



a Family Math Night event

Participant Booklet

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Math Medley

Welcome to Family Math Night! Tonight we present *Math Medley™*, a variety of engaging, hands-on math activities that include explorations in number, data analysis, probability, measurement, and geometry.

Math is the way we describe our world quantitatively. *How much time do I have to get ready? How many sandwiches will this loaf make? Will 4 feet by 2 feet make a good rabbit pen?*

Through tonight's activities, you and your children will become mathematicians. You'll be testing out predictions, collecting and interpreting data, honing mental math skills, designing shapes, and solving problems. And you'll do it all using dice, spinners, geoboards, stickers, and calculators. You'll even create some of your very own projects to take home.

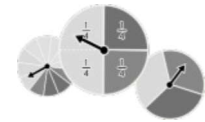
As you explore the activities, you'll find yourself talking with your child about ideas and concepts in math. And that's great because communicating about the math helps solidify the concepts and build confidence.

We hope you enjoy our presentation of Math Medley!

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Spinners



Beginning	<p>Have your child spin Spinner A on the game board and record the data. Did you get the results you predicted?</p> <p>Wipe off the game board and now spin and record data for Spinner B. What happened this time?</p>
Intermediate	<p>Using a paper clip and pencil, collect data on the <i>Design Your Own Spinner</i> activity sheet. Did you get the results you expected?</p> <p>Now, using the straight edge and crayons, design your own spinner then test it out.</p>
Advanced	<p>Use the straight edge and crayons to design your own spinners by following the directions on the <i>Spinner Probabilities</i> activity sheet.</p> <p>See if you can do the two <i>Challenge!</i> Problems.</p>

Questions to ask your child:

- Which spinner is fair, Spinner A or Spinner B? How do you know? (B)
- If you spin the spinner in *Part 1* 20 times, about how many times do you think you will land on red? (I)
- Explain why you designed your spinner the way you did. (I)
- Explain how you figured out how to determine $\frac{1}{3}$ of Spinner 2. (A)

Bingo



Beginning	<p>Play Bingo. Shake the die using the plastic cup and put a bingo chip on the number rolled. The first one to get three-in-a-row is the winner!</p> <p>Play again!</p>
Intermediate	<p>Fill in your bingo boards with the numbers 2-12. You may use a number more than once.</p> <p>Roll the double dice and find the sum. Put a bingo chip on the correct number. The first one to get four-in-a-row is the winner!</p>
Advanced	<p>Fill in your bingo boards with the numbers indicated on your board. You may use a number more than once.</p> <p>Roll the double dice and find the product. Put a bingo chip on the correct number. The first one to get four-in-a-row is the winner!</p>

Questions to ask your child:

- Can you show me on your board the number that is one more than 4? ...two less than 5?... (B)
- When two dice are rolled, which sum has the greatest chance of being rolled? Why? (I)
- Why would it be silly to write the number '1' on your board? (I)
- Why did you choose those numbers for your board? (A)

How To "Do" Family Math Night

- There are 8 stations to explore. Each station has one or two station facilitators to help with materials and questions.
- There is no particular order to complete the stations.
- If you become involved in one of the activities, stay there. You will learn more through an in-depth study.
- Each activity can be done on a variety of levels. You may choose to start at a beginning level (B), or you may choose to start at an intermediate (I) or advanced level (A). Loosely, the levels run K-1, 2-3, and 4-5.
- Work with your child. It is more fun to learn things together.
- At the bottom of each activity in this booklet are questions you may ask your child while doing the activity. They are a guide to help get your child to think about the math they are working on at a deeper level. This is a starter list. Feel free to ask your own questions. Question levels:
 - B = Beginning
 - I = Intermediate
 - A = Advanced
- Some stations get you and your child involved in making a project. These are yours to take home and share with others.
- And, finally...HAVE FUN! Enjoy the time you are spending together.



Snails and Trails

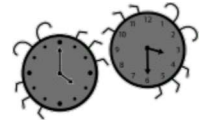


Beginning	<p>Play the <i>Snails and Trails</i> game with your partner starting with the black die. Keep track of the results. After 5 games, switch to the white die and repeat. Are the games fair?</p> <p>Use the die net and two colors of sticky dots to make a fair and an unfair die.</p>
Intermediate	<p>Play the <i>Snails and Trails</i> game with your partner starting with the black die. Keep track of the results. After 5 games, switch to the white die and repeat. Are the games fair?</p> <p>Use the die net and three colors of sticky dots to make a fair and an unfair die.</p>
Advanced	<p>Play the <i>Snails and Trails</i> game with your partner starting with the black die. Keep track of the results. After 5 games, switch to the white die and repeat. Are the games fair?</p> <p>Complete the <i>Dice Probabilities</i> activity sheet using three colors of sticky dots.</p>

Questions to ask your child:

- Is this game fair or unfair? How do you know? (B, I, A)
- Describe how you made your fair/unfair die. (B, I, A)
- How would you represent each color on your unfair die using fractions? (I)
- What is an equivalent fraction for $\frac{1}{3}$? (I, A)
- How did you figure out $\frac{1}{3}$ of 6? (A)

It's About Time

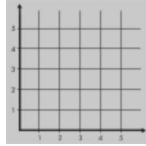


Beginning	<p>Help your child cut out the ladybug clock face then put the clock together.</p> <p>Use the clock task cards to have your child copy the time on the card to their clock.</p>
Intermediate	<p>Help your child cut out the ladybug clock face then put the clock together.</p> <p>Choose a clock task card (digital side up) and have your child make the time indicated on their clock. Turn the card over for the answer.</p>
Advanced	<p>Play the <i>Clock Angle Measurements</i> game. Use the protractors to determine the actual angle measurements. The one with the lowest score is the winner!</p>

Questions to ask your child:

- Which hand is the hour hand? Which is the minute hand? (B)
- If it's 4:00 now, what time will it be in 20 minutes? Continue with different time scenarios. (I)
- How many minutes are there in a quarter of an hour? (I)
- How many degrees are there in a circle? (A) (Answer: 360)
- How many degrees is a straight line? (A) (Answer: 180)

Coordinate Graphing



Beginning	Use the dry erase marker to help your child practice finding points on the <i>Picture Coordinate Graphing</i> activity sheet. Then use the number cube and stickers to have them “plot” their own points on the <i>Picture Plotting</i> activity sheet.
Intermediate	Use the dry erase marker and dice to play tic-tac-toe on the coordinate grid. First to get three-in-a-row, horizontally, vertically, or diagonally wins!
Advanced	<i>How quickly can you find the treasure??</i> Secretly “hide” a point on the 4-quadrant grid Treasure Hunt game board and, using N,S,E,W clues, see if your child can find where you’re hiding. Then have your child hide one for you to find!

Questions to ask your child:

- Can you use your finger to slide over and then slide up the grid to find the picture? (B)
- Why is it important to put the stickers right where the lines intersect/cross on the activity sheet? (B,I)
- What would happen if you went up first and then over? (I,A)
- Is it possible to plot points that are not on the line as in the coordinates (1.5, 3.5)? (answer: yes) (I,A)

Calculators



Beginning	Let your child have fun exploring the calculator. The <i>Learning About the Calculator</i> table tents are there to offer guided questions, if you like. For the pattern searches, use the 0-110 charts and dry erase markers to circle the numbers as they appear on the calculator display.
Intermediate	There are four Calculator task cards to choose from. Read the directions on the card and then use the calculator to solve the problems. For the pattern searches, use the 0-110 charts and dry erase markers to circle the numbers as they appear on the calculator display.
Advanced	There are four Calculator task cards to choose from. Read the directions on the card and then use the calculator to solve the problems.

Questions to ask your child:

- Why would you use the ‘+’ key? ...the ‘-’ key? (B)
- How would you add one more to the number ‘2’? (B)
- What steps did you take to solve the problem when you couldn’t use one of the calculator keys? (I, A)
- Why is it important to be able to do mental math? (I, A)
- A calculator, like a pencil, is a tool. What does that mean? (A)

Polygons



Beginning	Use the geobands to create shapes on the geoboard. When you're ready, use the task cards to re-create the shapes and discuss the answers to the questions.
Intermediate	Use the geobands to create shapes on the geoboard. When you're ready, use the task cards to re-create the shapes and discuss the answers to the questions.
Advanced	Use the geobands to create shapes on the geoboard. When you're ready, use the task cards to re-create the shapes and discuss the answers to the questions.

Questions to ask your child:

- Can you design a shape that has exactly four sides? ...three corners ...etc. (B)
- Can you design a shape that has an area of six square units? ...4 square units ...etc. (I)
- Can you design a shape that has one set of parallel sides and exactly one obtuse angle? (A)
- Make an equilateral triangle. What is the area? (A)

In the Bag



Beginning	Read the clues on the bag then use the colored tokens and 4-space counting strip to help you figure out what color bears are hiding in the bag. When you think you have the answer, peek inside the bag to see if you were right!
Intermediate	Read the clues on the bag then use the colored tokens and 8-space counting strip to help you figure out what color bears are hiding in the bag. When you think you have the answer, peek inside the bag to see if you were right! (> is greater than; < is less than)
Advanced	Read the clues on the bag then use the colored tokens and 8-space counting strip to help you figure out what color bears are hiding in the bag. Peek inside the bag to see if you were right! Use the scrap paper to help you simplify the fractions on Bag #2 and Bag #4.

Questions to ask your child:

- How can you use the counting strip to help you figure out the answer? (B)
- How confident of your predictions were you when you peeked inside the bag? (I, A)
- If you were confident with your predictions, why do you think this was so? If you weren't confident, how could you become more comfortable with your predictions? (I,A)