on 10". If the child forgets to click to hold on to the tree to end their move, I'll remind them after twenty seconds. If they don't click within ten seconds after that, then Stuart falls off the tree and has to start over.

Number one survival rule on the tree: click to hold on to the tree. If you don't click, just watch out!


3
Subtracting with the number line
25
24 23 22
21
20 19 18
17
12 13 14 15 16
11
10
9
8 7 6 4 3
2
1
0
2 +5
1
Following directions
2
Adding with the number line

Using the Game to Teach
Focal Points for Parents and Teachers

1 Following directions

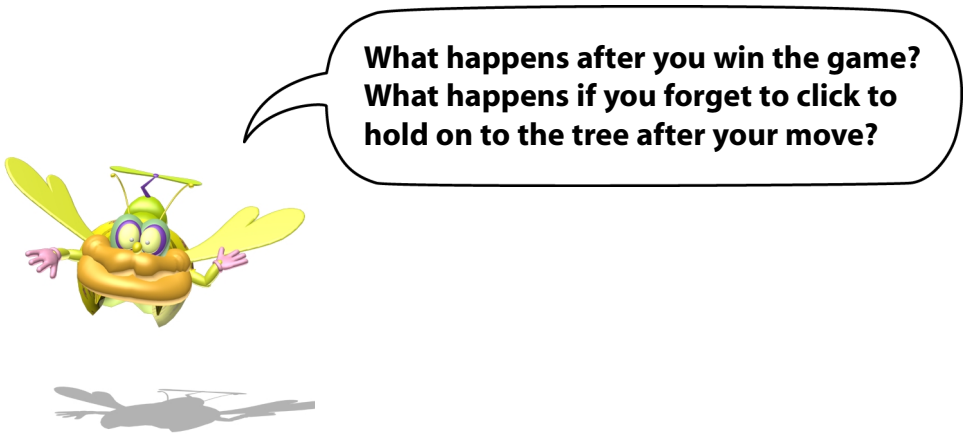
After each move, the child must click to signal the move is completed. If the child forgets to click, then Stuart will fall off the tree and must start over. This provides an opportunity for the child to practice following directions.

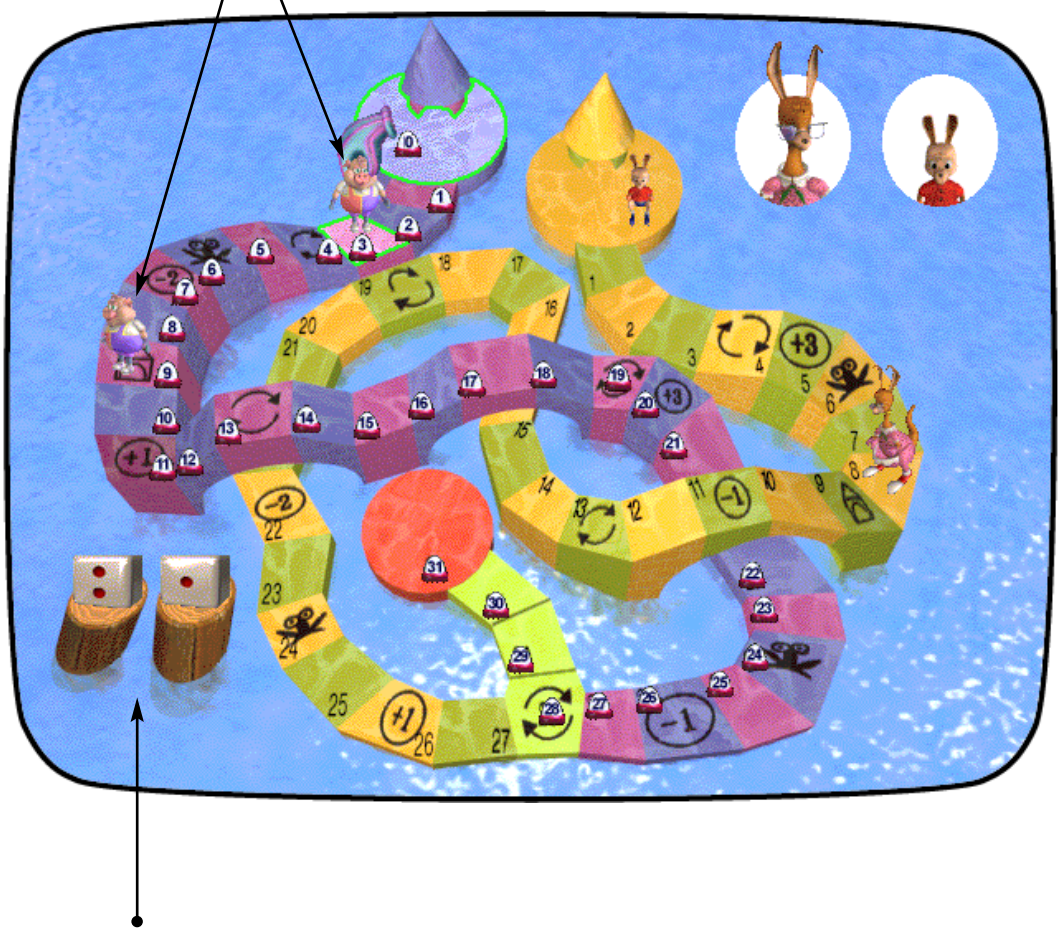
2 Adding with the number line

After the spinners determine the move such as "+3", the child must count out the correct move on the numbered ladder. The child can simply count up the ladder without doing symbolic addition. As the children begin to learn the addition facts, you can encourage them to use this knowledge to make their move easier. You might say… "Look, you are at 6 and you got + 4. How much is 6 + 4? So where should you move Stuart?".

3 Subtracting with the number line

After the spinners determine moves such as "- 4", the child must count out the correct move on the numbered ladder. At first, the child can simply count down the ladder without doing symbolic subtraction. As the children begin to learn the subtraction facts, you can encourage them to use this knowledge to make their move easier. You might say… "Look, you are at 9 and you got - 3. How much is 9 - 3? So where should you move Stuart?".




Two Piggy pawns
Click to roll dice

Dinoroo's Bridge Game

Overview

For the Kids

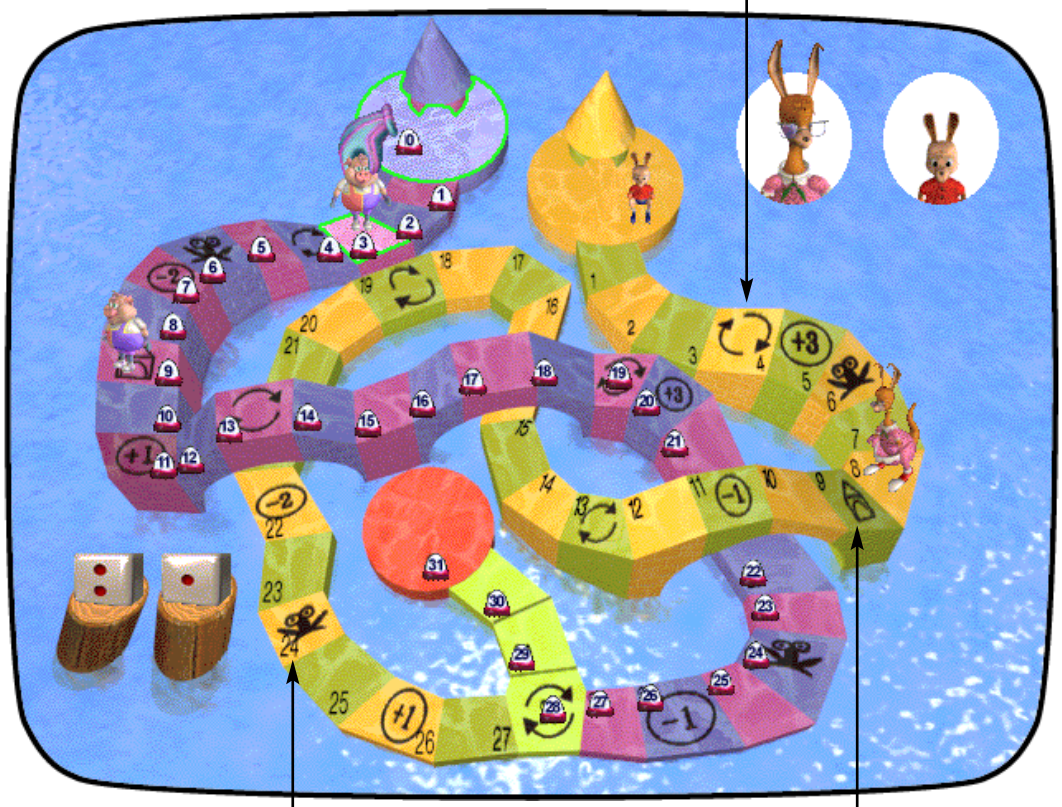
When playing Dinoroo's Bridge game you will learn to think "smarter" as you move your two little Piggy pawns to the finish area. Watch how the bridge rises out of the stone table under the balloons. Carefully observe how the kangaroos do their teamwork. Learn from them and come up with your best strategy to get your two Piggy pawns to the end of the floating bridge. Can you beat those kangaroos? Don't forget, you can always click Snouty to play with another player.

Concepts and skills

- Counting semi-concrete objects (e.g., dots)
- Adding two small sets (from 0 to 5) of semi-concrete objects with sum up to 10
- Meaning of "+" and "-"
- Quantitative reasoning and strategy development
- Suggestive use of number line from 0 to 31

Cognitive corner

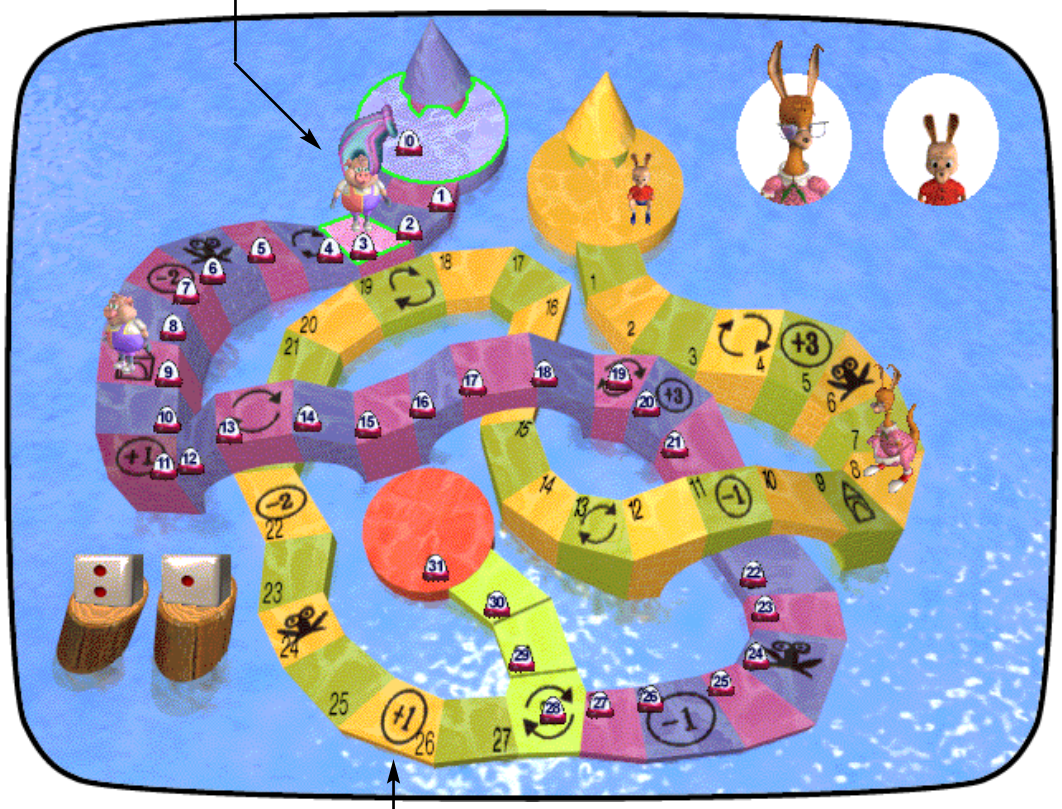
As soon as the children are familiar with the basics of a board game, they will be attracted to the challenges of Dinoroo's Bridge game. This game features quantitative reasoning and strategy development, as well as counting dots for big number sets (with sums going from 0 to 10). The option of choosing one of the two pawns to move on any dice roll gives the child a chance to practice how to reason hypothetically and quantitatively--- "What happens if I move this pawn or move the other pawn? Which move will get me closer to the finish line?" The curved


Switch with other player
Leap frog way ahead
Send other player home

bridge and the fact that the child's two pawns sometimes may be located on two different paths make it difficult to visually figure out which pawn to move. The number labels on the corner of each stone brick on the bridge provide a clue to help the child decide which pawn is closer to the finish area. On top of that, the squares with special functions such as "send home", "switch", or "leap frog" encourage the child to play strategically. For example, landing on "send home" allows the child to send one of the other player's pawns home, so that the playmate has to start over.

Corrections

If the child counts out the dice roll incorrectly, I will say "Oops, you got 5 and 4. Let's see, how much is 5 + 4 altogether?". The dice then sprout little arms and hands, which point to the dots as it counts to nine. The child's pawn is then moved back to the starting position and I will say, "So you start here, and count 9". The child's pawn then jumps forward as I count to nine. If the child lands directly on a special square, for example "+3", they should go forward three on their own. If they do not yet understand that plus means go forward, I will tell them "you landed on plus 3, so you should have gone forward 3 steps," and the child's pawn will jump forward three more steps.


2
Which is the best move?
1
What do the special squares mean?

Using the Game to Teach
Focal Points for Parents and Teachers

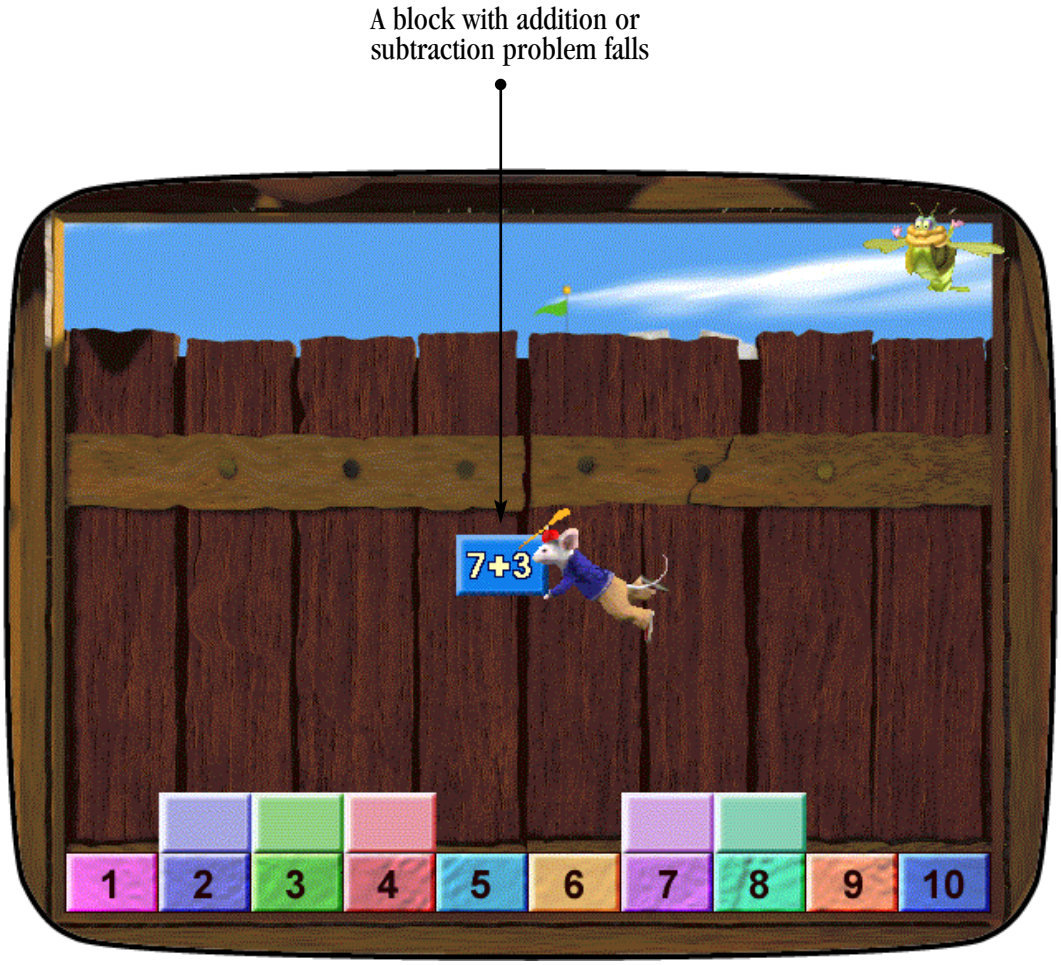
1 What do the special squares mean?

There are special squares labeled "+1", "-1", "-2" and "+3". These present a meaningful context in which to show the child that "+" means go forward and "-" means go back, where the concept of quantity is expressed as distance along a numbered line.

2 Which is the best move?

For each move the child may be able to reason out which of the two little piggy pawns to move. One piggy pawn might land on a special square that sends another player home, but the other piggy pawn might land on a lucky square that sends them to the finish area. If the dice sum to 6 as an example, then you could ask the child…"Which little piggy would be the best move if each moves 6 squares?" This could help the child learn to count out the move for both little pawns before deciding which one to move. This is an opportunity to help the child form simple numerical strategies for winning the game.

Have you found all the creatures living in the water? What happens if you win?


A block with addition or subtraction problem falls
7+3
1
2
3
4
5
6
7
8
9
10

Falling Blocks Addition and Subtraction

Overview

For the Kids

Curious about what's inside the cave? When the cave door opens, only a few special visitors can go in. Just click the cave door and the Bee will tell you how to get in. If you are allowed in, you must have enough brain power, plus flying and shooting skills to take this challenge. Time to boost your brain power and fly in full gear. Put the blocks in the right place and watch the old wooden door gradually drop. What's waiting for you out there is definitely worth your time and efforts.

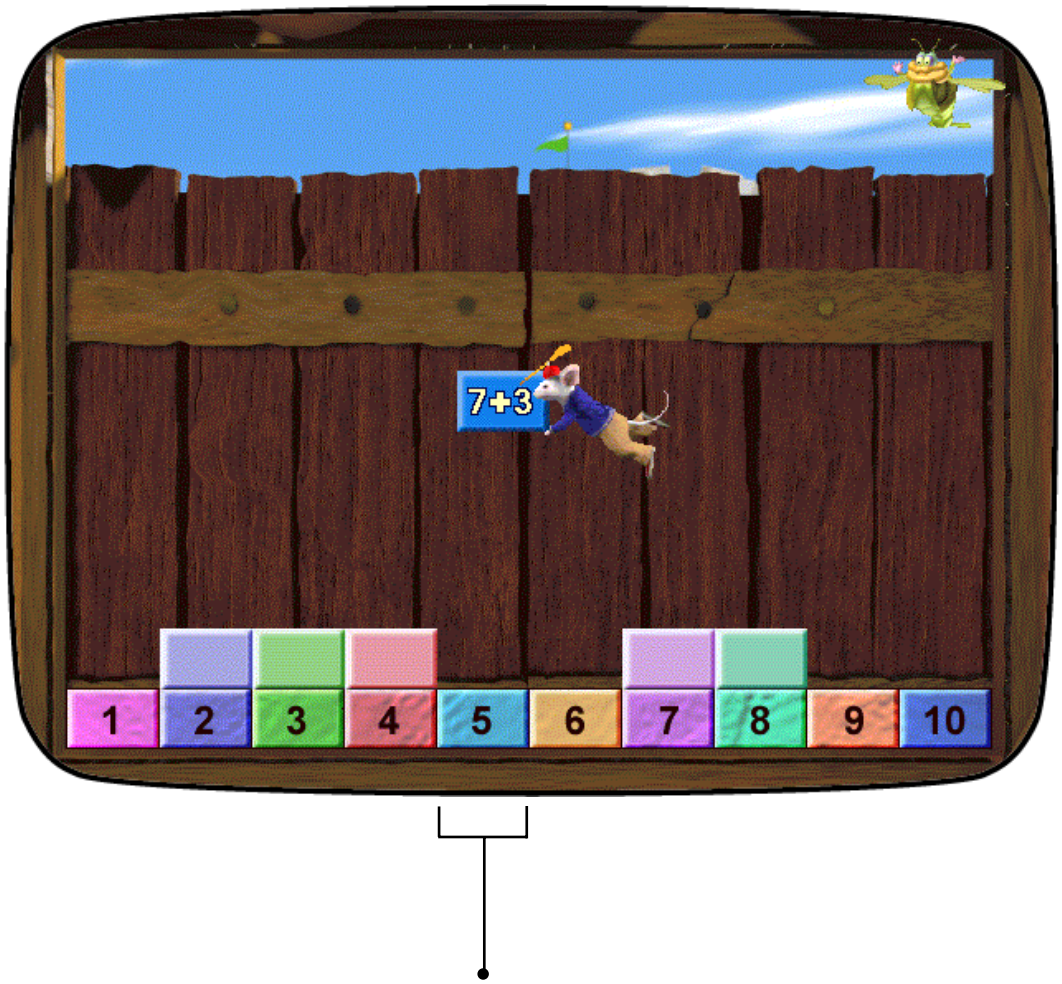
Concepts and skills

- Number facts: Addition and subtraction with sum or difference not exceeding 10
- Encourage mental calculation

Cognitive corner

Falling blocks addition and subtraction is the most difficult game in Numberland, because no visual cues or physical models of addition and subtraction are provided to help the child. Also, addition and subtraction questions are mixed together and appear in random order without obvious patterns. At this point, children may use one of several strategies. Some children may count on the always available "manipulative"--their fingers -- to get the answer; some children may quietly perform mental calculation without using any obvious concrete objects; some children may already have memorized the number facts and will simply get the answer from memory. And, of course, some children may not know what to do.

Memorizing the number facts is important because it makes calculation easier and it saves time for the deepening of understanding and it is important prepara-



Physical length of answer blocks is not proportional to their quantity

tion as the child eventually moves into long division. Encourage your child to relate this game to Falling Blocks Addition and Falling Blocks Subtraction, and to apply the addition/subtraction rules they've learned to this game. For example, if they don't know what "8+1" is, remind them of the "n+1" rule. Math learning eventually leads to the operation of symbols at an abstract level. One day, you'll gladly find out that your child has entered the symbolic world of math when he or she can quickly answer a question like "how much is 2 + 3?" without having to rely on any concrete objects or their fingers to tell you what the answer is.

Corrections

If the child places the falling block over the wrong answer, the correct answer will blink briefly as I say "Hmm?". I will always give them an immediate opportunity to try the same item again. If they miss it again, I will give them another chance after all 120 items have been presented. If the child still misses it, I will give them one last try after all of the missed items have been presented.

3 Saying the answer out loud

2 Applying the addition/subtraction rules learned

1 Recalling Number Facts

Using the Game to Teach
Focal Points for Parents and Teachers

1 Recalling Number Facts

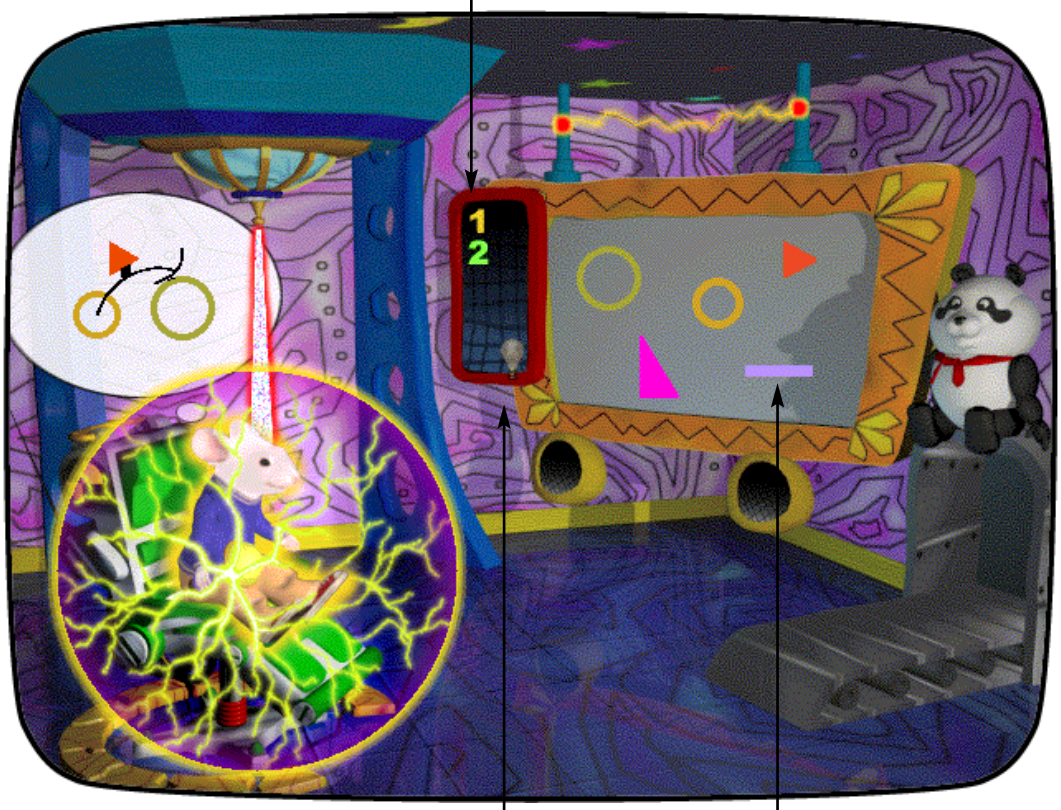
If the child gets the first answer wrong, the correct answer blinks briefly along the bottom. If they haven't noticed already, point this out, and encourage the child to remember the answer because they will see it again immediately. Keeping the answer in their short term memory provides a good way for the children to practice remembering their number facts.

2 Applying the addition/subtraction rules learned

This game provides the opportunity for your child to practice the addition/subtraction rules they've learned in Falling Blocks Addition and Falling Blocks Subtraction to new items they didn't see before. For example, if they don't know what "9 + 1" is, remind them of the "n + 1" rule.

3 Saying the answer out loud

As the child moves the falling blocks to the answer, encourage them to say out loud what they think the answer might be before hearing Panda say the right answer. Even though the child's answer might be wrong, this simple oral practice helps strengthen their memory of the subtraction facts.


Click bright numbers
to make a toy
1
2
Click light bulb to activate
Imagination Machine
Click to match shapes
in thought bubble

Imagination Machine

Overview

For the Kids

"Let's check your brain power!" You earn so much brain power playing in Numberland that you can "make" toys from your imagination. Just imagine a toy, match the shapes, then watch your thoughts morph into a 3-D object. Pull the knobs to see how many toys you have created. Where have all the toys gone? Follow the conveyor belt and--- Yes, they've gone to Bee's Toy Store!

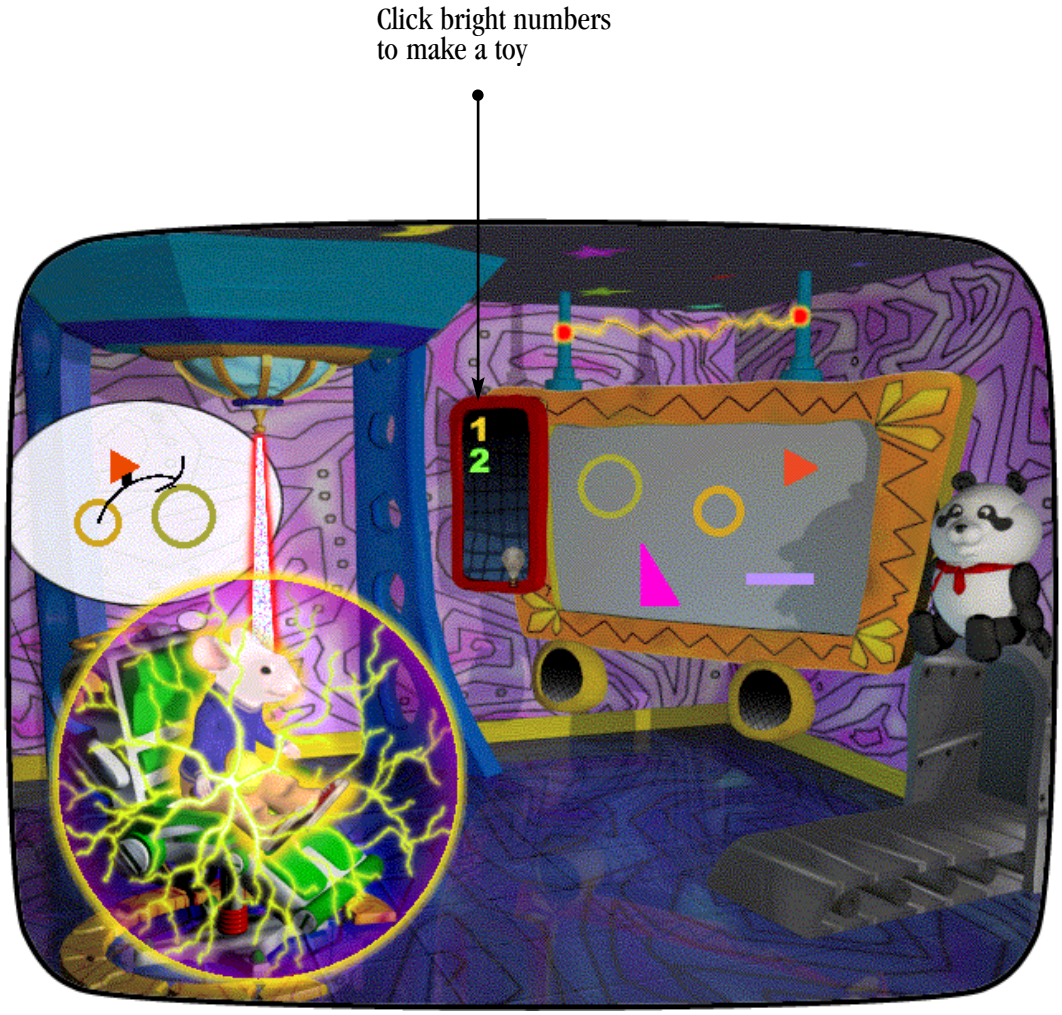
Concepts and skills

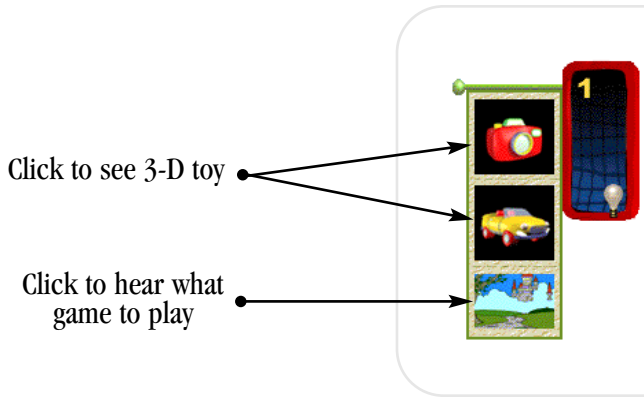
- Identifying, matching, and naming geometric shapes
- Comparing relative sizes of the same shapes

Cognitive corner

Kids love to imagine, and the imagination machine lets them pretend that they are using the machine to turn imagined toys into real ones. But activating the imagination machine takes brain power. So if the brain power gets low, they have to recharge it by playing more games. This over-arching motivational and attention keeping device reinforces the image that learning creates brain power which can then be used to create something useful. It has several important functions in Numberland. First, it helps motivate the child to play the same game over and over, practicing the concepts and skills they are learning in each game. Second, they are encouraged to move beyond the easy games to more challenging ones in order to create different toys.

All together there are 18 toys in this activity. At first, the child learns to identify and match simple shapes like circles, squares, and rectangles. As their brain power gets bigger, they see a greater variety of shapes and learn to discriminate between different sizes of the same shape. The concept of size is important to



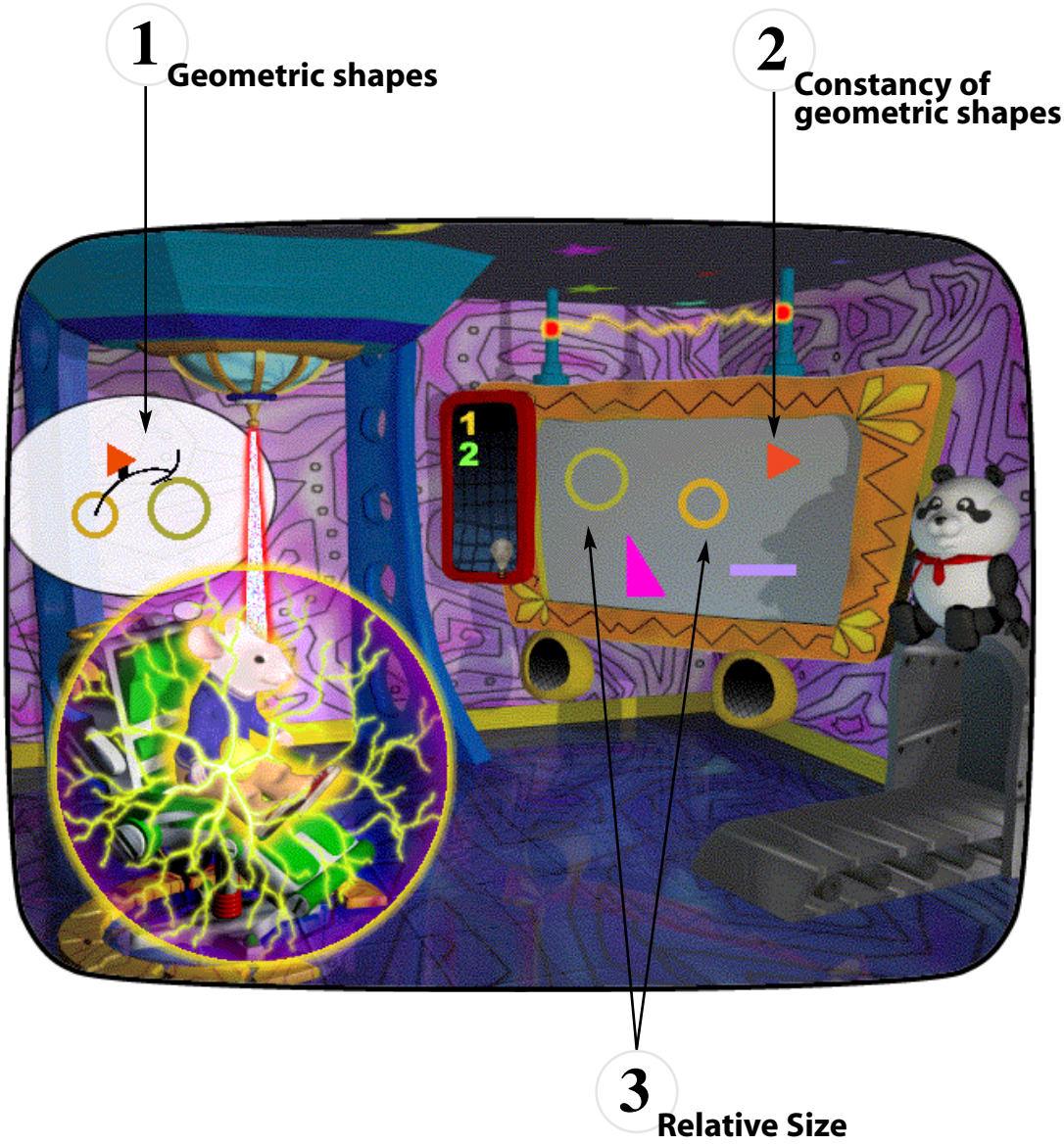


After making a toy, click the knobs beside the numbers

young children as they make sense of the world. Very young children tend to categorize things into just "big" or "small". As they gradually become more experienced with objects, they learn an intermediate category called "medium". This primary concept of size comparison is the foundation of scientific measurement, which will develop later. Finally, this activity reveals that many familiar objects are actually composed of arrangements of more elementary geometric shapes.

Corrections

If the child clicks the wrong shape, I will let them know by gently saying "Naa".


1
Geometric shapes
2
Constancy of geometric shapes
3
Relative Size

Using the Game to Teach
Focal Points for Parents and Teachers

1 Geometric shapes

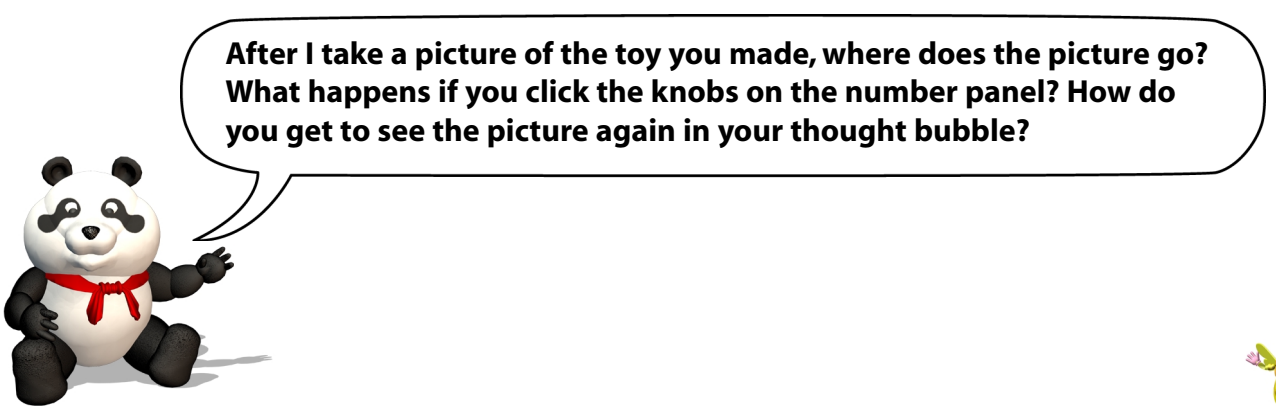
As the activity progresses, the toys will become more and more complex and involve a variety of geometric shapes. You might explain to your child, as an example, the difference between a rectangle and a parallelogram, or what a half circle means. In addition, you might want to use the 2D sketch in the thought bubble and point out to the child that complicated objects are composed of simple geometric shapes. Finally, don't forget to ask your child to use their imagination and guess what the toy is before it morhps into its 3D form!

2 Constancy of geometric shapes

As the child's brain power grows, the toys they are making will become more and more complex. Sometimes, shapes of the same kind are put in different orientations depending on the 2-D sketch in the thought bubble. In this case, you might point out that a triangle is still a triangle regardless of its orientation.

3 Relative Size

If there is more than one of the same shape on the screen with different sizes, Panda will compare the sizes by saying something like "bigger circle" or "smaller circle". This provides a good opportunity to practice comparing relative sizes with the child. You might say…"if this is the bigger circle, where is the smaller circle?



Stuart's Treasure Hunt

As the children explore Numberland and play the games, complete Stuart's treasure hunt. The child could draw in a happy face each time they find one.

Draw a happy face when you find one

1. Where is the place that you can click to check your brain power any time you want to?
2. Where is the lamp that leaves Stuart in the dark when you turn it off?
3. Where is the jack-in-the-box that jumps up and down?
4. Where is the other jack-in-the-box that jumps up and down?
5. Where is the stack of blocks that spins?
6. Where is the puppy-like creature that wiggles his head and wags his tongue?
7. Where is the octopus that swims and bubbles?
8. Where is the blowfish that puffs and puffs?
9. Where are the balloons that pop in the sky?
10. Where are the little butterflies that fly away?
11. How do you get your super special brain power certificate?

Mother Kangaroo's Numerical Rhymes

Here are all of the rhymes that the child will hear at the end of each Falling Blocks Subtraction Game. These rhymes just provide one additional way to help the child remember the addition number facts. You can read out the first part and see if the child can answer using the rhyme as a clue.

Here's a clue, 1 + 1 is _____.

Squeeze my knee, 2 + 1 is _____.

Ask the bee, 0 + 3 is _____.

Stomp on the floor, 2 + 2 is _____.

Please don't snore, 1 + 3 is _____.

Dig this jive, 3 + 2 is _____.

My pig's named Clive, 1 +4 is _____.

Get your kicks, 5 + 1 is _____.

Drop your sticks, 2 + 4 is _____.

Lollipop licks, 3 + 3 is _____.

My name's Kevin, 5 + 2 is _____.

I'm in heaven, 3 + 4 is _____.

Don't be late, 8 + 0 is _____.

I can't wait, 2 + 6 is _____.

Take the bait, 5 + 3 is _____.

Piggy's a swine, 3 + 6 is _____.

Please don't whine, 4 + 5 is _____.

This is mine, 7 + 2 is _____.

A big pig pen, 2 + 8 is _____.

You can win, 4 + 6 is _____.

Piggy's not thin, 7 + 3 is _____.

Where's Mother Hen? 5 + 5 is _____.

As kids play with Stuart, they learn math...

When do kids ever do hundreds of math exercises - - and enjoy it? As the kids play with Stuart in Numberland, you can appreciate the amount of math work they are doing by using the information below or by using the progress report within the game itself. For example, if a child plays the Flower Game 3 times, then on the average they will have done 3 x 9 = 27 math exercises. When a child completely fills up Stuart's brain two times (2 x 415 items), makes all 18 toys in the imagination machine room (18 x 5 items), takes the roller coaster in the cave (120 items), then they will have done (2 x 415) + (18 x 5) + (120) = 1040 math exercises in all!

Game	Number of Games	X (times)	Number of Math Exercises per Game		Total Number of Exercises
1. Dot-to-Dot	_____	X	1	=	_____
2. Bee's Toy Store	_____	X	2	=	_____
3. Treasure Chest Card Game	_____	X	11	=	_____
4. Panda's Castle Game	_____	X	7	=	_____
5. Falling Blocks Addition	_____	X	40	=	_____
6. Falling Blocks Subtraction	_____	X	40	=	_____
7. Flower Game	_____	X	9	=	_____
8. Dinoroo's Bridge Game	_____	X	12	=	_____
9. Tree Climbing Game	_____	X	9	=	_____
10. Falling Blocks Addition and Subtraction	_____	X	120	=	_____
11. Imagination Machine	_____	X	5	=	_____
12. Full Brain	_____	X	415	=	_____

Troubleshooting Guide

Problem	Possible Causes	Solution
During installation "**Cannot install to drive … Not enough disk space**" message appears.	You need 60 MB of free hard disk space available (the game requires 45 MB; in addition, the DirectX installation requires another 15 MB). Note: DirectX will be installed on the same drive as Windows, regardless of the drive you chose for the game.	Free up enough disk space, or install the game on a different hard drive. (i.e., make sure you have 45 MB free on the drive where you wish to install the game, **and** make sure you also have 15 MB free on your Windows drive.)
During installation "**Not enough space to install DirectX 5...**" message appears.	The game requires 45 MB and the DirectX installation requires an additional 15 MB. Note: DirectX must be installed on the same drive as Windows. Furthermore, even if you already have DirectX installed on your computer, the game will need to verify that you have the latest drivers.	Make sure there is at least 15 MB free on your Windows drive then rerun **DXSET.EXE** on the CD-ROM. (There is no need to repeat the whole game installation, just the DirectX installation.)
Even after re-starting the computer following installation, the game crashes or freezes.	You do not have the correct DirectX™ drivers installed. The DirectX drivers on your computer might need to be updated.	Repeat the installation process and follow the directions in the Installation Guide. If after re-installation, the program still does not work, then request a correct/updated DirectX driver from your audio card and/or graphics card manufacturer.

Problem	Possible Causes	Solution
Game freezes in Dot-to-Dot, Imagination Machine, or other spots.	Wrong DirectX sound setting. Your sound card may not support hardware acceleration.	Disable your Sound Card Acceleration with the following steps: Go to **Start** > **Run**, then type **DXDIAG.EXE**, then click **OK** (if the program is not found, run DXDIAG.EXE from the game CD), click **Sound** tab, set the **Hardware Sound Acceleration Level** to the lowest setting by dragging the slider all the way to the left to "**No Acceleration**," click the **Exit** button, restart the game.
Some of my other programs are not working correctly after I install the game.	Incorrect DirectX drivers are being used.	Restore your old drivers. From Windows, click on the **Start** button, choose **Settings**, then choose **ControlPanel**, select **Add/Remove Programs**, left-click **DirectX Drivers** on the listbox (you might need to scroll to find it), click **Restore Audio Drivers** and/or **Restore Display Drivers**. After restarting your computer, you should try running the game and see if it works just fine with your old drivers. If it doesn't, then you might need to contact the manufacturer of your audio or video card to request updated DirectX drivers.

Problem	Possible Causes	Solution
	Not enough memory.	The game requires **16 MB** of memory. This can be a combination of physical and virtual memory. Shut down any running applications before running the game, or increase the size of your Windows Swap file, see your Windows manual on how to increase virtual memory. Note that the more memory your computer has, the better Stuart will run.
No sound.	The speaker is "**Muted**" in Windows.	Turn off "**Mute**" by double clicking the small **speaker icon** on the lower right corner of the Windows Task Bar. Make sure **Mute** is unchecked.
Sound is barely audible.	Windows audio setting is set too low.	From Windows, click on the **Start** button, choose **Settings**, then choose **ContolPanel**, double-click on **Multimedia**, then increase the audio playback volume.
Sound is hissing.	Treble adjustment on your speaker is set too high.	Decrease the treble setting on your speaker.
How can I change the volume of the sound?	Not applicable.	You can only use the volume control on the speaker or on the Windows Task Bar.

Problem	Possible Causes	Solution
Can I turn off the game sounds?	Not applicable.	No, because sound and voice overs are integral parts of the game. They provide constant and essential feedback/cue to the player. Of course, you can always turn off your speaker if you insist on turning off the sounds. However, we do not recommend this for reasons stated above.
How can I turn off the music during a game?	Not applicable.	Press the '**M**' key on the keyboard. (Press the '**M**' key again to turn music back on.)
Unable to print.	Printer is off.	To be safe, exit the game, turn on your printer after re-entering the game, then try to print again. If you still have problems, turn your printer off, then re-start the computer and turn your printer on after re-entering the game.
	Printer is out of paper.	Load some paper, then wait for the printer to print or press the **online/offline** button. If it does not print, then follow the above procedure.
	Printer is not connected.	Connect the printer to your PC and follow the "printer is off" solution.
	Incorrect printer is selected as the default printer in the Windows printer settings. You must select a dot-matrix, ink-jet, or laser type raster printer.	Select the correct default printer in Windows. (i.e., from Windows, click the **Start** button, select **Setting**, then select **Printers**.)

Problem	Possible Causes	Solution
Game is too slow or the sound breaks up or skips.	The CPU might be too slow. The game requires a minimum of a 200 Mhz CPU.	Install the game on a computer with at least a 200 Mhz CPU.
	The CD-ROM drive is too slow. The game requires an 8X speed or faster CD-ROM drive.	Install the game on a computer with an 8X speed or faster CD-ROM drive.
	Disk may be fragmented without enough contiguous space.	De-fragment your hard disk.
	Other applications are running in the background. They might take up too much CPU time.	Make sure no other applications are running when the game is running.
The game appears too dark (or too bright) on my monitor.	The monitor brighness and/or contrast setting might need to be adjusted.	Adjust the brightness and/or contrast setting on your monitor.
How do I uninstall the game? How do I remove the game from my computer?	Not applicable.	Go to the Windows **Program Group** where the game is located (the default is called **Stuart Little: His Adventures in Numberland**), you should find an icon called: **unInstall Stuart Little: His Adventures in Numberland**. Double click/run that item to uninstall. Alternatively, from Windows, click on the **Start** button, choose **Settings**, then choose **ContolPanel**, select **Add/Remove Programs**, left-click **Stuart Little: His Adventures in Numberland** on the list-box (you might need to scroll to find it), then click the **Add/Remove** button.

Problem	Possible Causes	Solution
Will I lose the player's records if I uninstall the game?	Not applicable.	The player's records are stored in a file called **player's.dat**, and in a folder called **Playdata** under the game's folder. Running the uninstall program does not erase them. Therefore, if you reinstall the game into the same folder at a later time, the player's records will not be lost (unless you've manually deleted **players.dat** and **Playdata**).
After uninstalling, there is a message that says, "**unInstall completed. Some items could not be removed…**."	This is normal. Uninstalling the program does not erase the players' records. This is intentional so that if you decide to reinstall later, you can still use the old players (and not lose their winning record).	If you do not wish to keep the players' records, you can always remove the **Playdata** sub-folder and **players.dat** file manually.
I accidentally deleted the game's folder. Now I cannot run **unInstall**; however, the Stuart icon is still on my Windows desktop.	This is because the uninstallation procedure is not followed. The icon would have been deleted by the **unInstall** program provided with the game.	Drag the icon to the Windows **Recycle Bin** to delete it. In the future, it's a good idea to follow the proper uninstallation procedure. (See section **How do I uninstall the game?** above)
During game, I receive a message saying that the game could not open some file(s).	The file(s) might be corrupted.	Uninstall and then reinstall the game.
I receive this message: "**Could not initialize Direct Sound...**"	Another application is using your sound card.	Make sure no other application is running before you run the game.

Problem	Possible Causes	Solution
I receive this message: "**Could not initialize Direct Draw...**"	Another application is interfering with the game's display operation.	Make sure no other application is running before you run the game.
Can I run the game without the CD-ROM?	Not applicable.	No, most of the game's data are on the CD-ROM. You need to have the CD-ROM in the drive in order to run the game.
Can I run the game directly from the CD-ROM, without installing it?	Not applicable.	No, the game needs to be installed so it can save player's records.
Sounds skips or sound is fragmented.	Wrong DirectX sound setting. Your sound card may not support hardware acceleration.	Disable your Sound Card Acceleration with the following steps: Go to **Start** > **Run**, then type **DXDIAG.EXE**, then click **OK** (if the program is not found, run DXDIAG.EXE from the game CD), click **Sound** tab, set the **Hardware Sound Acceleration Level** to the lowest setting by dragging the slider all the way to the left to "**No Acceleration**," click the **Exit** button, restart the game.