ST Math

Teacher Guide to Supporting 2nd Grade Students Learning From Home

With the spread of Coronavirus, COVID-19, schools across the country are temporarily closing. At MIND Research Institute, our mission is to ensure that all students are mathematically equipped to solve the world's most challenging problems. That's why we stand ready to provide resources and no-cost access so the learning can keep on happening, even if school is temporarily closed.

This guide provides support and resources that teachers can use for remote learning. There's also a companion guide for parents. All resources in the parent guide are included here to support teachers as they plan their remote instruction. The three types of resources in this guide are outlined below.

ST Math Program: ST Math is a PreK-8 visual instructional program that leverages the brain's innate spatial-temporal reasoning ability to solve mathematical problems. Its unique, patented approach provides students with equitable access to learning through challenging puzzles, non-routine problem solving, and informative feedback. With ST Math, students build deep conceptual understanding, and schools see proven, repeatable results.
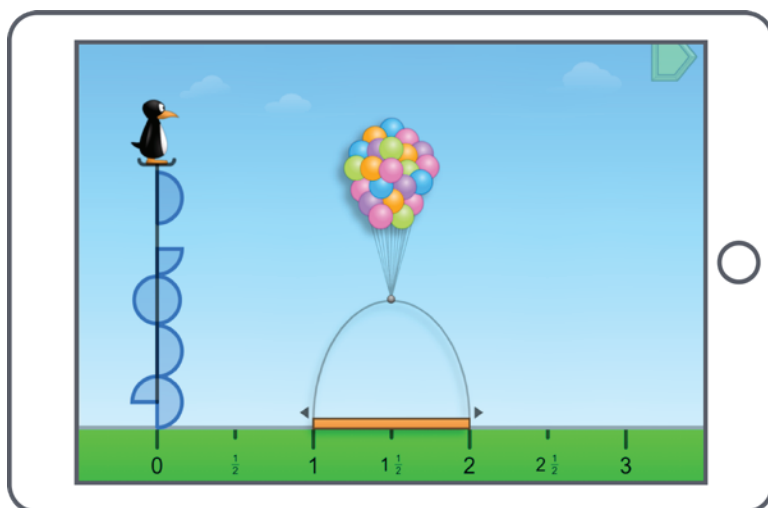
Hands-On Math Activities: These activities focus on specific math concepts within a grade level. Each activity is designed to engage students in learning that is hands-on and promotes understanding of the concept. These activities are meant to be done with a parent or guardian. It's a fun way for children and parents to do math at home. Each activity includes clear directions, vocabulary words, and questions parents can ask to support their children during the activity.

Number Sense Games: Number Sense is an area that is critical to mathematics learning. It includes mathematical concepts like counting, adding, subtraction, multiplication, division, fractions, place value, estimation, and many others. Included in this packet are activities that students can do at home with their families to build number sense and practice those critical skills in a fun and engaging way through gameplay.

Contents

Using These Resources

As you review this packet and prepare to use these resources to support you in planning your remote learning, here are some suggestions for you.

Provide your students with an assignment sheet.

- Download the assignment sheet from this packet and use it to communicate with your students the expectations for their work during the week.

Review the tips for parents.

- These are tips that are provided in the parent guide, but also are good reminders that you may want to include in your email communications.

Visit **stmath.com/coronavirus** for additional information and support.

Learn from Home Assignment Sheet

NAME: _____ DATE: _____

SCHOOL: _____ TEACHER: _____

1. **Play ST Math.**

   Mark your progress on the ST Math Usage Calendar.

2. **Complete a math journal sharing what you learned.**

   Give or share your completed calendar and math journal with your teacher.

   (Ask your teacher how to turn them in.)

3. **Math Activity** _____ Pg. ____

4. **Math Game** _____ Pg. ____

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ST Math

Resources to support, monitor, and assess student learning while they play ST Math.

Teacher Guidance:

- Encourage students to work independently on ST Math and track their usage on the ST Math calendar. Recommended usage time is 20 to 30 minutes at least 3 times per week.
- Remind your student to use the Think Before You Click strategy to help them think through games. This will help support them when they are stuck on puzzles. For more information on this strategy, view the videos on our instructional resources Youtube playlist.
- Encourage parents to support the student's thinking by asking facilitating questions instead of telling or showing the student how to solve the puzzles. The parent guide includes a facilitating questions poster. For more information on how parents can facilitate student thinking as they work on ST Math puzzles, view the videos on our instructional resources Youtube playlist.
- Consider posting or emailing a link to the Think Before You Click and Facilitation videos for easy access for parents.
- Review the other resources on the site to determine what other things you might want to share to support the use of ST Math at home.

Below are tips to share with families working with their children at home:

- Work with your child to set goals and monitor their progress toward achieving their goals. This is a great opportunity to help your child see that they can achieve their goals.
- When your child is finished playing ST Math, have them complete a math journal to share what they have learned.
- If possible, take time to sit with your child and ask them to explain to you what they are learning with ST Math.
- A fun way to share learning together is to have your child "teach" a family member how to play one of the ST Math games. They can share the mathematics in the game.
- If your child gets stuck playing the ST Math puzzles, you can have them think through the questions on the Think Before You Click poster. If you are able, you can use the questions on the Facilitating Questions poster to help your child problem-solve through the ST Math games.

ST Math Resources in the Teacher Guide

The resources in the table below are provided in the Parent and Teacher Guides to support students as they learn at home.

ST Math Usage Calendar: As students play ST Math, have them track their progress on the calendar.

ST Math Journals: There are different Math Journals for students to communicate their learning. You may choose to use only one or to provide all of them for students to choose from. Students can turn these in via email or another virtual tool each week or you may choose to have them turned in when students return to school.
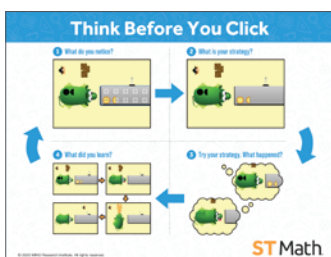
Think Before You Click Poster: This poster is a great resource for students to ask themselves questions as they work through ST Math puzzles. It will help students as they get stuck. Students may have to try different strategies and observe the feedback several times before they get the correct answer. For more information on this strategy, view the videos on our instructional resources Youtube playlist.

Facilitating Questions Poster: This poster is a great resource provided to parents to help support their student while they play ST Math at home. It is important to remind parents not to tell the student the answer, but to ask questions that help them think through the puzzles. For more information on this strategy, view the videos on our instructional resources Youtube playlist.

Additional Resources: Additional resources for teachers and parents can be found at https://www.stmath.com/coronavirus.

ST Math® Usage Calendar

Mark your progress every time you use ST Math. Try to play at least 30 minutes. Color the box each day that shows the number of minutes you played. Fill in how many puzzles you completed in ST Math.

STUDENT NAME: _____

MONDAY			TUESDAY			WEDNESDAY			THURSDAY			FRIDAY		
DATE:			**DATE:**			**DATE:**			**DATE:**			**DATE:**		
10 min.	20 min.	30 min.	10 min.	20 min.	30 min.	10 min.	20 min.	30 min.	10 min.	20 min.	30 min.	10 min.	20 min.	30 min.
Number of Puzzles I Completed:			Number of Puzzles I Completed:			Number of Puzzles I Completed:			Number of Puzzles I Completed:			Number of Puzzles I Completed:		
DATE:			**DATE:**			**DATE:**			**DATE:**			**DATE:**		
10 min.	20 min.	30 min.	10 min.	20 min.	30 min.	10 min.	20 min.	30 min.	10 min.	20 min.	30 min.	10 min.	20 min.	30 min.
Number of Puzzles I Completed:			Number of Puzzles I Completed:			Number of Puzzles I Completed:			Number of Puzzles I Completed:			Number of Puzzles I Completed:		
DATE:			**DATE:**			**DATE:**			**DATE:**			**DATE:**		
10 min.	20 min.	30 min.	10 min.	20 min.	30 min.	10 min.	20 min.	30 min.	10 min.	20 min.	30 min.	10 min.	20 min.	30 min.
Number of Puzzles I Completed:			Number of Puzzles I Completed:			Number of Puzzles I Completed:			Number of Puzzles I Completed:			Number of Puzzles I Completed:		
DATE:			**DATE:**			**DATE:**			**DATE:**			**DATE:**		
10 min.	20 min.	30 min.	10 min.	20 min.	30 min.	10 min.	20 min.	30 min.	10 min.	20 min.	30 min.	10 min.	20 min.	30 min.
Number of Puzzles I Completed:			Number of Puzzles I Completed:			Number of Puzzles I Completed:			Number of Puzzles I Completed:			Number of Puzzles I Completed:		

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Math Journal with JiJi

NAME: _____ **GAME:** _____ **DATE:** _____

1 WRITE OR DRAW SOMETHING YOU LEARNED

2 TELL SOMETHING THAT WAS EASY OR HARD

3 TELL HOW THIS HELPS YOU WITH MATH

4 MATH VOCABULARY

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Math Journal with JiJi

Write or draw something you learned today. Write in one box each day.

NAME: _____ **GAME:** _____

1

2

3

4

WRITE MATH WORDS YOU USED IN THIS GAME.

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Math Journal

My Reflections

NAME: _____ **DATE:** _____

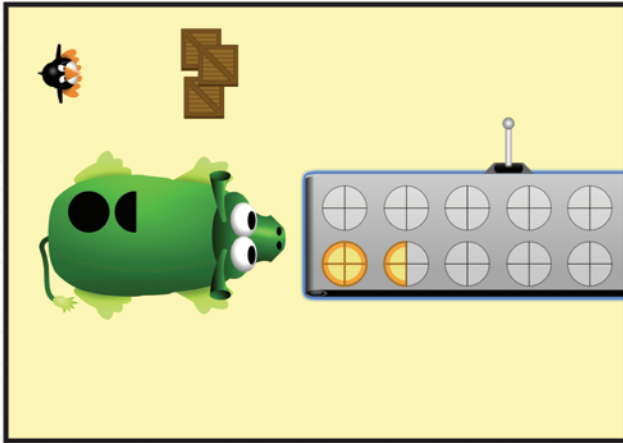| OBJECTIVE PROGRESS	SYLLABUS PROGRESS	TIME SPENT	# OF PROBLEMS SOLVED

SOMETHING I LEARNED TODAY IS . . .

SOMETHING THAT WAS EASY / HARD FOR ME WAS...
(circle one)

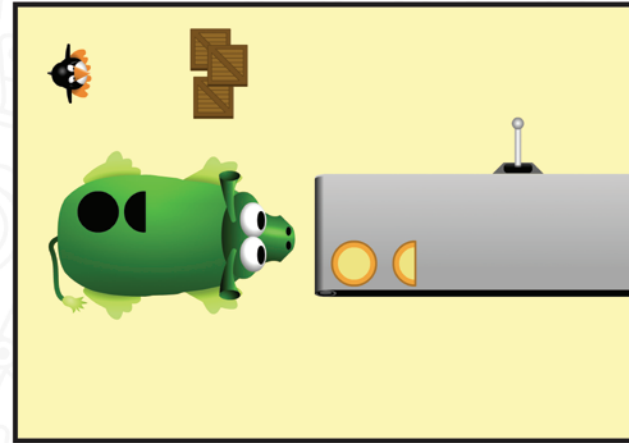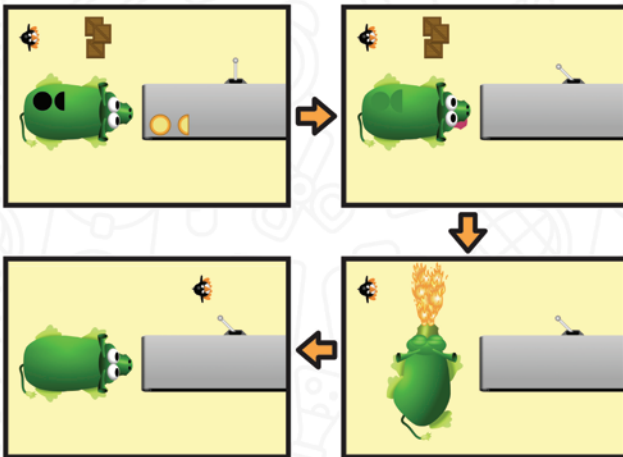## ONE WAY THIS CONNECTS TO WHAT I LEARNED IN CLASS IS . . .

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Think Before You Click

1 What do you notice?
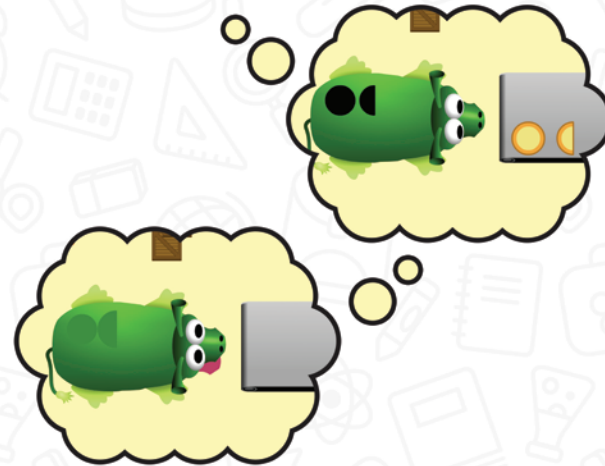

2 What is your strategy?

4 What did you learn?

3 Try your strategy. What happened?

ST Math

Facilitating Questions

In ST Math®, the puzzles start off simple and then get more challenging as the student progresses. When they reach a challenging problem, they may ask for your help.

To help them, ask questions like:

- What do you notice about the puzzle?

- What did you learn from the previous level that can help you here?

- What can you click?

- Describe what you see after you click. What did you learn?

- Describe the strategy that you are going to use.

- What can you do to get JiJi across the screen?

- What question is this puzzle asking?

- What will you do now?

- What do you expect to see?
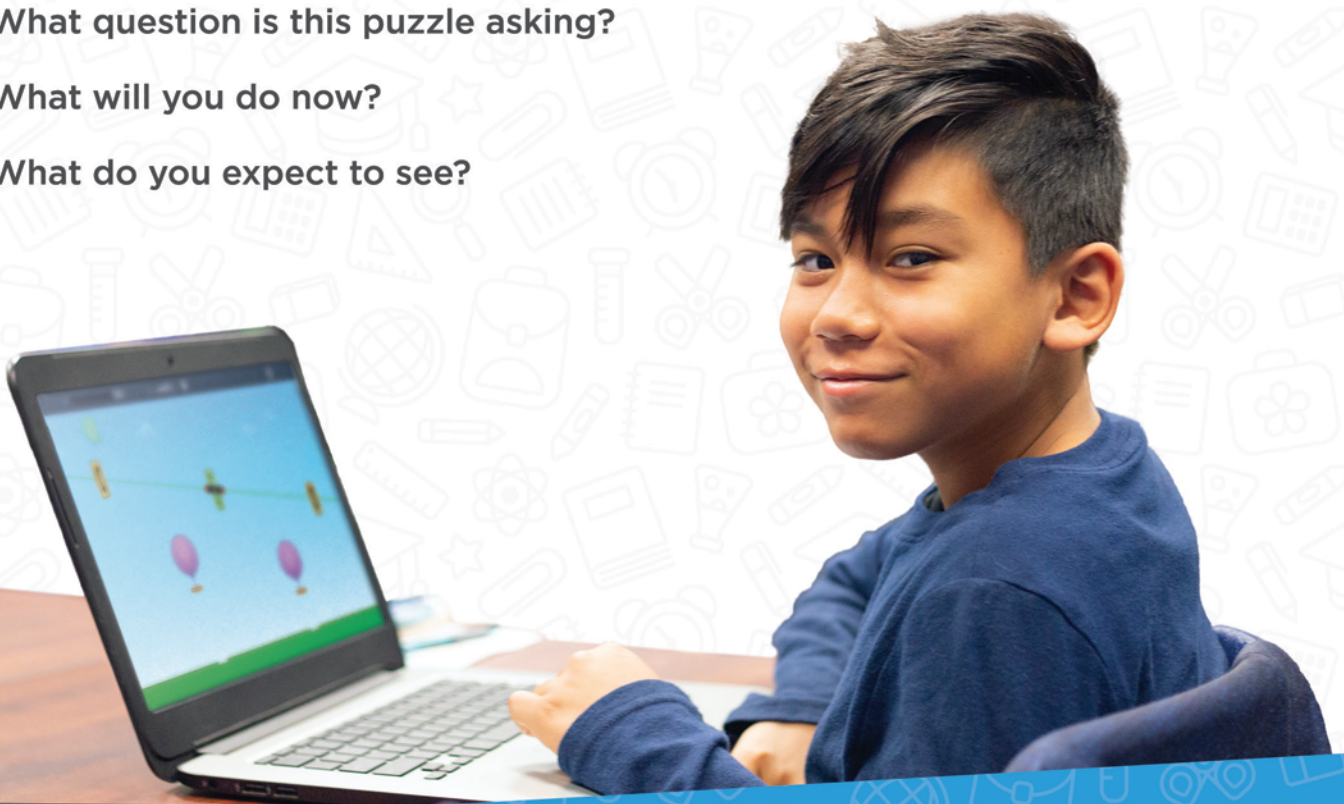
Hands-On Math Activities

A collection of hands-on, grade-band activities focused on practicing and exploring math concepts.

*These activities correlate to our games.*

Teacher Guidance:

- These activities focus on specific math concepts within a grade-level. Each of the hands-on math activities are correlated to an ST Math game. These games are great for you to use with your students in your one-on-one meetings, or in virtual lessons. The visual models in the games help students "see" the mathematics.
- As students do these activities with their families, you may want to have students write what they learned during the activity, or write their answers to the questions so you can assess their learning. Below are some tips that you can share with parents as they do these activities with their children.

Below are tips to share with families working with their children at home:

- These are great activities for you to do with your child. Family members can use the questions and ideas provided to promote math conversations.
- Once your child finishes the activity, have them write a 5-sentence summary or draw a picture of what they learned. They should also list any questions they have for their teacher.

Hands-On Math Activity Resources in the Teacher Guide

The resources in the table below are provided in the Parent and Teacher Guides to support students as they learn at home.
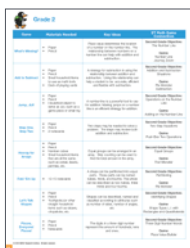
Math Activity Guide: This guide outlines activities, their related materials, and math concepts.

Math Activity Sheets: These activity sheets include directions, vocabulary words, sample questions, and extension ideas. The activities are designed so that students can complete with the teacher or at home with their families.

Grade 2

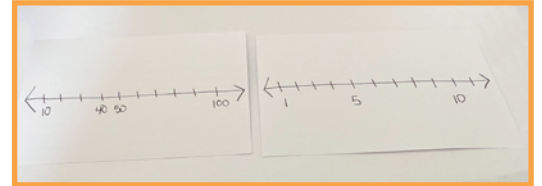| Game	Materials Needed	Concepts	ST Math Game Connection
What's Missing?	• Paper • Pencil	Place value determines the location of a number on the number line. The relationship between numbers on a number line can help with addition and subtraction.	**Second Grade Objective:** The Number Line **Game:** Number Line Journey Zoom
Add to Subtract	• Paper • Pencil • Small household items to use as math tools • Deck of playing cards	A strategy for subtraction is using the relationship between addition and subtraction. Using this relationship can help a student to be accurate, efficient, and flexible with subtraction.	**Second Grade Objective:** Addition and Subtraction Situations **Game:** Pie Monster Subtraction
Jump, JiJi!	• Paper • Pencil • Household object to serve as JiJi, such as a game piece or small toy	A number line is a powerful tool to use for addition. Making jumps on a number line is an efficient strategy for addition.	**Second Grade Objective:** Operations on the Number Line **Game:** Adding on the Number LIne
Step One, Step Two	• Paper • Pencil • 2 notecards	Two steps may be needed to solve a problem. The steps may involve both addition and subtraction.	**Second Grade Objective:** Two Step Equations **Game:** Push Box Two Operations
Hooray for Arrays	• Paper • Pencil • Number cubes • Small household items that are all the same, such as cereal, beans, pennies, etc.	Equal groups can be arranged in an array. Skip counting can be used to find the total amount in the array.	**Second Grade Objective:** Equal Groups **Game:** Fruit Monster
Fold 'Em Up	• 12-15 notecards	A shape can be partitioned into equal parts. These parts can be named halves, thirds, and fourths. The whole can be described as two halves, three thirds, and four fourths.	**Second Grade Objective:** Partitioning **Game:** Pie Monster
Let's Talk Shapes	• Paper • Pencil • Toothpicks (or other straight household items such as straws, chopsticks, etc.)	Shapes can be described, named, and classified according to attributes such as number of sides, number of angles, etc.	**Second Grade Objective:** Identifying Shapes **Game:** Shape Types L.I. with Rectangles and Quadrilaterals
Places, Everyone! Places!	• Paper • Pencil • Notecards	The digits in a three-digit number represent the amount of hundreds, tens, and ones.	**Second Grade Objective:** Three-Digit Number Words **Game:** Place Value Builder

What's Missing?

Activity for 2nd Grade Students
This game focuses on helping children to understand the number line. Your child should understand that numbers increase as you move right on the number line and numbers decrease as you move left on the number line. They should also understand that a number line does not have to start at 0 and that numbers on a number line are equally spaced.

Directions:
- Gather a pencil and paper.
- Draw various number lines for your child. Show between 10-12 spots for numbers on each number line. Leave several spots blank on the number line. The numbers can range from 0 - 1000.
- Give your child the number line and ask them to determine the missing numbers.
- Talk with your child about their strategy for determining the missing numbers.

Math Words to Use:	Materials	Sample Questions to Ask:
Number line Number order Greater than Less than	• Paper • Pencil	• How did you know which number goes in that spot? • What two numbers would come before the beginning of this number line? • What two numbers would come after the end of this number line? • Does a number have to be labeled on a number line for it to have a spot on a number line?

Ideas to Extend Learning:
- Challenge your child with number lines that only have 10's or 100's labeled. Ask them to place 2 and 3 digit numbers on the number line. Talk about how every number has a spot on the number line even if it isn't labeled.
- Choose a number from the number line. Ask your child to write that number in word form and expanded form (for example: 834, eight hundred thirty four, 800 + 30 + 4).
- Choose two numbers on the number line. Ask your child to compare the numbers. Ask them how they can use the number line to prove that one number is greater than the other.
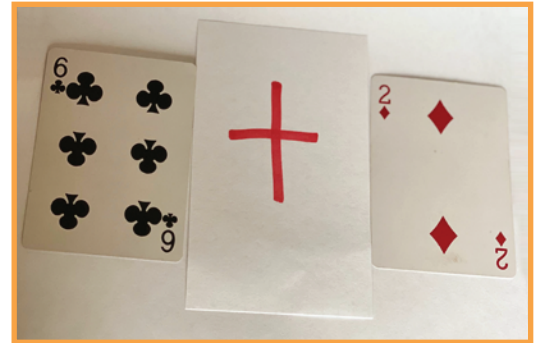
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Add to Subtract

Activity for 2nd Grade Students
This game focuses on helping children to understand the relationship between addition and subtraction. Addition and subtraction are opposite operations and they result in related facts (fact families). Your child can use addition facts they know to solve a related subtraction fact.

Directions:

- Gather paper, a pencil, small household items like cereal to use as math tools (if needed), and a deck of playing cards. Tell your child that aces are worth 1, jacks are worth 11, queens are worth 12, and kings are worth 13. Remove the jokers.
- Have your child choose two cards and represent putting the two numbers together with an addition equation (e.g., $8 + 11 = 19$).
- Work together to write the other addition fact. Ask your child to prove that order doesn't matter when you add, so the other addition fact involves simply switching the order of the addends (e.g., $11 + 8 = 19$).
- Write one related subtraction fact with the answer unknown (e.g., $19 - 8 = ?$). Show your child that they can think of this problem as a missing addend problem (e.g., $8 + ? = 19$).
- Work together to solve and prove the answer.
- Choose two more cards and repeat.

Math Words to Use:	Materials	Sample Questions to Ask:
Add **Subtract** **Missing addend** **Equation** **Equal** **Related facts**	• Paper • Pencil • Small household items to use as math tools • Deck of playing cards	• How did you find the sum of these numbers? • What are the related facts for this equation? • Why are addition and subtraction opposite operations? • What other strategies do you have for subtraction?

Ideas to Extend Learning:

- Pose story problems that involve subtraction within 100 and ask your child to represent the problems and solve (e.g., "Sarah had 87 stickers in her collection. She gave 29 of her stickers to her best friend. How many stickers does Sarah have now?"
- Explain to your child that we can represent the unknown in a problem with a letter or shape. Show them problems such as $39 + A = 98$ or $74 - B = 49$ and ask them to solve for the unknown.
- Give your child three numbers that are part of a number bond (e.g., 3, 7, 10 or 18, 2, 20) and ask them to write the four related facts for each set of numbers.
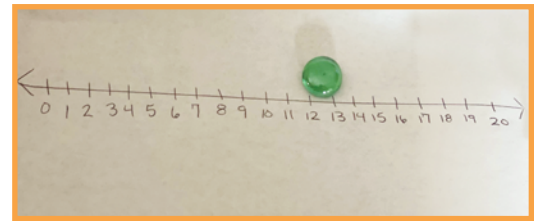
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Jump, JiJi!

Activity for 2nd Grade Students
This game focuses on helping children to see the number line as a tool for addition and subtraction. Your child should have a strategy for both adding and subtracting that is accurate, efficient, and flexible. Your child should understand that a number line does not have to start at 0, that the spaces between each number are equal, and a number line has no end.

Directions:
- Gather paper, a pencil, and a small household object to serve as JiJi (a game piece, a small toy, etc.)
- Work together with your child to create a 0 - 20 number line. Talk with your child about the structure of a number line. Remind them that a number line has arrows on each end because numbers go on forever. Point out that the numbers on a number line are equally spaced.
- Pose different addition and subtraction problems and have your child make their "JiJi" jump on the number line to show what is happening in the equation and to solve the problem. (E.g., For the equation 8 + 3, JiJi would jump to 8 to start and then jump to the right 1, 2, 3 spaces to land on 11. For the equation 19 - 5, JiJi would jump to start at 19 and then jump to the left 1, 2, 3, 4, 5 spaces to land on 14.)

Math Words to Use:	Materials	Sample Questions to Ask:
Add Subtract Number line Strategy Equation	• Paper • Pencil • Household object to serve as JiJi, such as a game piece or small toy	• To solve this problem, where do we start on the number line? • To solve this problem, do we move right or left on the number line? Why? • Does a number line have to start at 0? Why or why not? • How could we add three numbers together on a number line?

Ideas to Extend Learning:
- Pose addition and subtraction story problems within 20 to your child and ask them to show you how they can use the number line to find the answer.
- Show your child addition and subtraction problems that have been solved with a number line (show your jumps with arrows on the number line). Ask your child to write the equation that matches what they see on the number line.
- Represent different skip counting patterns on a number line and ask your child to identify the rule for the pattern they see (e.g., add 5).
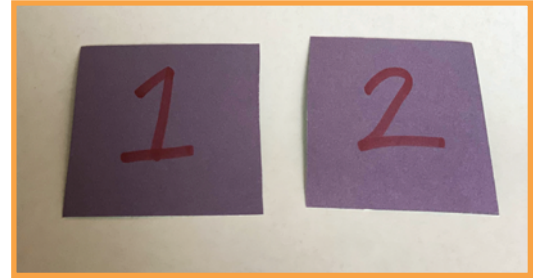
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Step One, Step Two

Activity for 2nd Grade Students

This game focuses on helping children to understand that more than one step may be needed to solve a problem. Your child should understand that a problem situation might require putting together multiple groups or using both addition and subtraction in order to find a solution.

Directions:

- Gather paper, a pencil, and two notecards or small pieces of paper.
- Write "1" on the first notecard and "2" on the second.
- Pose the following story problems to your child. After you read each problem, ask your child what two steps are needed to solve the problem. Have them solve the problem on the paper.
- Talk together about their strategy. Ask your child what they did first and why. Put the "1" notecard by their work for the first step as they explain what they did first. Ask your child what they did next and why. Put the "2" notecard by their work for the second step as they explain what they did next.

DeSean has 25 red tokens and 46 blue tokens. He gives 13 tokens to his brother. How many tokens does DeSean have now?	Lily has 28 stuffed animals in her collection. 9 are dogs, 8 are cats, and the rest are bears. How many stuffed bears does Lily have?	Omar has two pencil boxes. He has 24 pencils in each box. If Omar gives13 pencils to his friend, how many pencils will Omar have?
Kierra's sticker book has 3 pages. Each page has 30 stickers. She gave 11 stickers away. How many stickers does Kierra have in her sticker book?	Cameron's Lego set had 100 pieces. He lost 29 pieces. He found 18 pieces under his bed. How many Lego pieces are left from the set?	Fatma loves gel pens. She has 52 pink pens, 31 purple pens, and 12 green pens. How many pens does Fatma have in all?

Math Words to Use:	Materials	Sample Questions to Ask:
Strategy Steps Unknown Known	• Paper • Pencil • 2 notecards	• What is this problem asking us to do? • What was your first step to solve this problem? • What did you do next? • How can you prove your answer is correct? • Did the order of the steps matter? Why or why not?

Ideas to Extend Learning:

- Talk with your child about problems in real life that require multiple steps to accomplish, such as following a recipe, building furniture, driving to an unknown location, putting together a Lego set, etc.
- Look at the problems again. Ask your child if the order of the steps matters in all of the problems. Prove together that order doesn't matter when you just add (e.g., 7 + 3 + 4 is the same as 3 + 4 + 7) but order DOES matter when you subtract (e.g., 12 + 3 - 5 is NOT The same as 5 - 3 + 12).
- Work together to follow a simple recipe. Talk with your child about the steps the recipe requires and why the steps are in the order they are in.

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Hooray for Arrays

Activity for 2nd Grade Students

This game focuses on helping children to understand the concept of an array. Your child should understand that an array is objects arranged in equal rows and columns. Skip counting is an efficient way to find the total amount in an array (e.g., 4 rows with 5 in each row could be counted 5 + 5 + 5 + 5 = 20).

Directions:

- Gather a pencil, paper, 2 number cubes (dice), and small household items. (Note: the items should all be the same so the math concept is clear. Cereal, beans, pennies, etc. would be good for this game.)
- Explain to your child that an array arranges objects in equal rows and columns. Rows go across (like a row in a movie theater) and columns go up and down (like columns on a building). The number of objects in each row in an array has to be the same.
- Tell your child they are going to build an array using the small household item. Roll a number cube to determine the number of rows. Roll a number cube to determine how many will be in each row. (Note: if your child rolls a 6, roll again. Use only numbers 1-5.)
- Have your child build the array. Talk together about how to name the array. Write a repeated addition sentence (e.g., 3 rows of 4 each would be 4 + 4 + 4) and work together to skip count the rows (e.g., 3 rows of 4 each would be 4, 8, 12).

Math Words to Use:	Materials	Sample Questions to Ask:
Array **Row** **Column** **Equal** **Skip counting**	• Paper • Pencil • Number cubes • Small household items that are all the same, such as cereal, beans, pennies, etc.	• How many are in each row? How many rows do we have? • What number are we adding each time? • How could we skip count this array? • What is the total number in this array?

Ideas to Extend Learning:

- Look for arrays in your house and neighborhood. Can your child find examples of objects arranged in equal rows and columns, such as panes of glass in windows, drawers on a dresser, days of the week on a calendar, etc.
- Let your child explore if numbers of objects can be arranged in more than one array. Good numbers to explore would be 12 and 24.
- Ask your child if they think 3 rows of 4 is the same as 4 rows of 3. Let them investigate by building the two arrays. Show your child that rotating an array changes its name, but does not change the total. Repeat with other arrays of 5 x 5 or less.

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Fold 'Em Up

Activity for 2nd Grade Students
This game focuses on helping children to see that rectangles can be divided, or partitioned, into equal parts. Your child should understand that the parts must be equal. They should call shapes with 2 equal parts *halves*, shapes with 3 equal parts *thirds*, and shapes with 4 equal parts *fourths*. These parts do not have to be the same shape, but they must be equal in size.

Directions:

- Give your child 12-15 notecards.
- Ask your child if they have ever broken something into two equal pieces and why. Explain that when something is partitioned into 2 equal pieces, the pieces are called *halves*. Ask your child to find as many ways as they can to fold the notecards into halves.
- Investigate the different halves your child found. Prove together that the parts are equal. Look to see if the halves are all the same shape.12-15 notecards
- Repeat with *thirds* and *fourths.*
- Discuss with your child how many halves, thirds, or fourths it takes to describe the whole shape. Prove together that a whole is the same as two halves, three thirds, and four fourths.

Math Words to Use:	Materials	Sample Questions to Ask:
Partition Equal Halves Thirds Fourths	• Several note cards	• How many equal pieces do you see? • How do we know these pieces are equal? • Why are these pieces called halves? • Why are these pieces called thirds? • Why are these pieces called fourths? • Can we make fourths that are not all the same shape? How?

Ideas to Extend Learning:

- Look for examples of halves, thirds, and fourths around the house. Point out times when your family has partitioned something into two, three, or four equal pieces.
- Look at the folded notecards with your child again. Ask your child if any of the notecards represent an array (equal rows and columns). Work together to name the arrays with a repeated addition sentence (e.g. the rectangle folded into fourths may show 2 + 2 or 1 + 1 + 1 + 1).

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Let's Talk Shapes

Activity for 2nd Grade Students
This game focuses on helping children to understand that shapes have attributes, or something you could say a shape has, like 3 sides or equal sides. Your child should understand these attributes can be used to describe, name and classify shapes. Vocabulary is an important part of being able to work with shapes.

Directions:
- Gather paper, pencil, and toothpicks (or other straight objects like straws or chopsticks).
- Give your child the toothpicks and ask them to make the different shapes from the list below.
- After your child makes each shape, talk about its attributes.
- As your child describes the shape, ask them questions to focus on defining attributes, such as being closed or open, number of sides, number of vertices (corners), number of angles, etc.
- On the paper, draw multiple examples of the shapes listed below. Vary the examples by size and orientation.
- Ask your child to find all of the triangles, for example. Discuss the defining attributes of the triangles and help your child to see that any closed shape with 3 straight sides is a triangle regardless of its size or orientation.
- *Shapes to make: square, rectangle, triangle, hexagon, quadrilateral (any 4-sided shape)*

Math Words to Use:	Materials	Sample Questions to Ask:
Attribute **Square** **Rectangle** **Triangle** **Hexagon** **Angles** **Sides** **Closed** **Vertex** **Vertices** **Quadrilateral** **Pentagon** **Hexagon**	• Paper • Pencil • Toothpicks (or other straight household items such as straws, chopsticks, etc.	• What is the name of this shape? • How many sides/angles does this shape have? • Are these shapes both triangles/squares/rectangles? How do you know? • Do all of one type of shape look alike? Why or why not? • Does rotating a shape change its attributes? Why or why not? • Does making a shape bigger or smaller change its attributes? Why or why not?

Ideas to Extend Learning:
- Explain to your child that a *quadrilateral* is a closed shape with 4 sides. Ask your child to use toothpicks to make (or draw) as many 4 sided shapes as they can. Name the shapes they draw (e.g., square, trapezoid, etc.) and talk about how shapes can belong to more than one group (e.g., a shape can be a square AND a quadrilateral).
- List a set of attributes and have your child draw a shape that matches those attributes. For example, "I am thinking of a closed shape with 6 sides and 6 angles. What could my shape look like?"
- Go on a shape hunt in your house. Ask your child to name each shape and talk about the attributes they see.
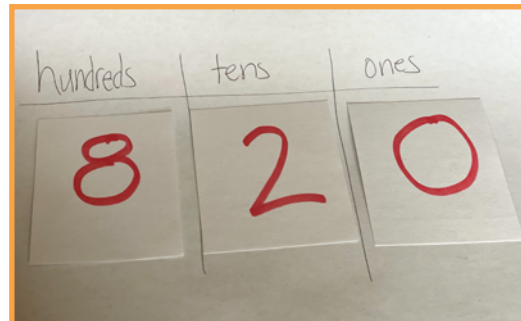
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Places, Everyone! Places!

Activity for 2nd Grade Students

This game focuses on helping children to understand that a digit's place determines its value. Your child should understand that the three digits in a three-digit number represents the amount of hundreds, tens, and ones (e.g., the number 582 has 5 hundreds, 8 tens, and 2 ones).

Directions:

- Gather paper, a pencil, and notecards labeled with the numbers 0-9.
- On the paper, create a place value chart like the one shown below.
- Have your child choose 3 number cards and place them on the place value chart, one in each place value spot (e.g., 582).
- Talk with your child about the value of each digit (e.g., "The 8 is in the tens place. This means we have 8 tens. What is the value of the 8? Why is the value of the 8 equal to 80?")
- Mix up the cards and talk about how moving the digits into different places change its value. (E.g., "Now our number is 825. Now what is the value of 8? Why?")
- Choose new cards and repeat.

Math Words to Use:	Materials	Sample Questions to Ask:
Place value **Digit** **Ones** **Tens** **Hundreds**	• Paper • Pencil • Notecards	• What number have you built? • What is the value of the ___? • How many ones/tens/hundreds does this number have? How do you know? • Why does moving the digit to a different place change its value? • What is the value of the tens and ones in a number like 400? Why?

Ideas to Extend Learning:

- Ask your child to choose 3 number cards to build a three-digit number. Write down the number they build. Then, ask your child to rearrange the number cards to make a different three-digit number. Work together to compare the two numbers. Ask your child to prove which number is bigger using place value language (e.g., "This number has 4 hundreds. The other number only has 2 hundreds. 400 is greater than 200."). Use the >, =, or < symbols to write the comparison.
- Ask your child to choose 3 number cards to build a three-digit number. Have your child represent this number in word form and expanded form (e.g., 271 in word form is "two hundred seventy one" and in expanded form is 200 + 70 + 1). Repeat with other three-digit numbers.
- Pose a number to your child in expanded form and ask them to write the number in standard form (e.g., 800 + 60 + 4 would be written as 864).

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Virtual Math Talk with the Teacher

Teacher Resource

- Math talks are great ways to have students explore math concepts. Use the ST Math Creature Board to explore number concepts with your students. Challenge your students to use pictures to solve the problem and then write it symbolically.
- Use the ST Math Creatures Board to pose questions to your students online. The table below has some examples.
- The ST Math Creature Board is also a great resource to use to play the Creature Target Game. This is a great game where you can give your students target numbers and then have them submit their responses. The responses can be discussed in one on one meetings, during office hours, and through online instruction.
- Both the Creature Problem Solving and the Creature Target Game are great opportunities to talk about Number Pairs/ Make Ten, Addition Concepts, Skip Counting, Additive/Multiplicative Reasoning, Multiplication Concepts, Factors, Multiples, etc.).

Creature Problem Solving

Using the creatures on the board, children can solve problems about the number of shoes each creature can wear.

(NOTE: the snake has no feet so it represents 0.)

PreK-Grade 2 Ideas	Grades 3-5 Ideas
Find one creature that can wear 6 shoes. Prove that you are correct. Can you find two creatures that together can wear 6 shoes?	JiJi wanted to practice skip counting. JiJi looked at the creatures on the playground and used one of the creature's legs to skip count to 24. Which creature's legs could JiJi have used?
Angela had 10 shoes. She put them on two of the creatures. Which creatures could she put them on?	I have some creatures. Together they wear 12 shoes. If I only have 1 type of creature, which creature do I have and how many?
Paul had some shoes. He put them on robots and ants with exactly enough. How many shoes could he have?	There are 36 shoes and one type of creature. How many of those creatures do I need? Find three different ways.

Creature Target Number game

- Show the ST Math Creature Board.
  The challenge is to see how many shoes each creature can wear.
  Snake = 0, Eyeball = 1, Ostrich = 2, Robot = 3, Dog = 4, Starfish = 5, Ant = 6, Amoeba = 7, Octopus = 8, Bus = 9, Lobster = 10
- Give a target number. Have students identify the creatures who can wear the same number of shoes as the target number.
- Students may use any combination of creatures.
  Example: Give a target number of 10. Children may choose one dog and one ant (4 + 6) or one octopus and one ostrich (8+2).
- Students may use any operation to make a target number.
- Give a target number of 18. Students may choose three ants (3x6) or four starts minus an ostrich (4 x 5) - 2.
- If you are not able to be online with all your students at the same time, pose a few questions and have them send their responses to you.

ST Math Creature Board
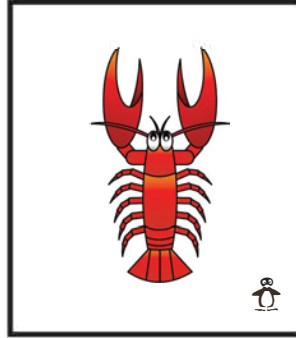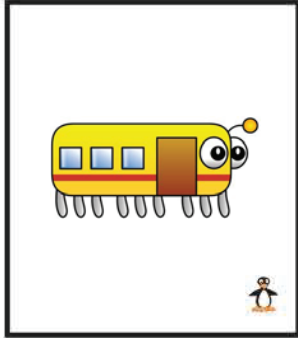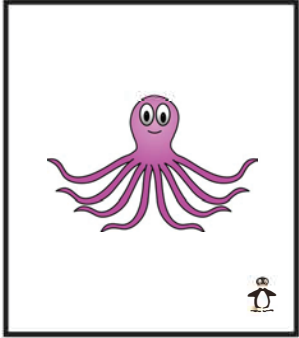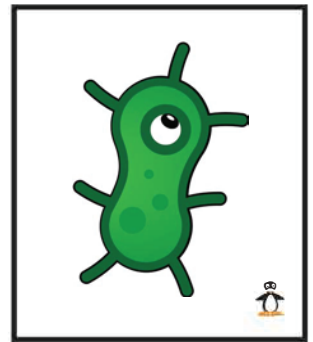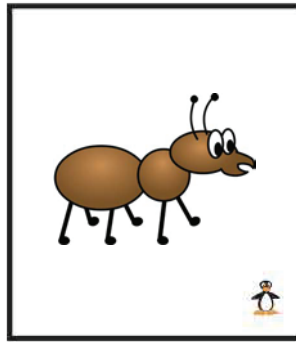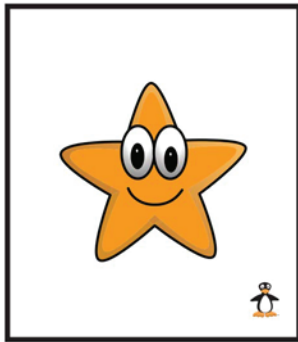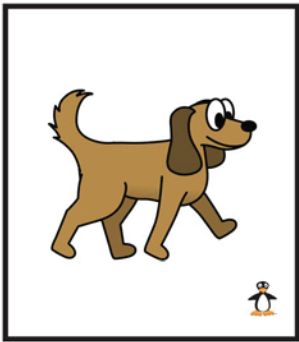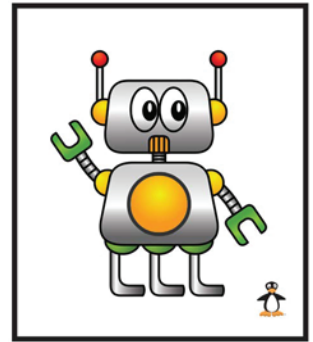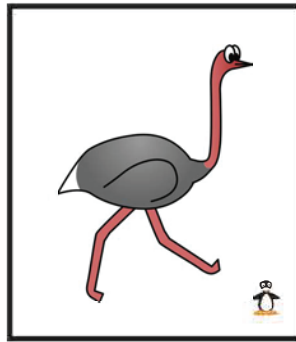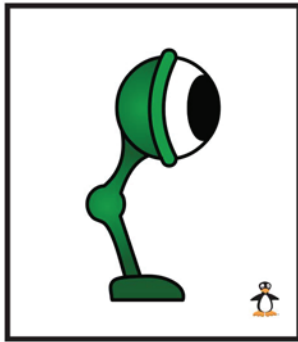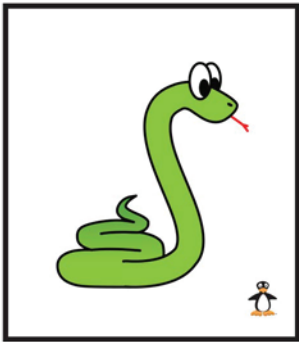
Thinking Space

Target Number

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Number Sense Games

Hands-on games and math stories designed to support students in building number sense.

Teacher Guidance:

- These games are for students to play with their families at home. The games are focused on number sense.
- You may want to go through the games and assign specific games for students to work on at home.
- At the conclusion of game play, you may want your students to write a short summary of their experience.

Below are tips to share with families working with their children at home:

- Play the Number Sense games with your children. This is a great opportunity to strengthen their math skills and have fun at the same time.
- Some of the games in the packet include game boards. All of the game boards can easily be made by your child instead of printing them out.
- Use the ST Math Creature Board to play the game Creature Target Number. The directions to play the game are included in your packet.
- Once your child gets a sense of how to play Creature Target Number. Challenge them to create their own problems for you.

Number Sense Activity Resources in the Parent Guide

The resources in the table below are provided in the Parent and Teacher Guides to support students as they learn at home.

Grade-Band Game Activity Guide: This guide outlines games, their related materials, and math concepts.

Game Directions: Step-by-step directions on how to play the games. These games are focused on building number sense.

ST Math Creature Board: A creature board highlighting some of the characters from the ST Math games. This board can be used to explore math concepts. Included with this resource are directions for playing the target number game.

Kindergarten to Second Grade Games to Play at Home

This is a collection of games that can be done with kindergarten to second grade aged students. A direction sheet is provided for each game. This outlines the games, specifies how to play, offers information around vocabulary words, and provides questions that family members can ask to promote thinking. All of the games are designed for parents and children to play together.

Game Name	Materials Needed	Key Idea(s)
Three Card Make 10	• Deck of cards with face cards removed. Ace equals 1.	Addition and subtraction to 20
Addition War	• Deck of cards with face cards removed. Ace equals 1.	Addition to 20
Pyramid Make Ten	• Deck of cards with face cards removed. Ace equals 1.	Addition pairs to make 10
Number Line Race	• 2 number or dot cubes • 2 game pieces or markers • 2 index cards • Paper bag • Number line 0 to 27. **You may print the number line provided or make your own.**	Addition and subtraction to 27
Make Ten Concentration	• 2 Decks of JiJi Creature Cards. **These cards will need to be printed**. OR • Deck of cards with face cards and tens removed. Ace equals 1.	Addition pairs to make 10
Number Line Bingo	• Deck of cards with face cards removed • Number line 0 to 20 for each player. **You may print the number line provided or make your own.** • 4 small markers for each player (e.g., beans)	Addition and subtraction to 20
Tic-Tac-Ten	• Ace to 10 cards from a deck of cards or a dot cube • Tic-Tack-Ten board. **This may be printed or you can make your own.** • Small game pieces or markers	Numbers and addition to ten
Addition Connect Four	• Two paper clips • Two different color chips or game pieces • Game Board. **This must be printed.**	Addition to 20
Sudoku	• JiJi Sudoku board and cut out JiJi cards • Sudoku boards with numbers **These game boards and JiJi cards must be printed.**	Problem solving

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Three Card Make Ten

For 2 to 4 Players

Supplies:

• Deck of Cards, face cards removed

Ace = 1
2-10 = face value

How to Play:

1. Shuffle the cards and deal three cards to each player. Place the rest of the cards in the center face down.

2. Players add and/or subtract their three cards to make ten. Players take turns showing how ten was made using their 3 cards. If the cards make ten, they put those cards down and pick 3 more cards from the deck.

3. If a player cannot make ten, they pick a card from the deck and their turn ends.

4. Play continues until all of the cards are gone from the center deck and there are no other plays. The winner is the player with the most cards.

Addition War

For 2 Players

Supplies:

• Deck of Cards, face cards removed
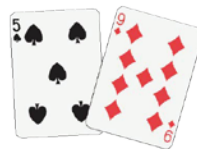
Ace = 1
2-10 = face value

How to Play:

1. Shuffle the cards. Deal all of the cards to the two players and leave them in a stack, face down.

2. The players put their top two cards face up in front of them.

3. Each player adds his or her cards.

4. The player with the greatest sum gets all 4 cards.

5. If both sums are equal, the play continues until there is a greater sum. The player with the greater sum takes all of the cards played in that round.

6. The winner is the player with the most cards at the end of the game.

Pyramid Make Ten

For 1 Player or 2 Players as partners

Ace = 1
2-10 = face value

Supplies:

• Deck of cards with face cards removed

How to Play:

1. Shuffle the cards.
2. Deal cards into a pyramid (see diagram).
3. Form a pyramid of cards beginning at the top with one card so that each new level partially covers the level above it.
4. Place three cards face up beside the pyramid.
5. Remove any uncovered ten card or any two uncovered cards that add up to ten.
6. If there are no cards that can be removed, place three new cards face-up on top of the three cards.
7. Play continues until there are no cards that can be removed and there are no more cards in the deck.
8. The object of the game is to remove all of the cards in the pyramid.

• In this example, the 10 card can be removed and one of the 6 cards and 4 card can be removed.

• If the 6 card in the bottom row and the 4 card in the bottom row are removed, the 5 card in the second row will be uncovered and playable.

• The 7 and 3 cannot be removed because the 7 is partially covered by the 9 card.

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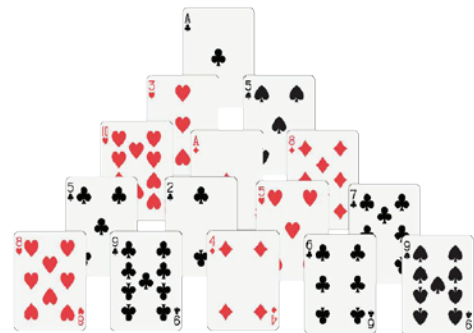
Number Line Race

For 2 Players

Supplies:

- 2 number or dot cubes
- 2 game pieces
- 2 index cards. Draw a + sign on one and a - sign on the other.
- Paper bag
- Number line 0-27 (use this one or make your own)

How to Play:

1. Decide who goes first. Take turns playing.
2. Put the index cards in a bag.
3. Player 1 rolls the dot cube and selects an index card from the bag.
4. They move the number of places rolled on the number line.
5. Plus (+) moves right to left on the number line. Minus (-) moves left to right on the number line.
6. If they cannot move the number of spaces rolled, they lose their turn.
7. The winner is the first person who reaches 27 on the number line.
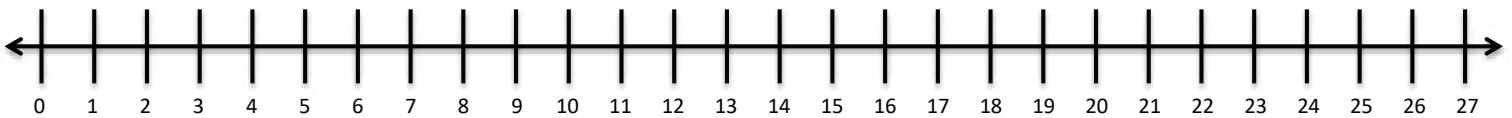
Make Ten Concentration

For 2 to 4 Players

Supplies:

- 2 decks of JiJi Creature Cards

How to Play:

1. Shuffle the cards and place them face down in an array.
2. Players take turns flipping two cards face up.
3. If the cards (number of feet) add up to 10, the player keeps those cards.
4. If the cards do not add up to 10, they are turned face down.
5. The player plays until they do not have a make-ten match.
6. Play continues until all cards are removed.
7. The winner is the player with the most cards.

Creature Cards
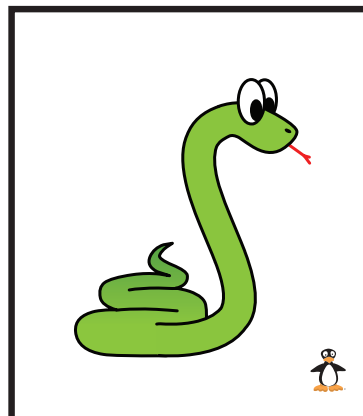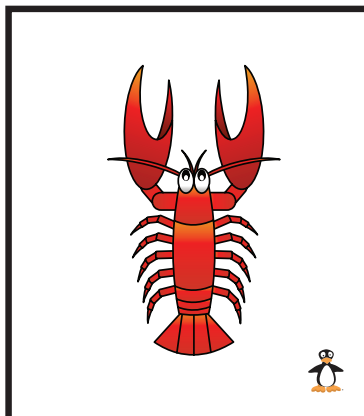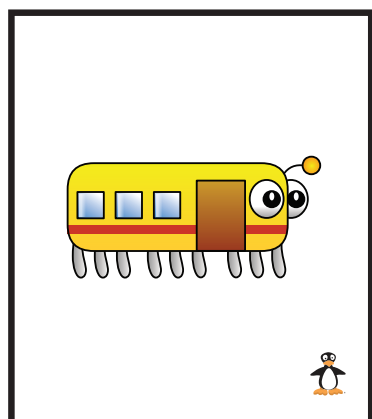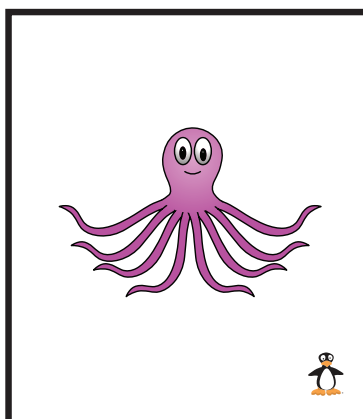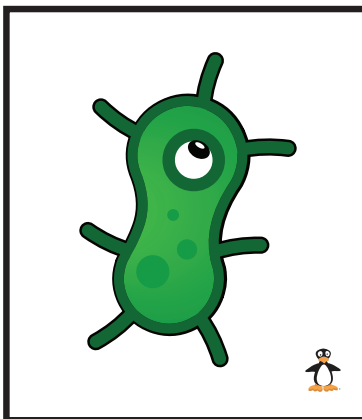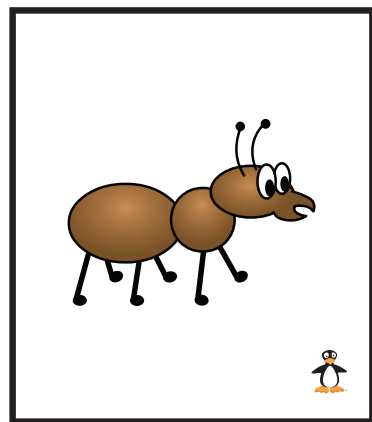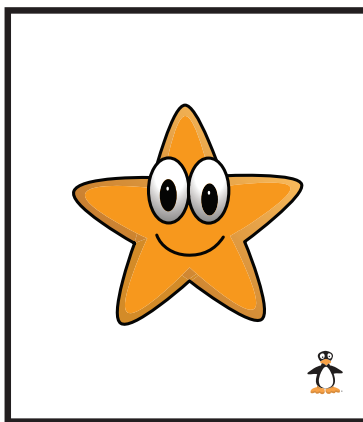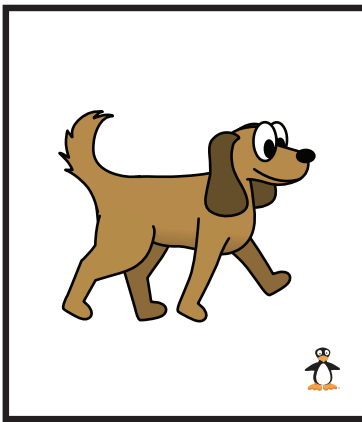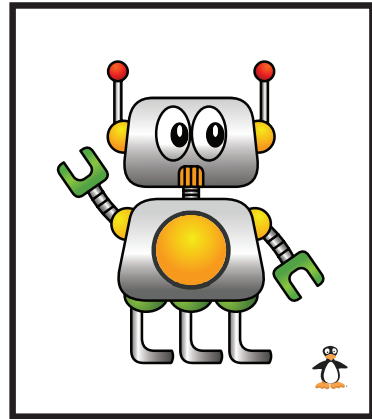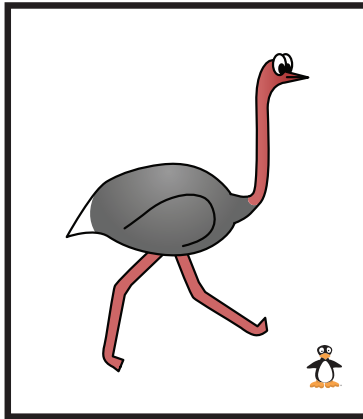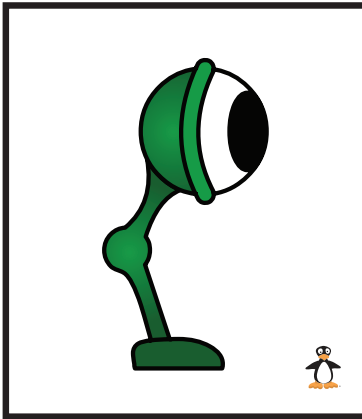
Number Line Bingo

For 2 to 4 Players

Supplies:

- 1 deck of cards with face cards removed
- Number line 0 to 20 for each player
- 4 centimeter cubes for each player

How to Play:

1. Shuffle cards and place face down in the center.
2. Each player places their centimeter cubes on various numbers on their number line. (They can place more than one cube on the same number.)
3. Players take turns flipping over two cards at a time. Each player can decide to add or subtract the numbers on the cards. If their sum or difference is a number that they have a cube on, they get to remove the cube. If they have more than one cube on a number they can only remove one of the cubes.

Tic-Tac-Ten

For 2 Players

Supplies:

- Ace-10 cards from a deck of cards or a dot cube
- Tic-Tac-Ten board
- Small game pieces

How to Play:

1. Take turns picking a card or throwing the dot cube. Place that number of dots in one of the ten frames on the board.
2. Put all of your dots in only one ten frame. You cannot split them up and you cannot have more than ten dots in a frame. You must use all of the dots.
3. The player who completes a ten frame puts a marker in that square.
4. If a player cannot place all of their dots in one frame, they lose their turn.
5. The winner is the player who has three markers in a row (across, up and down, or diagonal).

Number Line Bingo

Cut out number lines

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

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Tic-Tac-Ten
Game Board

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Addition Connect Four

For 2 Players

Supplies:

- Two paper clips
- Two different color chips or game pieces

How to Play:

1. Player One places a paper clip on a number on the bottom strip.
2. Player Two places a paper clip on a number on the bottom strip, adds the two numbers, and places their piece on that number (sum) on the board.
3. Player One moves one paper clip, adds the two numbers, and places their piece on that number (sum) on the board.
4. Play continues until one player has 4 of their pieces in a row, on the board, without any of the opponent's markers in between their four markers (across, up and down, or diagonal).
5. The first player with four pieces in a row wins.

Examples

12	15	20	16	7	●	20	15
13	18	10	20	15	●	19	9
11	8	17	13	18	●	10	16
10	6	14	11	9	●	●	19
13	16	4	●	●	●	●	●

12	15	20	16	●	9	20	15
13	18	10	●	●	12	19	9
11	8	●	●	●	14	10	16
●	●	●	●	10	15	19	
13	●	●	●	20	12	5	

12	15	20	16	7	9	20	15
13	18	10	20	15	12	19	9
11	8	17	13	18	14	10	16
10	●	●	●	●	10	15	19
●	●	●	●	●	20	12	5

Non-Examples

12	15	20	16	7	●	20	15
13	18	10	20	●	●	19	9
11	8	17	●	●	●	10	16
10	6	●	●	●	●	15	19
13	●	●	●	●	●	12	5

12	15	20	16	7	9	20	15
13	18	10	20	15	12	19	9
11	8	●	13	18	14	10	16
●	●	●	●	●	10	15	19
●	●	●	●	●	20	12	5

12	15	20	16	7	9	20	15
13	18	●	20	15	12	19	9
11	●	●	13	18	14	10	16
●	●	●	●	9	10	15	19
●	●	●	●	17	20	12	5

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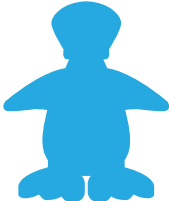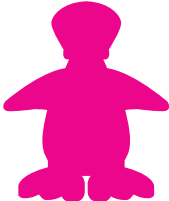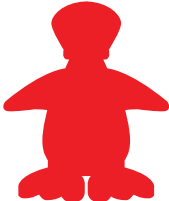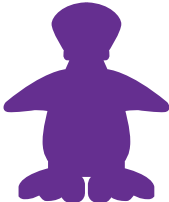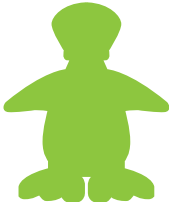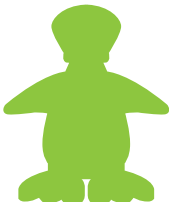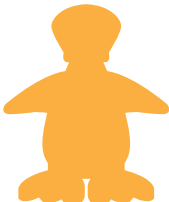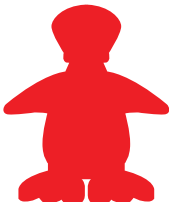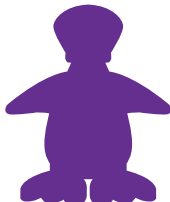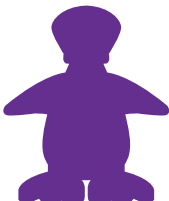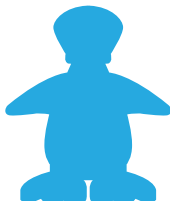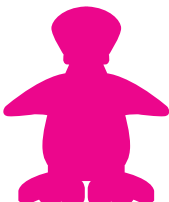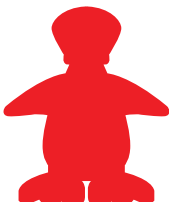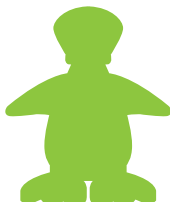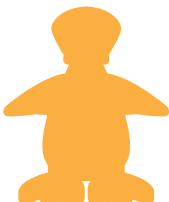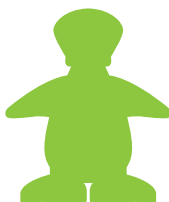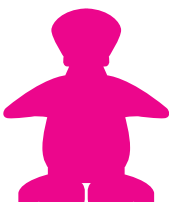
12	15	20	16	7	9	20	15
13	18	10	20	15	12	19	9
11	8	17	13	18	14	10	16
10	6	14	11	9	10	15	19
13	16	4	8	17	20	12	5

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

JiJi Sudoku
Difficulty Level: Easy

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JiJi Sudoku

Difficulty Level: Easy
Puzzle pieces

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Beginner (4×4)

3			2
	4	1	
	3	2	
4			1

Beginner

Beginner (4×4)

2	3	4	1
3	4	1	2

Beginner

Easy (9×9)

						9	2	6
2	6		9	1		5		
	5	4		3				
6			8		5		9	7
8								1
5	4		1		9			2
				2		1	6	
		2		9	6		3	5
3	8	6						

Easy

Easy (9×9)

	9	3	1		5	6	4	
7								5
5		1	2		9	3		7
2								3
	3	6	9		7	5	2	
9								1
3		2	4		8	1		9
6								4
	4	7	3		2	8	5	

Easy

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