Kingston Counts!

A Celebration of Family Math

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Family Math

Many of us are exposed to the world of literacy before we are even born. Mothers often read books to their infants from the time they are in the womb. From there on, it seems that literacy is promoted and given more attention than all other subject matter. So where does math fit in?

Unfortunately, in our society, math does not have a good reputation. It is seen as that dreaded and terrifying subject that is de

Most parents and guardians want their children to succeed in math, but they do not always know how to help because of their own horrifying math experiences. Moreover, the math that their kids do in school today looks foreign compared to what they learned oh-so-many years ago. So what is Family Math?

Family Math creates opportunities for families to come together and take part in math activities in a safe, relaxed, and fun environment. It's a chance for parents and guardians to become familiar with what their kids are learning in math class so that they may become more comfortable and confident themselves and transfer these feelings over to their children. The activities and games involved in Family Math are meant to be engaging and hands-on. The goal is not necessarily to find one correct answer in a speedy fashion, but rather to foster problem-solving strategies and to see math in a new and exciting way. One important notion to keep in mind is that there is nothing wrong with making mistakes. In fact, this is how we learn best. Family Math encourages math curiosity and exploration without the stress and pressure of performing well. Overall, the goal is to stimulate interest and positive attitudes about math, and to demonstrate how easy it is to work math into everyday conversations. It all begins with the parents and guardians. If these role-models can gain a respect and an appreciation for math, their children are bound to gain these as well, and are sure to succeed in the 'real' world of math!

Using math everyday not only improves math skills, but is also a great way for

In Case You Were Wondering…

16 tablespoons = 1 cup
12 tablespoons = 3/4 cup
10 tablespoons + 2 teaspoons = 2/3 cup
8 tablespoons = 1/2 cup
6 tablespoons = 3/8 cup
5 tablespoons + 1 teaspoon = 1/3 cup
4 tablespoons = 1/4 cup

Cherry S Recipe

Ingredients

Pie Crust:

1 tsp. salt (from a cylinder container)

3 cups flour

8 oz. (1/2 lb.) shortening (a rectangular prism package)

1 egg, beaten (a Cartesian oval)

1/3 cup cold water

1 tsp. white vinegar

Filling:

5 to 6 cups fresh pitted cherries, about 1/2 2 to 3 pounds (spheres)

1/2 cup water

1 1/4 cup granulated sugar (in a rectangular prism package)

4 tablespoons cornstarch

Directions

To make the crust:

Combine flour and salt in a bowl until well mixed. Using two knives or a pastry blender, cut in shortening until mixture resembles coarse crumbs (some chunks can remain).

Beat egg (Cartesian oval) in a separate small bowl; add water and vinegar and stir until mixed.

Add egg (Cartesian oval) mixture to the flour mixture and stir all together using a spoon or by hand.

Press mixture into a ball (sphere) and roll it out on a sheet of wax paper until about 1/2 inch thick. Place another sheet of wax paper over the top and roll until 1/8 inch thickness. If dough is too sticky, dust very lightly with flour and refrigerate for 30 minutes.

Carefully remove the top sheet of paper and put the crust onto an ungreased pie pan.

Play Dough Recipe

Why spend money on play dough
when you can make your own?!

Ingredients

- 2 cups of flour
- 1 cup of salt
- 1 cup of water
- 1 tbsp of cooking oil

Instructions

- In a medium-sized bowl (or 1/2 a sphere), mix together the flour, salt, and water.
- Add in the cooking oil to keep the mixture from hardening.
- Knead the play dough until you have your desired texture
- Store in an airtight container (perhaps a cylinder?) or plastic bag

Just a Few Math Activities That Can Be Done With Play Dough

* W

Paper Plate Math!

With two paper plates you can cut them to show a clock, fractions or pie chart.

How to make math plates:

1) Take two different coloured paper plates or two white plates and colour them each a different colour.

2) Make a straight cut from the edge of each plate, at any spot, to the middle of the plate.

3) Slide the plates together where the slit is on each plate to make one plate (half will be one colour, and half will be the other colour).

4) Now that you have made your fraction plates, you can move the plates around to show different amounts.

   For example:

5) You can add more plates as well. Pick another colour and add it in by putting two plates with slits on top of each other (match up where the slits are). Next, slide the third plate into the others just like you did with the first two.

Paper Plate Clocks

To make paper plate clocks you can use a black marker to write the numbers 1 to 12 around the plates. Move the plates around to show different times.

For example:
If this first clock was marked by red I would say it 6:00. If I looked at the second clock and again used red to tell time I would say it is 8:30.

Calendar Math

Fill It In!

Once you have a calendar (made, found or bought), it is a great idea to fill it in with your child.

- Find an ad that has a long-term payment plan option. How much would you pay upfront? How much would it work out to if you took a number of weeks or months to pay it off?

- Find a text box and measure the length and height. What is the area of the box (length x height)?

- Try to find the newspaper's fee for ads or classified notices. Design your own ad. How much would it cost to put it in the paper? Calculate the area of all the ads on a page. How much money did they make selling that ad space?

- Compose a list of a few characters from the comic strips. Survey friends to see which ones are favourites. Graph your results.

Body Math

People come in all different shapes and sizes, but did you know that your body is made from parts that are all proportional to each other in the most fascinating ways? Don’t believe us? Just take a look…

& # 8 + 0 % + • 5 8 + 6 + 4 # 7 0 8

/ # 0

Measurement Puzzles

Instructions:

For each of the following puzzles, your team will need to work together to find the answers.

There are various strategies you can use to find these answers so we encourage the trial and error method.

As a team, you will need to decide on the best solution for the problem and be able to explain why.

You can find measurement wherever you look, as in the following examples. Everyday tasks can involve any measures, such as weight and amount.

Activity 3: Find the Lighter Counterfeit Coin

We have 3 coins. Two are good coins; one is a counterfeit coin that weighs less. Identify the counterfeit with one weighing on a balance.

Compare coins 1 & 2.
If they weigh the same, coin 3 is counterfeit; otherwise the lighter of the two is counterfeit.

We have 9 coins; eight good coins and a counterfeit coin that weighs less.
Identify the counterfeit with 2 weighings.

Activity 4: Heavier Counterfeit Coin

We have 3 coins. Two are good coins; one is a counterfeit coin that weighs more. Identify the counterfeit with one weighing on a balance.

We have 9 coins; eight good coins and a counterfeit coin that weighs more.

Activity 5: Measurement with a Scale

You have 5 packages of candy bars and a scale. Each candy bar is supposed to weigh 200 grams. One of the packages, however, contains candy bars that weigh 150 grams.
Can you find the package with lighter candy bars using the scale only once?

Extra challenge: You only know that one package contains lighter candy bars but you don't know the weight of regular or lighter bars. How many times do you need to use the scale to find out the two weights and the package with lighter bars?

Act ivity 6: Measurement with Scales

We have 100 oranges in a heavy cardboard box. How can you find the weight of the oranges (without the box) using a bathroom scale?

Bathroom scales are usually not accurate for small weights (say, less than 30 lbs) or very large weights (say, more than 200 lbs). How would you weigh a baby who is about 20-25 lbs using a bathroom scale?

How would you weigh the 100 oranges accurately using the bathroom scale if you estimate the oranges to weigh 20-30 lbs and the cardboard box 3-5 lbs?

Can you accurately weigh a person who is about 250-300 lbs using two bathroom scales?

Calculator Magic

Calculators are an important tool for children to be comfortable with, use, and understand. They allow kids to explore numbers and ideas, to discover patterns in numbers and to develop problem solving strategies. Calculators allow for information to be gathered quickly so that children can spend more time exploring the numbers.

Here are a variety of tricks you can try with a calculator. Once you've mastered them, try them out with a friend or family member, to astound them with your magic prowess!

Select any number from 1 through 100.
Write the name of the number. This is your first number.
How many letters are in its name? The amount of letters is your second number.
Next count how many letters there are in the second number. This is your third number.
Continue to count the amount of letters in each number you obtain until you find a number which repeats itself.
What number is it?

Enter the numbers 12345679 in your calculator. You may have noticed that the number 8 is not included.
Multiply the number by 3.
Multiply your answer by any digit from 1 through 9.
Lastly, multiply your result by 3.
What is your surprising answer?

Calcula id

14. [illegible]

28 x 29 x 30 + 31 – 18,

Caesar’s Box Cipher

Julius Caesar (100 BC – 44 BC), Emperor of Rome, had many different ways of sending coded messages to his commanding officers during battle. One of his most famous ciphers is called Caesar’s Box Cipher. Caesar would send a group of letters that appeared to be nonsense. The amount of letters in the code added up to a number that could be square rooted. For example the number 25 can be square rooted to the whole number 5. The commanding officers would then create a square entering the letters so that the amount of columns and rows were the same. They would then input the letters starting left to right in the first row, then the second row and so on. Once all the letters were in the box, they would read up

MCEE AAMC TNAA HBGL
AETGNAF TILTMRSE EHAGRA ATAKEET LHTEDNU ICAICD TNALFE
WTTFDN IGREBT TEYWEL HOAOPE OMLUOS UEILIS

Can you make your own?
Instructions
1)
bottom until all the letters are placed
coded message starting with the top left to top right, and then continue on
w from left to right
message to a friend or family

Book of Magic Tricks

1) Binary System Cards

- This is a magic trick based on the addition of different integers. To complete this trick, ask a friend to pick a number between one and thirty-one. Once they choose, go through the different cards, asking them whether their number appears in each one. If your friend answers yes to a card, add the first number that appears. For example, your friend chooses the number 25. It appears in Card A, D, and E. The first number of those boxes are 1, 8 and 16. Add these numbers together to figure out which number you have: 25.

A				B				C				D				E			
1	3	5	7	2	3	6	7	4	5	6	7	8	9	10	11	16	17	18	19
9	11	13	15	10	11	14	15	12	13	14	15	12	13	14	15	20	21	22	23
17	19	21	23	18	19	22	23	20	21	22	23	24	25	26	27	24	25	26	27
25	27	29	31	26	27	30	31	28	29	30	31	28	29	30	31	28	29	30	31

They are left with a number that ends in three. Our example would be 43. No matter which card they choose the final answer will always end in three.

4) I Know Your Birthday Calculator Tricks

Enter the year they were born, without letting you see it. For example: 1987. Multiply that year by 2: 1987 x 2 = 3974. Add the number of months in a year: 3974 + 12 = 3986. Multiply that total by 50: 3986 x 50 = 199 300. Add their age to that result: 199 300 + 23 = 199 323. Add the number of days in a year: 199 323 + 365 = 199 688. Finally, ask them to hand you the calculator with the final total showing. Just subtract 965, and the year the person was born and their age will magically appear: 199 688 – 965 = 198 723. 1987 = year born = 23 = age

5) I know how old my teacher is Calculator Trick

- This trick works only if the person you are playing the trick on is at least ten years old or older.

  a. Step 1: Ask your teacher (or another older person) to punch his or her age in the calculator without you looking.
  b. Step 2: Ask him or her to:
     1. Think of a favourite number from 1 – 9.
     2. Subtract that number from the number showing in the display.
     3. Multiply by 9.
     4. Add his or her age to the product.
  c. Step 3:

  Example: Let’s say your teacher is 33 years old. Lay St ETw 48 0 enter 2(t)-10(h)-10(e)-4 c(r)-1

This Magic Hat has 5 puffs in all.
There is 1 more red puff than pink puff.
How many of each kind are there?

This Magic Hat has 4 red buttons.

- Tape the top of the cardstock to the edge of the top opening.
-

How to Make

To multiply one number by another you need to align the digits as they are positioned in the given number against the row of multiples as shown. You look for a number that you are multiplying your large number by and read the results from right to left by adding the digits in each square diagonally in the appropriate row.

For example: to multiply 62 by 7, you need first to position your bones to get the index bone followed by

Multiplication Fun

Having difficulties with multiplication? Want to learn new ways to multiply quickly? Here are some fun and interesting ways to try to work out those multiplication problems.

Two Times Tables: Double Your Pleasure

When multiplying a number by two, you're simply doubling that number. Any number multiplied by two is the same as that number ADDED TO itself. Here's an example: 2 x 5 is 10

Now let’s try. Take the question is 9 x 4. Count the fourth finger from left to right (you should end on your left index finger or ring

Finger Multiplication

Hold your hands up in front of you, palms facing upwards (so you can see them).
Number your finger as follows:

Your thumbs are each a "6",
Your pointer fingers are each a "7"
Middle fingers are each an "8"
Ring fingers are each a "9"
Pinky fingers are each a "10"

Place you hands in front of you, palms upwards and fingers pointing towar each other. Let's try multiplying 7X8.
Touch your pointer finger of your left hand (7) to the middle finger of your right hand (8). Now count the two fingers that are touching plus the fingers above on each hand. When counting the two touching fingers and the one above you should have five "upper" fingers. That is how many tens" answer will have.

On the bottom of your hands, below the touching fingers, you should have fingers on the left and 2 on the right. You will then multiply these fingers to get your “ones” which is 2X3 answering 6.

Therefore, the answer to 7 X 8 is 56 (Since we found 5 in the “tens” and 6 the “ones”).

Let’s try another question. To multiply 7X7, touch your number 7 fingers together and you get: 4 above and 3x3 underneath – your answer is 49

Adding and Subtracting with your Soroban

Chisenbop

Chisenbop is a method of doing basic mathematics using your fingers. It was created in Korea and works very similar to counting on a Soroban. The key to understanding Chisenbop is learning the counting technique. The right hand stands for the values zero through nine. Each digit counts as one, and the thumb counts as five. Here's an illustration:

0	1	2	3	4

The right hand represents multiples of one, with the thumb representing 5.

5

Math and Number Games

New Year's Eve

The purpose of this game is to be the first one to say "December 31st."

Rules of the game:

1) The starting date is January 1st.
2) Take turns with a partner saying dates.
3) Each turn, you can only change the month or the day, not both.
4) Whatever date you say must be later in the year than the date said before it

For example:

Player A: January 12
Player B: May 12
Player A: May 16
Player B: October 16
Player A: November 16
Player B: December 16
Player A: December 31!

Having a strategy may help you win this game.

1. The first half of make. _____
2. The last 1/6 of rabbit. _____
3. The first 2/7 of hexagon. _____
4. The first 3/8 of magazine. _____
5. The last 1/2 of epic. _____

NIM Games

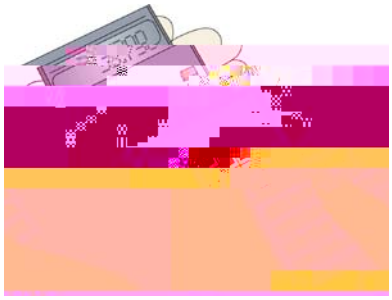
NIM is a game that originated in China many years ago.

It is a simple game designed for two people. The basic idea is to start with a pile of counters (such as beads, bingo chips, toothpicks, etc.). Each player takes turns removing 1 or 2 it ems each round until none are left. The person who removes the last 1 or 2 counters is the winner. <u>You are not allowed to skip a turn!</u>

You can try it out now! Just gather 20 items. Play it a couple of times and see if you notice a pattern. At what point can you predict who the winner will be?

Now you can change the game. Try it with a different start ing number (i.e. 21, 15 or 30) . Try removing 1, 2, 3 or 4 at a turn . Try playing it with a different number of players. Work in the opposite direction by adding to your pile. Change the rules so that the person who can avoid taking the last counter wins. What new strategies developed?

By now you should be a NIM expert! So now you can try some more variations. The game " Hot Air Balloon Ride" on pag e 48 is a take on NIM.



Calculator Variations

These NIM variations use some higher numbers, so you may want to play them by entering your numbers into a calculator instead.

101 Calculations

Start by entering 101 on the ca lculator. Players t ake turns subtracting a number . You may take away any number from 1 to 9 inclusive. The player who ends on 0 wins.

Hundreds

Start with the display on 0. Players take turns adding number s, from 1 to 9 inclusive. Make it total 100 and you win!

21st Century

Start at 2001 on the calculator. Players take turns subtracting a number from 1 to 99 inclusive. The person to reach 0 is the winner!

Two- Dimensional NIM

Players take turns putting counters on the board.
After the first one is placed, any others must connect fully on one side. In other words, all counters must be placed beside, above or below another counter.
Players place 1 or 2 at a time.
The player to cover the last square (or two) is the winner.

Hot Air Balloon Ri

Materials:
10 toothpicks (or more)

Hot Air Balloon Ride
2 Player Game

Object of Game: In this variation of the Chinese game of NIM, ten ropes hold a hot air balloon to the ground. Each player may cut either one (1) or two (2) ropes. The person to cut the last rope wins a free ride on the balloon!

Just a Few Things:
*Use 10 toothpicks (ropes) to attach the balloon to their pegs
*Take turns picking up 1 or 2 toothpicks at a time (cutting the

Toothpick Math

A Brief History of Tangrams

Legend holds that thousands of years ago, a sage in the ancient orient was asked to transport a pane of glass. The pane was to be used in the royal palace as the first glass window for the king and queen. In those days, panes of glass were a prized commodity, especially one as perfectly made as this one for it was perfectly square. So, as you can imagine, the transporting of the glass was an awesome responsibility. To protect the glass, the sage first wrapped it with the finest silk in the land to protect it from being scratched. He then wrapped the package with leather that was strong to protect the glass yet soft enough as to not break the glass. Finally, the sage wrapped the entire package in a thick layer of canvas. This, he thought, would protect the pane of glass from all danger.

After days of travel, the sage came to the hardest part of his journey, a rocky mountain. He ascended the mount, carefully selecting each step so as not to accidentally trip and possibly break th

GO SUM!

Materials

S	P	H	E	R	E

Instructions

Popcorn Cups

Step 1: Fold your piece of paper from one corner in half to form a large triangle

Stee W/r5 1eh ehewnp nes-11(ia/r5 1)-42(e)0(n)-42(eh)/r5 1 boeoeflo n eh

Cootie Catcher

You can make a Cootie Catcher and what you need:

Scissors
Rectangular sheet of plain pap
Pen or Markers

What you do:

Follow these step by step instructions to create your very own Cootie Catcher.

Step 1:
Fold the bottom of the paper to the far side of the page to make a triangle.

Step 2:
Using scissors cut off the flap at the top

Step 3:
Open your paper to reveal a square

Step 4:
Fold the paper to remake a triangle, but in the opposite direction

Step 5:
Open your paper two reveal two diagonal lines making an 'X' and center point on the paper

Step 6:
Fold each of the 4 corners of the paper to meet the center of the 'X'

Step 7:
When all corners have been folded, the Cootie Catcher should look like this

Step 8:
Turn the paper over so that the folded sides are facing down

Step 9:
Fold all the corners to the center of the 'X.'

Step 10:
Once you have folded in all corners, write the numbers 1 - 8 on each of the triangles like above

Step 11:
Hold the paper in front of you as shown and fold it up into a square.

Step 12:
Now unfold and fold the square in half horizontally. This helps crease the sides

Step 13:
Open each of the numbered

Step 14:
Flip the Cootie Catcher

Step 15:
Flip the Cootie Catcher over so that

0 I - Puffer Fish

4. When you unfold you should have two diagonal, one vertical and one horizontal fold as seen in the picture on the right.	
5. Start to collapse the folded piece of paper.	

6.

7. Now fold the corners up to top of the triangle as illustrated in the following pictures. Flip and repeat on the other side.	1 2 3

PUFFER FISH:

9. Find the hole at the top of the object and blow into it and let it PUFF OUT!

Crane Instructions

Material: Origami Paper (or easily folded paper cut into a perfect square).

1. It is easier to make origami when you prefold your paper. First fold the paper along the diagonal. Make sure to align your points. Open your sheet of paper up and repeat along the other diagonal. Then open again.	

2. Fold the paper in half creating a rectangle (hamburger fold).

3. Now that the pre

Crane Instructions

5. Open one of the squares up into a diamond shape. Fold 4 cm from the top. Fold the outsides to the insides. Fold it back down. The shape that you have now should resemble a kite. Do the exact same with the other side.

continued…

6. Next fold all four sides up. The two triangles that are not folded are now your wings. The two folded triangles are the head and tail of your crane. Fold a small triangle to designate the tail, and a bigger one to designate the head.	

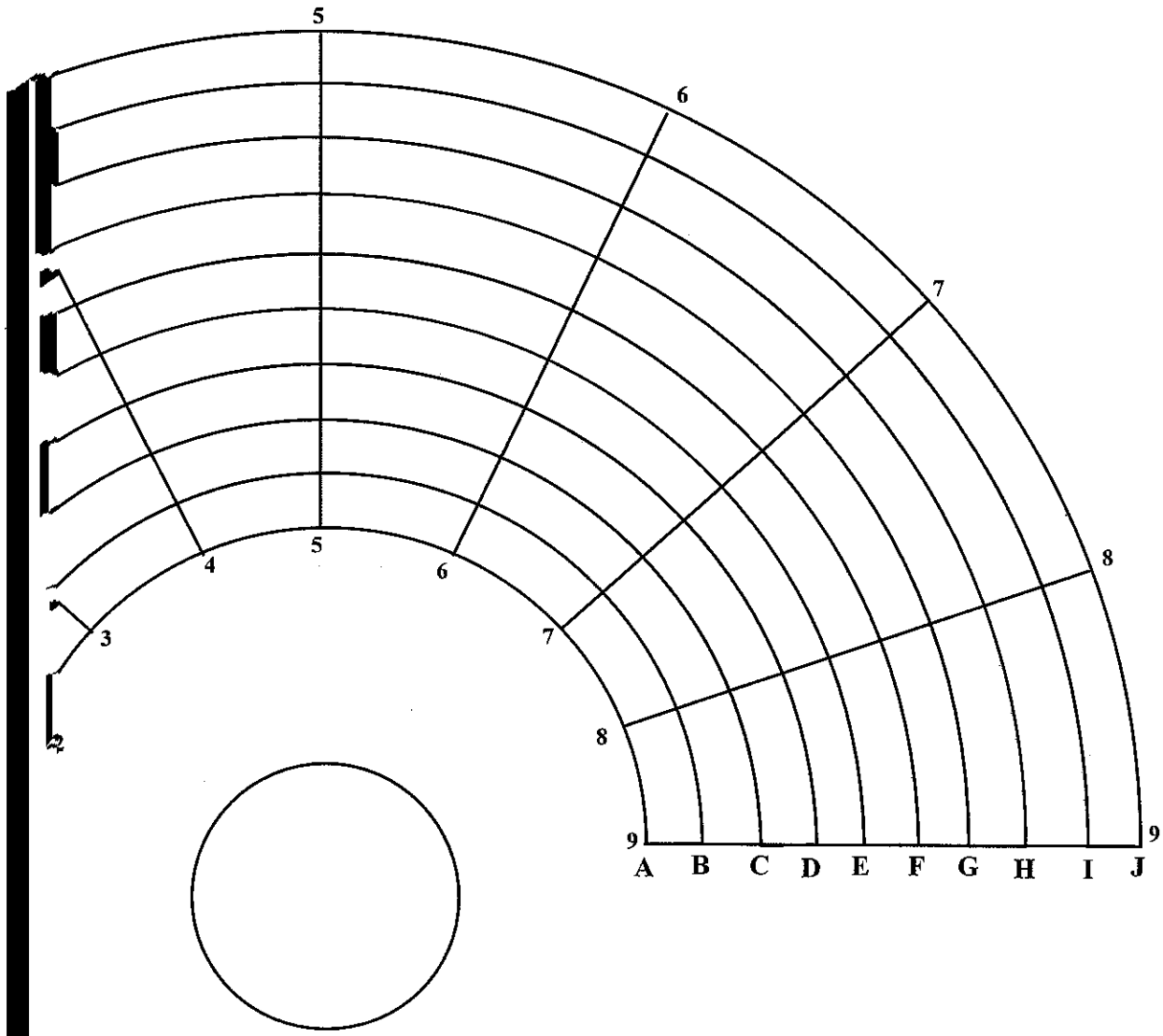
Voilà, the end product is a crane.	

Now fold right and left tips to meet at the arrows on the diagram.	
Now fold the both sides along the dotted lines on the diagram.	
Now you will fit the 2 flaps you just folded into th “pockets”. Start with the RIGHT side. Bring the right flap over and open the paper slightly then slide the paper into the pocket.	
Now repeat the previous step for the LEFT side.	
Flip paper over.	
Now fold the flaps in at the dashline shown on the diagram.	

OK, so that was 1 modular unit. There are 6 sides to a cube, so complete 5 more of these modular units.	
To assemble the cube, Take the orange modular unit and insert the tip of the red unit into the pockets.	
Then insert the blue tip to the orange unit pocket from the other side.	

Next flip the paper over.

Grid Paper (2.0 cm)



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Book of Permutations

A small number of items can be grouped to give a large number of permutations. By making a book of eight pictures, each divided into three sections, you can see how the permutations increase with each additional page. Templates are provided for you to enlarge and copy.

1. Cut eight pieces of paper to the same size. With a ruler, draw pencil lines across the paper to divide each sheet into three equal horizontal sections. Using poster board or thicker paper, make two (p)-J T* [(U)-C 2-11(,)4(m)--7(r)co (-7(r)a-16
3. If needed, draw guide lines on the two horizontal lines to match up where tops and bottoms of animals will meet. This will ensure that the animal bottoms will all be the same size and all meet up with the middle body sections.
4. Colour the animals as you wish and p lace all the pages between the two

Creating Your Own Puzzle

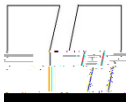
This Activity Covers:

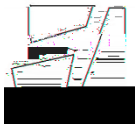
- x Geometry
- x Looking at different shapes

Lookinffving puzz10.6 le“ mÑ Ð&„¢(à fß `8Q• & F FÐÍ Í D@ AP

1. Cut out two squares from a piece of cardboard, one for each pe
   six-inches, but can be made larger. If you are using a cereal box
   already have an image on them; you may skip steps two and th
2. If you do not already have an image on your cardboard, cut two
   magazine or old calendar the same size as your cardboard. Be sur
   cardboard squares are the same size.
3. Line the picture up to the square and glue the square. Let the sq
   minutes.
4. Cut the square once in any direction.
5. Cut the square a second time:
   After the second cut, put the three pieces together to make sure
   solve the puzzle.

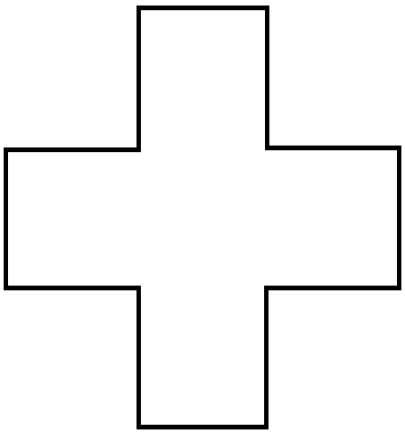
6.





Addition Sign Puzzle

Using the pieces provided, can you create an addition (plus) sign?



Get Across the Lake to the Island!

One day, 2 unicorns and 4 mice

The only problem was that the boat could only fit one unico.96 r 0.003 Tws0n6(t
mice at once. Also, the boat coul2 no.96 rt drive.96 r itself.96 r would
have to remai03 Tw boar2 until.96 r every.96 ro.96 rne was on the isl1(s0n6(
them across the lake.

How did all the animals get across safely? How many trips did they have
to make in the boat? Who was on each trip?

Solutions

Calculator Riddles pgs. 23-25

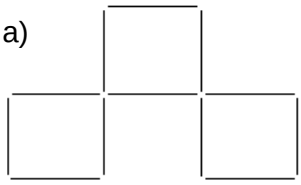
1. A hole. When you take away more dirt, the hole gets larger!
2. A goose. A goose has 2 legs but no goose has 4 legs!
3. Ellie. They are her parents, so she must be one of their children!
4. 16 legs (the decimal point separates numbers and words).
   One of the four singers is a tenor and 10 + 2+ 2 + 2 = 16!
5. 9 eels, because 9 eels were not sold!
6. Lee, the butcher. He weighs meat all day long!
7. 1 h (hour). The third pill will be taken one hour after the first pill!
8. ($) 100 bill. It is worth $99 more than the new one ($1)!
9. Bob scored higher on the math test because glasses improve division!
10. 12s (seconds). January second, February second, March second, etc.!
11. Holes, so 75 kilograms of water leaked out!
12. Leslie. She was more exhausted because of all the numbers that she had to carry!
    Bill, because of all the borrowing that he had to do!
    Bess, because she was so productive!
13. A googol. It has 101 digits!
14. His boss is right. All of the months have at least 28 days!
15. 8.9 (seven ate nine)!
16. The number 5317. It lies when it is resting on its back!
17. 0. No matter how you turn the calculator, there is no dirt in a hole!
18. 2 eggs. You took 2 eggs so you have 2 eggs!
19. His legs, because he puts down 3 and carries 1!

Caesar's Box Cipher pg. 26

1. MATH CAN BE MAGICAL
2. ATTITUDE IS A LITTLE THING THAT W

Toothpick Math Answers pg. 49

1. a)



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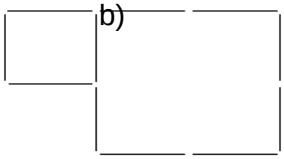

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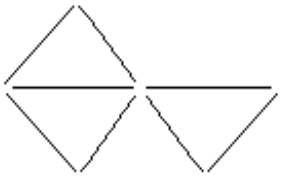

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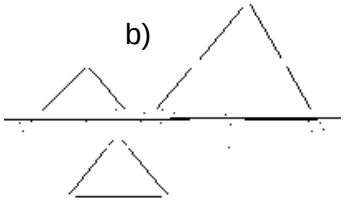

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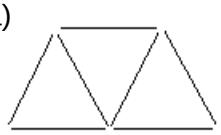

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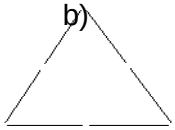

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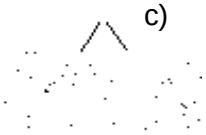

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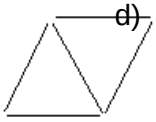

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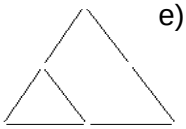


4.

Book of Permutations pg. 74

A book of 8 pages split into three equal section would give 512 (8 x 8 x 8) different permutations.

Addition Puzzle pg. 76

Get Across the Lake to the Island pg. 77

It should take at least 13 trips.

GLOSSARY

Area: The size of the surface of a shape. There are many different formulas to calculate area, depending on what shape you are working with.
For example, the area of a rectangle is area = length x width.

Bar Chart: A chart or graph which represents information with bars
For example:

Cartesian Oval: A shape like an egg

Cipher: A secret code or message. It can be represented by symbols or letters.

Counter: Any item that can be counted. Items such as beads, buttons, marbles and toothpicks make great counters. They come in handy for games that require items to be marked

Measurement: Standard or non standard measurement. Standard measurement is when we are measuring things using length, width, grams, seconds, litres, etc. Non standard measurement includes using items to measure that are non-standard. For example: "I can fit 8 paper clips across my paper. My paper is 8 paper clips long".

Median: The number or item that falls in the middle of the sequence. For example: In the number 5389879 the 9 is in the middle of the sequence.

Mode: A number or item that occurs the most frequent. Example: 12233444448 the mode is 4 because there are 5 four's

Net: A 2D outline of a shape that can be folded and made into its 3D shape.

Soroban: A Japanese abacus. It is used to help with manipulation of numbers.

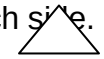
Spatial Sense & Geometry: The relationship of space. Shapes, lines, curves, etc. and how they relate to their space.

Sphere: A 3d shape with no edges, no vertices, and no faces. It can roll and is a circular shape.

Square: A shape with 4 vertices and 4 equal

Strands: The Ontario math curriculum is made up of five 'strands' or categories. There are 5 strands: Data Management & Probability; Measurement; Number Sense & Numeration; Patterning & Algebra; Spatial Sense & Geometry.

Sum: The sum is the total of an addition operation. So in 4 + 3 +2 = 9, the sum is 9.

Triangle: A shape with 3 sides and 3 vertices that meet each side. 

Websites to Explore

MATH FOR PARENTS AND FAMILIES

Figure This! Math Challenges

MATH FOR STUDENTS

AIMS Math Puzzles http://www.aimsedu.org/Puzzle/

For people of all ages that love puzzles ! Choose from puzzles using numbers, logic, toothpicks and geometric shapes. Puzzles are rated on a scale of difficulty so there is something for everyone ! Also includes puzzles using optical illusions and visual paradoxes.

Brainbenders

http://www.enchantedmind.com/html/puzzles/brainbenders/brainbender_puzzles.html

This website, Enchanted Mind, rich with advanced, creative mathematics will stretch the mind of any math student and provide challenges such as puzzles and word problems. Definitely for the math lover with advanced math skills, try the Brainbenders for some mental gymnastics !

Calculation Nation

IXL http://www.ixl.com

Excellent, interactive website with free practice math questions arranged by grade level. Although this is an American-based site, it organizes the grade levels by skills and categories, allowing for ease of finding the appropriate questions required for practice. Website is easy to navigate, even for the younger students. Fee-based membership option tracks progress reports and are available to both teachers and parents.

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NRICH Mathematics http://nrich.maths.org/public/

This website specializes in enrichment of math ideas while providing free mathematics enrichment materials (problems, games, etc.) on a categorized, searchable database for students aged 5 and beyond. The aim of the program is to enrich the mathematical experience of all learners and has a focus on providing professional development for teachers wishing to embed rich mathematical tasks into everyday classroom practice. The site includes word problems, games, and articles including a weekly math problem.

Thinkfinity http://thinkfinity.org/home.aspx

An abundant resource site for teachers with lesson plans, interactive activities and worksheets categorized by grade level with an easy to use drop(o)-38(r)-blem

Book List

This is a list of math related books that you can read with you children. The majority of these books can be found in local libraries. Keep in mind that any book can be math related! When reading with you child, look at the words and pictures. Look for patterns, shapes, things you can count, estimation you can make or compare sizes.

Adler, David A. Fraction Fun
Ahlberg, Janet. Each Peacn Pear Plum

Giganti, Paul. Each Orange Has 8 Slices – A Counting Book
Goennel, Heidi. Odds and Evens: A Numbers Book
Grifalconi, Ann. The Village of Round and Square Houses

Peterson, Ivars. Math Trek: Adventures in the Math Zone.
Pinczes, E.J. One Hundred Hungry Ants
Pittman, Helena Clare. A Grain of Rice
Reid, Margarette S. The Button Box
Rissman, Rebecca. Shapes in the Garden
Shapes in Sports
Shapes in Music
Shapes in Buildings
Shapes in Art

1, 2, 3 Books!

Here is a list of math related books that you can read with your children. All of these books can be found in branches of the Kingston Frontenac Public Library. Many books can be math related! When reading with your child, look at the words and pictures for patterns, shapes, and things you can count.

Number Sense and Numeration: Primary

Aker, Suzanne. ***What comes in 2's, 3's, and 4's?***
Introduces the numbers two, three, and four by enumeratieyes and two arms to the four seasons of the year.

Axelrod, Amy. ***Pigs Will Be Pigs***
Meet Mr. Pig, Mrs. Pig, and the piglets. Here's a family that must add, subtract, multiply, and divide, and think about the way money works in order to satisfy their big pig appetites.

Christelow, Eileen. ***Five Little Monkeys Jumping on the Bed***
A counting book in which one by one the little monkeys jump on the bed only to fall off and bump their heads.

Clements, Andrew. ***A Million Dots***
Shows what a million dots looks like and includes interesting facts such as how many shoe boxes it would take to make a stack to Mount Everest

Crews, Donald. ***Ten Black Dots***
A counting book which shows what can be done with ten black dots--one can make a sun, two a fox's eyes, or eight the wheels of a train.

Giganti, Paul. ***Each Orange Has 8 Slices – A Counting Book***
An illustrated introduction to counting and simple addition

Hulme, Joy N. ***Wild Fibonacci: Nature's Secret Code Revealed***
Introduces the Fibonacci sequence, the pattern of numbers in which each number is the sum of the two numbers before it, and relates it to curves found in nature, including elephant tusks, tiger claws and seahorse tails

Hutchins, Pat. ***The Doorbell Rang***
Each time the doorbell rings, there are more people who have come to share Ma's wonderful cookies

Kasza, Keiko. ***The Wolf's Chicken Stew***
A hungry wolf's attempts to fatten a chicken for his stew pot have unexpected results.

Koller, Jackie French. ***One Monkey Too Many***
Adventurous monkeys have a series of mishaps and escapades involving a bike, a canoe, a restaurant, and a hotel.

Martin, Bill. ***Chicka Chicka 1, 2, 3***
An alphabet rhyme/chant that relates what happens when the whole alphabet tries to climb a coconut tree

Mollel, Tolowa M. ***My Rows and Piles of Coins***
A Tanzanian boy saves his coins to buy a bicycle so that he can help his parents carry goods to market, but then he discovers that in spite of all he has saved, he still does not have enough money.

Murphy, Stuart J. ***Too Many Kangaroo Things to Do***
A surprise birthday party planned for a kangaroo by his friends provides many opportunities for the reader to add and multiply various things.

Pinczes, E.J.

Patterning and Algebra: Primary

Ernst, Lisa Campbell. *Sam Johnson and the Blue Ribbon Quilt*
While mending the awning over the pig pen, Sam discovers that he enjoys sewing the various patches together but meets with scorn and ridicule when he asks his wife if he could join her quilting club.

Vaughan, Marcia. *The Secret to Freedom*
Great Aunt Lucy Tells a story of her days as a slave, when she and her brother, Albert, learned the quilt code to help direct other slaves and, eventually, Albert himself, to freedom in the north.

Measurement: Primary

Allen, Pamela. *Who Sank the Boat?*
The reader is invited to guess who causes the boat to sink when five animal friends of varying sizes decide to go for a row.

Hoban, Tana. *Is it Larger? Is it Smaller?*
Photographs of animals and objects in larger and smaller sizes suggest comparisons between the two.

McKissack, Pat. *A Million Fish…More or Less*
During an outing on the mysterious Bayou Clapateaux, Hugh Thomas catches a million fish.

Neuschwander, Cindy. *Sir Cumference and the Dragon of Pi*
When Sir Cumference drinks a potion which turns him into a dragon, his son Radius searches for the magic number known as pi which will restore him to his former shape. Part of the Sir Cumference series of books.

Schwartz, David M. *Millions to Measure*

Strauss, Stephen. *How Big is Big*
Math Concepts: Weights and Measures, Juvenile literature.

Measurement: Junior

Lasky, Kathryn. *The Librarian Who Measured the Earth*
Describes the life and work of Eratosthenes, the Greek geographer and astronomer who accurately measured the circumference of the Earth

Schwartz, David M. *Millions to Measure*

Spatial Sense and Geometry

Burns, Marilyn. *The Greedy Triangle*
Dissatisfied with its shape, a triangle keeps asking the local shape shifter to add more lines and angles until it doesn't know which side is up.

Grifalconi, Ann. *The Village of Round and Square Houses*
A grandmother explains to her listeners why in their village on the side of a volcano the men live in square houses and the women in round ones.

Jonas, Ann. *Round Trip*
Black and white illustrations and text record the sights on a day trip to the city and back home again to the country. The trip to the city is read from front to back and the return trip from back to front, upside down.

Pittman, Helena Clare. ***A Grain of Rice***
A reward of one grain of rice doubles day by day into millions of grains of rice when a selfish raja is outwitted by a clever village girl.

Scieszka, Jon. ***Math Curse***
When the teacher tells her class that they can think of almost everything as a math problem, one student acquires a math anxiety which becomes a real curse.

Silverstein, Shel. ***The Giving Tree***
An endearing story of the life of a man and tree. The tree gives everything it has to the man and the man gives companionship to the tree.

Swift, Jonathan. ***Gulliver's Travels***
Due to a series of mishaps he winds up on uncharted islands among unusual people and animals. Many Math concepts presented.

Tang, Greg. ***The Grapes of Math: Mind-Stretching Math Riddles***
Illustrated riddles introduce strategies for solving a variety of math problems in using visual clues.

Zaslavasky, Claudia. ***Math Games &Activities From Around the World***
Presents more than 70 games, puzzles and projects from different countries and cultures that teach a variety of basic mathematical concepts.

Sphère

Matériaux

- dés
- crayons
- la grille Sphère ä gauche

Les règles

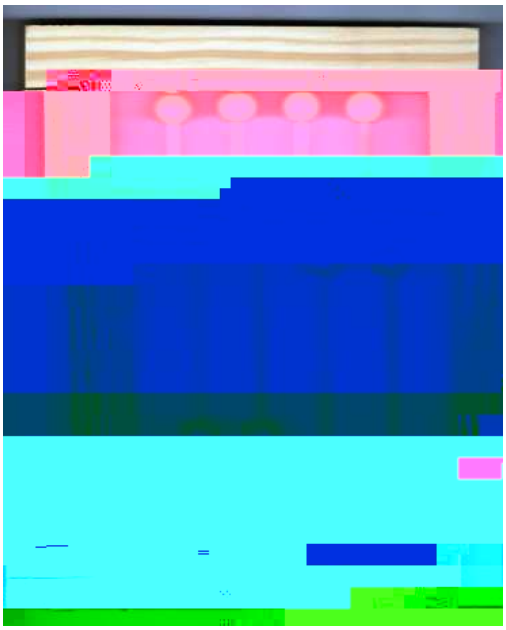
Le but de ce jeu est d'accumuler autant de points que possible. Il y a six parties de S,P,H,È,R,E. Au début de la partie, tous les joueurs sont

5.

Soroban 0.1 is

Dans le deuxieme exemple, la valeur sur le Soroban est **3,** parce que 3 boules de "Terre" se sont deplacees ver la barre.

Dans le troiseme exemple, la valeur sur le Soroban est **11,** parce qu'on a deplace une boule unaire sur le tige des unites et une boule unaire sur le tige des dizaines.



Dans le quatrième exemple la valeur sur le Soroban est **3 708**, car il y a 3 unaires et 1 quinaires sur le tige des unités, rien sur le tige des dizaines, 2 unaires et un quinaires sur le tige des centaines, et 3 unaires sur le tige des millier. (3 milliers + 7 centaines + 0 dizaines + 8 unites = 3708).

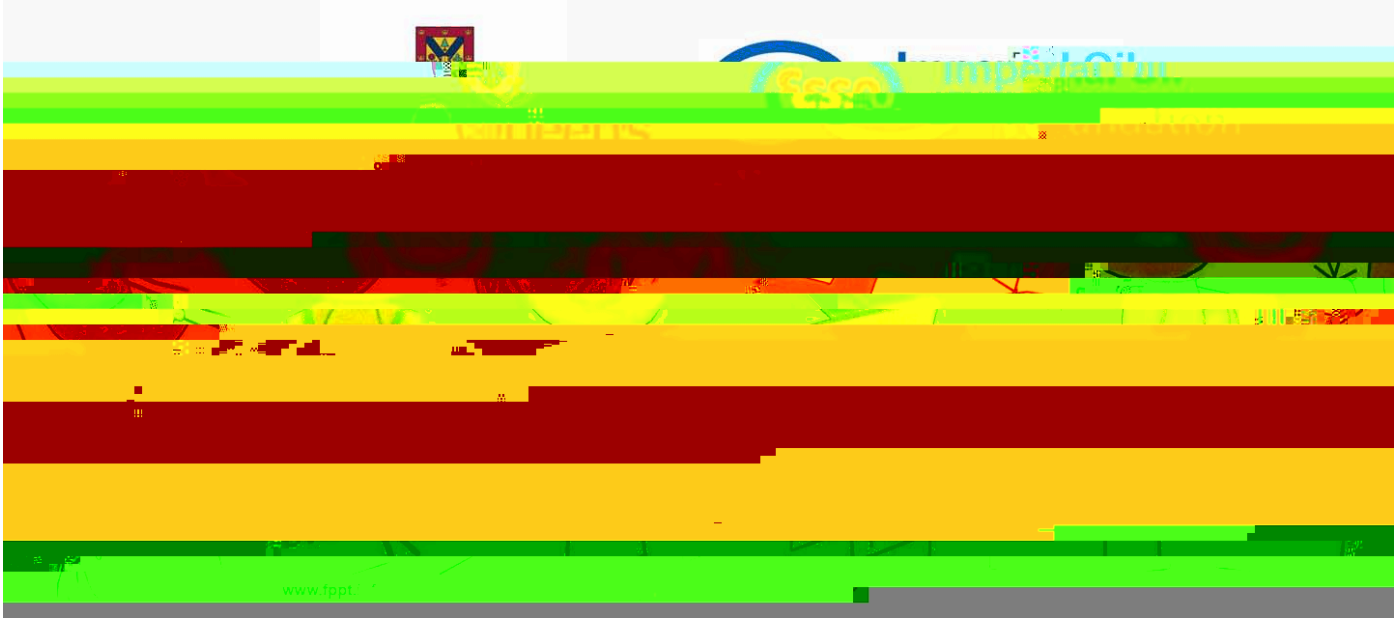
Ajoutant avec votre Soroban

C'est facile d'ajouter avec votre Soroban! Pour calculer 8 + 6, on fait d'abord 8 + 1, puis pour ajouter 5, on fait + 10 – 5.

The left hand represents multiples of ten, with the right thumb representing 50. Here's how the left hand works:

Kingston Compte!

Une célébration de mathématique pour toute la famille

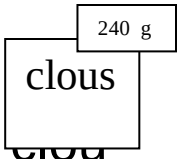


Mesurer à la quincaillerie

On sait que ce récipient peut contenir 240 g de clous.
On a une balance, mais pas de contrepoids.
Mesurez 90 g de clous pour un client.

Divisez les clous par deux.

120 g 120 g



Diviser les perles également

Il y a un assortiment de perles
pour faire l'artisanat, et une
balance, mais pas de contrepoids.
Comment peut-

La pièce de monnaie fausse est plus légère. Laquelle est-elle?

On a trois pièces de monnaie. Deux sont bonnes, mais une est fausse et moins lourde. Comment peut-on l'identifier par moyen d'une balance?

Faites une comparaison entre la première et la deuxième pièce de monnaie. Si leurs poids sont les mêmes, la troisième pièce de monnaie est fausse, autrement c'est la moins lourde des deux qui est fausse.

On a 9 pièces de monnaies, donc 8 sont bonnes, mais une est fausse et plus légère. Pouvez-vous la trouver en juste 2 pesages?

les enigmes de mesure

Mesurer avec une balance

Vous avez 3 paquets de barres de chocolat et une balance.
Chaque barre de chocolat pèse 200 grammes.
Dans un paquet, il y a une barre de chocolat qui ne pèse que 150 grammes.
En n'utilisant la balance qu'une fois, pouvez-vous trouver le paquet avec la barre de chocolat qui ne pèse que 150 grammes?

Le

Les de l'origami

Origami, d'origine chinoise, est devenu célèbre au Japon. Ceci est la raison pour laquelle le nom est japonais. Origami est l'art du pliage du papier: "oru" signifie "plier" et "kami" signifie "papier". Ceci est exactement ce qu'on va faire; Nous allons plier du papier. Commencez avec une feuille de papier carrée que vous allez transformer en animal, plante ou forme géométrique. Découvrez le plaisir de l'origami.

Étape par étape: Un ballon

1. Commencez avec une feuille de papier carrée.

7. Maintenant pliez chacun des 4 coins vers le haut.	1 2 3
8. Puis, pliez les 4 coins horizontaux vers le centre.	1 2 3
Une extension: S'il vous reste du temps, utilisez votre doigt pour élargir la petite poche. Vous devez rentrer chacun des rabats dans les poches. Les rabats doivent être pliés en 2 pour en faire assez petits pour les poches.	s.

s