

FAMILY SCIENCE/MATH NIGHT LESSON PLAN

Family Math & Science Lesson Plan from students in ED 3510 Communicating Science course (2-credits)
Western Upper Peninsula Center for Science, Mathematics & Environmental Education at Michigan Technological University
Tel: 906-487-3341 Email: jchadde@mtu.edu Websites: www.wupcenter.mtu.edu

Math for Kids!

Presenter's name: Casey Behles, Chemical Engineering

Age Group: K-2

Topic: Early Mathematic Skills

Lesson Overview

This lesson increases students' awareness of mathematic concepts such as counting, adding, subtracting, strategizing, and symmetry through a series of learning stations. Parents will learn fun ways to teach their children math skills by helping them through each station.

Sources Consulted

1. Dinosaur Math/Coloring Activities.
<http://www.enchantedlearning.com/subjects/dinosaurs/activities/mathcolor/> Accessed 3/15/06.
2. *Sea Shore Stories*. <http://www.aimsedu.org/Activities/index.html> © 2006 AIMS Education Foundation. Accessed 3/16/2006
3. Stenmark, Jean K, et al. *Family Math*. © 1986 Regents, University of California. pp 24-35, 184-187.

Objectives

After this presentation, students will have simple concepts of symmetry and mathematical strategy. They will also have hands-on practice counting and adding. Hopefully students and parents will see how math can be fun!

List of All Materials Needed

- | | |
|---|---|
| ✓ One numbered egg carton | ✓ ~100 Blunt-edged toothpick halves |
| ✓ 3 bags of dried beans (different varieties) | ✓ Activity Instruction sheets for parents at each station |
| ✓ Tub of crayons | ✓ 1 ream of assorted construction paper |
| ✓ Odd/Even record sheet (40) | ✓ 1 ream of white paper (from recycle bin, preferably) |
| ✓ Number strips 1-9 (40) | ✓ 2 colors of non-toxic finger paint |
| ✓ Laminated Animal Crossing I | ✓ Paint brushes (2) |
| ✓ Laminated Animal Markers | ✓ Old newspaper (to keep painting area clean) |
| ✓ Dice [marked 1,1,2,2,3,3] (2) | ✓ Safety scissors (4) |
| ✓ Alphabet Cost Poster | ✓ Scissors (1) |
| ✓ Chalk board or dry erase board (and chalk or dry erase markers) | ✓ Paste |
| ✓ Laminated Bridges Board | ✓ Pencils (2) |
| ✓ | |

Room Arrangement or Special Needs: Chalk or dry erase board and chalk or dry erase makers, tables or desks, towels to clean up spills.

Procedure:

Introduction

Welcome to Family Science Night, sponsored by the Western UP Center for Math and Science. My name is Casey. I'm a senior at Michigan Tech and I study Chemical Engineering so that I can eventually help poor people all over the world have clean water.

Today we're going to have fun learning math -- you need to know a lot of math to be an engineer and help people!

Attention-getter: OK, everyone stand up! We're going to sing a counting song! 5 Little Ducks or 10 Little Monkeys sing along and hand movements.

That was quite a workout! Now I have some questions for you:

1. Who can count to 12? Raise your hands!
2. Can anyone tell me what an even number is?
3. What about "mental math"? Can you add or subtract numbers inside of your head?

Who's ready for some more math fun? Parents, we have 8 stations around the room. I'm going to ask you to read the instructions at each station and help your student do the activity. You can go in any order you want, and some activities will take more time than others. Don't feel that you have to do them all. The stations with higher numbers are more difficult than the stations with low numbers.

- We have Stations 1 Egg Carton Numbers, Station 2 Odd or Even, and Station 3 Animal Crossing which help you teach number skills to your younger students.
- Stations 4 Blob Pictures and Station 5 Cut Out and Snowflakes help you teach concepts of symmetry for students of all ages.
- Stations 6 Value of Words and Station 7 Bridges help you teach addition and strategy skills to more advanced students.

Alright families, let's spread out across the room at the different stations. I will keep walking around to help out.

Station 1: Egg Carton Numbers

- ✓ Egg Carton labeled 1-12
- ✓ ~100 beans

Count beans into each carton spot as labeled. The total number of beans counted should be 78.

Station 2: Odd or Even

- ✓ Odd/Even record sheets
- ✓ ~20 beans
- ✓ Number strip
- ✓ 2 different colored crayons

Have student take a handful of beans. Count them. Help them arrange them in pairs to see if the number is even or odd (an odd number will have one left over, an even number will have no left over). Draw the pairs and record the number on the Odd/Even record sheet.

Take a number strip and color all the odd numbers one color. Color all the even numbers a different color.

Station 3: Animal Crossing

- ✓ Laminated Animal Crossing I
- ✓ Laminated Animal Markers
- ✓ Dice [marked 1,1,2,2,3,3] (2)

For 2-4 players (parents can play too!).

- Each person chooses their own side of the board and their own animal marker.
- Put your animal marker in any square on your side

- Take turns rolling the dice. You may move the number of squares shown on the dice, or you may move fewer squares. Your goal is to reach the opposite side.
- Each turn you may only move in one direction. You may change directions only at the beginning of a turn. If you reach a barrier you must stop, even if you have not moved the number of squares the dice showed.
- The first person across to the opposite side of the board wins!

Station 4: Blob Pictures

- ✓ White paper
- ✓ Paint
- ✓ Paint brushes
- ✓ Old newspapers

Fold paper in half. Open it up and drop a blob of paint on one side. Keep your creation over the newspaper! Fold it in half again and press. Open it up to see the design that has been made!

Station 5: Cut Outs and Snowflakes

- ✓ Safety Scissors
- ✓ Scissors
- ✓ Colored and white paper
- ✓ Paste
- ✓ Pencils

Fold a colored piece of paper in half and cut out a shape along the fold. Guess what the shape will look like when it is opened. Paste your cutout on another sheet of paper to display your design!

Cut out a square of white paper. Fold it in half twice. Fold in half again, diagonally. Cut out designs (you might want to draw your designs first and have an adult help cut with the grown-up scissors). Open the paper to see your snowflake! Paste it on a colored sheet of paper to display your design!

Station 6: Value of Words

- ✓ Alphabet Cost Poster
- ✓ Chalk/Dry Erase Board and chalk/dry erase markers

Have every person in the family find the value of his or her first name. Write it on the chalk board. Whose name costs the most? Add up numbers in your head if you can. What is the most expensive word you can find? Can you find a word worth exactly \$50? 100?

Station 7: Bridges

- ✓ Laminated Bridges Board
- ✓ ~100 Blunt-edged toothpick halves
- There is an X and O player
- The O player may connect any two adjacent O's (next to each other) using toothpicks. They can connect vertically and horizontally.
- The X player may connect any two adjacent X's (next to each other) using toothpicks. They can connect vertically and horizontally.
- You may not cross through a toothpick already on the board.
- O wins if he or she makes a path from the top row of O's to the bottom.
- X wins if he or she makes a path from the left side to the right side.

Summary: (5 min.)

Alright, parents, students please stop what you are doing and come back to your seats. I have just a few questions and then we have one more game!

1. I'm going to write a number on the board. Is it even or odd?
2. Did you make anything with symmetry tonight? Can you show it to me?
3. What about "mental math"? If I have 5 little monkeys jumping on a bed and 2 fall off and bump their head, how many monkeys are still jumping on the bed?

Clean-up: OK, time for our last game of the day – We're going to practice counting how many scraps of paper we can pick up and put in the garbage!

Rinse off paint brushes. Throw away newspaper, clean up any spilled paint or paste. Pick up all cut-out paper scraps.

Filler:

Create a Puzzle

- ✓ Construction Paper
- ✓ Safety Scissors

Cut out a square of colored paper (or any other shape you like). Make a straight cut in any direction. Make a second cut. Try to fit your three pieces together to make sure you can solve this puzzle. Make a third cut. Practice solving your 4-piece puzzle. Share it with a friend!

Or students can repeat stations to make more symmetry art to take home. Or we can color in adding/subtracting color-by-number worksheets

Take Home Handouts and/or materials: Each student takes home an adding/subtracting color-by-number worksheet.

Safety Considerations: Cut/poke hazard with scissors. Stains from paint.

Take-home Color-by-Number sheet

Brachiosaurus		NAME _____			
2=brown	4=purple	6=green	8=orange		
3=pink	5=blue	7=yellow	9=red	10=gray	

Copyright ©1998 Enchanted Learning Software
This page may be printed for non-commercial educational uses only.