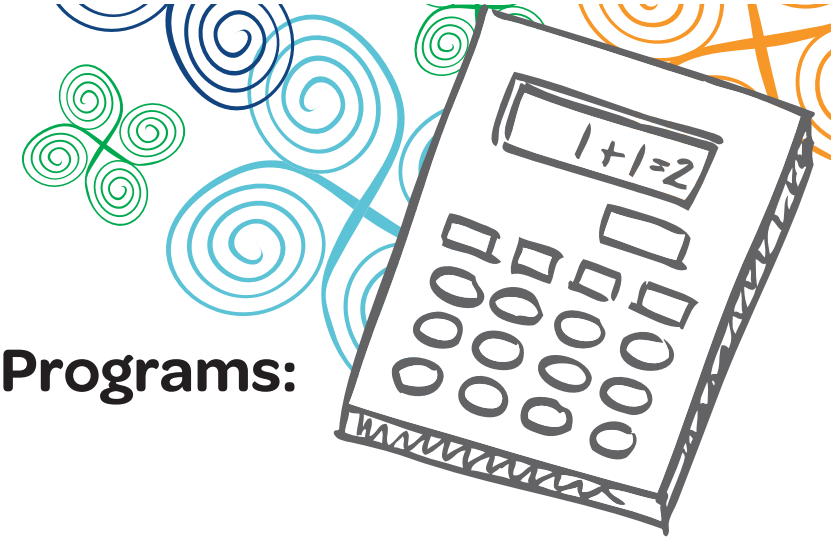
girl scouts of the missouri heartland



Perfectly Effortless Programs: Mathtastic!

Activity Overview

This program is designed to make girls more comfortable and excited about math. Did you know that we use math every day? When we count money, or measure your height and weight, or tell time we are using math. This PEP is best suited for Girl Scout Daisies through Girl Scout Cadettes and is designed not to do every activity, but for leaders to select only activities appropriate for their level of girls.

Part of Everyday Life

- Ask the girls to find as many different examples as they can of how math is used in everyday life. These could be balancing a checkbook, using money, cooking, sewing, playing video games, cutting a cake into equal pieces, shapes in buildings, running a computer or other ways. Ask the girls to discuss the first thing they think of when they hear the word math. Can math be fun? Are they good at math?
- Provide the girls with maps of the area and their community. Ask the girls to map the path from school to their homes or from their homes to school. Then ask girls map their way to the nearest Girl Scout ser vice center or program center. Have them figure the mileage for the trips and discover the quickest course to reach each location.
- Ask the girls if they have ever thought about how they use math when playing games or participating in various sports. When you are shooting a basket you must use geometry to figure out where to hit on the backboard so it will bounce into the net, or when figuring your batting average on your softball team. Try to think of as many examples as possible of how you use math when participating in six different games or sports.

Math & Cooking

1. Begin by showing and discussing with the girls how to measure amounts such as teaspoon, tablespoon, and cup. Explain what these measurements mean: cup, pint, quart, gallon, liter, pound, ounce, etc.
2. Help the girls cook something using a recipe. Ask the girls to read the recipe, do the measuring of ingredients and figure out if they need to double the recipe so everyone can have one. You can use any recipe, but the following is a good choice:

Chocolate No Bake Cookies

Mix together in large sauce pan:
2 cups or 1101 mL of sugar
4 tablespoons or 34.4 mL of cocoa
½ cup or 275.3 mL of milk
½ cup or 275.3 mL of margarine
Bring to a boil, stirring constantly. Boil 1 minute.

Add:
½ cup or 275.3 mL of peanut butter
1 teaspoon or 11.5 mL of vanilla
3 cups or 1652 mL of quick oats
Stir until well blended.
Drop onto wax paper by the spoonful.

My Numbers
Numbers are used to tell many things about you. How many toes do you have? How tall are you? How old are you? Make a "My Numbers" poster that shows all of your important numbers facts.

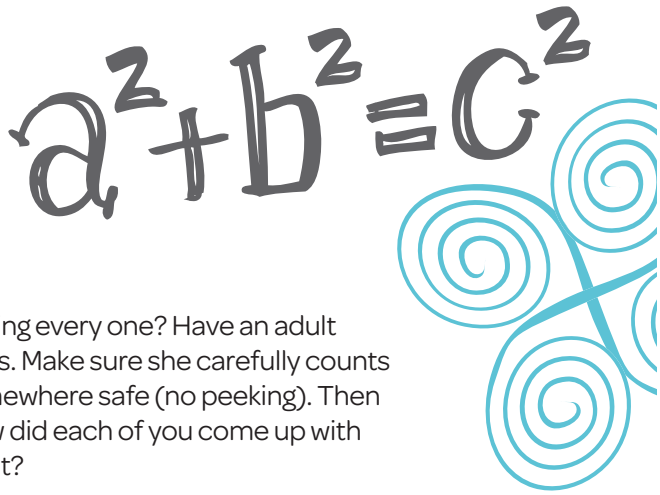
Your Numbers Are...
Measure yourself in five different ways. The length of your arm or leg, the length of your stride, and the amount of cereal you put in your bowl are just a few of the ways you add up. Come up with your own!

Shape Up
Look for geometric shapes around your home, school, playground, or other area. You can check floors, walls, doors, windows, leaves, flowers, or other items. Find out the names of the shapes you don't already know.

Calculate Your Flight Time
Choose a destination that you would like to visit anywhere in the world. Using a world map with a distance key, figure out how far the place is from your hometown. How long would it take you to drive there? Fly there?

Make a Math Puzzle
Draw a square divided into nine equal spaces (3x3). Put a penny on each square (nine pennies). Two players take turns removing one penny at each turn. A player must always leave at least one penny in each row or column. The last person to play wins. If a player takes a penny that makes a column or row empty, she loses. Play at least 10 games. Try to discover a strategy for winning the game.

Scale It
Visit a playground and measure or estimate the height, length, and width of several pieces of equipment. Then, using what you have learned, create a model, or drawing of it. Decide what your scale will be and note it on your model.



Make It Count
Can you tell how many jelly beans are in a jar without counting every one? Have an adult or older friend fill a jar with jelly beans or other small candies. Make sure she carefully counts how many are put in, records the number, and keeps it somewhere safe (no peeking). Then you and your friends try to guess the number in the jar. How did each of you come up with your number? What's the correct answer? Who was closest?

Make Your Own Code
Assign the letter "A" a number value. If A=7, B would equal 8,
E would equal 11, and so on. Write out a "secret message" for a friend, using equations to substitute for each letter. For example: If A=7, E=11, L=18 and P=22, you could spell out the word "apple" by writing: 3+4, 10+12, 2x11, 23-5, 22-11. Send your friend a message and see if she can unravel your meaning. Don't forget to share the key to the code with her!

Money Words
Give a money value to each letter of the Alphabet. For example, A=1 cent, B=2 cents etc. Then add up the cents that are in the letters of your first name. What is the most expensive word or name you can think of? Find as many words as you can that add up to $1.00.

Telling Time

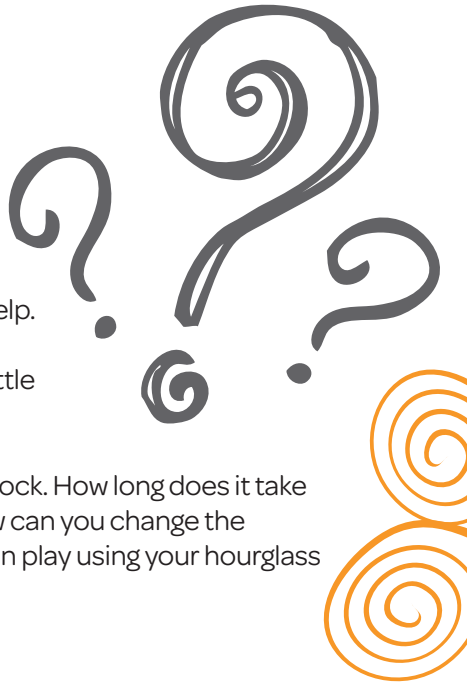
Today, we have analog clocks (clocks with minute and hour hands) and digital clocks (clocks that use numbers). People have been discovering ways to tell time for thousands of years. One invention was an hourglass. Learn how to make your own hourglass!

You will need:

- Two 1-liter clear plastic bottles with caps
- Packaging tape
- A nail
- Sand or table salt
- A clock

To make your hourglass:

1. Fill one of the bottles with sand.
2. Use the nail to make a small hole in each bottle cap. Ask an adult to help.
3. Screw the caps on both the bottle with sand and the empty bottle.
4. Place the empty bottle on top of the bottle with sand. The empty bottle should be upside down so the caps of both bottles are touching. Tape both bottles tightly so they are joined.
5. Turn the bottles over so the bottle with sand is on top. Look at your clock. How long does it take for all the sand to move from the top bottle to the bottom bottle? How can you change the amount of time that your hourglass tells? Think of some games you can play using your hourglass as a timer.



Budget Your Troop

When you or your troop plans an activity you will usually need some money. Find out how much is in your troop fund, and then plan two activities you would like to do. For example, the seven girls in Rosa's troop wanted to visit the zoo. They identified all of the costs for the activity, and then multiplied each cost (for example, entrance fee and lunch) by how many girls were going. To come up with the grand total for the troop, they added the amount of money needed for each activity in the column on the far right. See the sample planning chart below.

Zoo Cost	Cost per Girl		# of Girls in Troop		Amount of $ Needed
Entrance Fee	$4.00	×	7	=	$28.00
Lunch	$3.00	×	7	=	$21.00
Souvenir	$2.00	×	7	=	$14.00
Public Bus	$2.00	×	7	=	$14.00
				Grand Total	$77.00
Do you have enough money in the troop fund?					

Predictions

Make a prediction, such as, "I think that between 2:00 and 3:00 p.m., one out of every five people walking down the street will be wearing jeans." Make a plan to check your prediction. Then carry it out. Compare your prediction with the results.

Math in Nature

- Give the girls a square piece of paper and ask them to fold it in half. The fold is the line of symmetry. A figure has line symmetry if there is a line that divides the figure into two congruent and equal halves.
- You often see symmetry in nature — in the human body, in flowers, insects, birds, and many other objects in nature. Because symmetrical designs are appealing to the eye, they are often used in fabrics, flags, carving, masks, weaving, and pottery.
- Have the girls try to think of objects in nature that have symmetry. Take the girls on a nature hike and look for objects that are symmetric. Have the girls look at leaves and find the line of symmetry.
- Have the girls make snowflakes that are symmetrical.
- Have the girls make their own artwork using symmetry. Take a piece of paper and fold it in half. Unfold it and place dots of paint on the paper on one side of the fold. Refold the paper and then unfold it again. The fold is the line of symmetry and the girls have created a symmetric painting.

M&M Math—Building Graphs Using M&Ms

1. Give each girl a small bag of M&Ms (the small fun-size works well or take a big bag and divide it into small baggies so each girl has some) and give her the M&M Recording Sheet. Have the girls lay out their M&Ms by color on their sheets.
2. Then ask the girls to make a bar graph using crayons. For example, if they have four red M&Ms on the graph, they color in four boxes. Explain to the girls that they have made a bar graph. Ask them what they think the uses of a bar graph are.
3. Visit http: www.m-ms.com/us/about/products/index.jsp to find the percentage of each color of M&M is made. Take this information and make a bar graph out of it, or you can use the attached graphs. Compare this bar graph to the ones the girls made.

For Girl Scout Cadettes, Seniors, and Ambassadors, help the girls to use a spreadsheet program to develop their graphs on the computer.

Number Scavenger Hunt

Using a newspaper, have the girls complete the Number Scavenger Hunt Sheet. Divide the girls into teams and give each team glue, a newspaper, and a Number Scavenger Hunt Sheet. When the girls find an item, they should cut it out and glue it to its description. When finished, have the girls talk about how many numbers play a major part in their lives.

Name:_____

M&M's® Candy Color Chart

12						
11						
10						
9						
8						
7						
6						
5						
4						
3						
2						
1						
	 red	 blue	 yellow	 green	 brown	 orange