Family Math Night

Parent Resources

Family Math Night

http://www.edu.gov.on.ca/eng/literacynumeracy/parentGuideNumEn.pdf
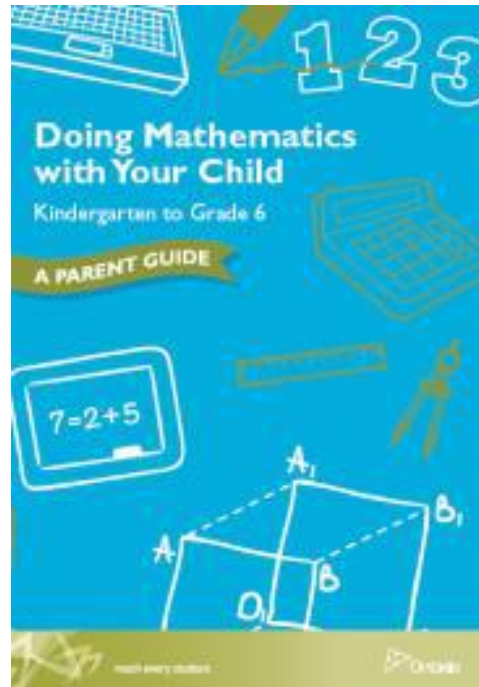
What's my Number?

I'm thinking of a mystery number between _____ (insert either 1 – 20 or 1 – 100).

You can ask me questions but I will only answer 'yes' or 'no.'

Let's see if you can figure out the number with as few questions as possible!

What's the Math?

Your child will:

- develop an understanding that a number *(a quantity, an amount)* represents all of the quantities below it.

- learn there are relationships between quantities under 100.

Tenzi

OBJECT: Be the first player to get all ten of your dice to show the same number.

HOW TO PLAY: (2-4 players)

Each player chooses a set of dice. Players hold all ten dice in their hands. Someone says "Go" and everyone rolls at the same time. Quickly look at your roll and decide which number you are going to go for. (For example, if you have more 3's than any other number, that's what you want to go for.) Put all your dice with that number aside, collect the remaining dice and quickly roll again. (You do not have to wait for others to roll again. Everyone rolls together only on the first roll.) Keep rolling until all ten of your dice show the same number.

WINNING: The first player to get all ten of their dice to match (ten 3's, for example) shouts out "TENZI" and wins the game!
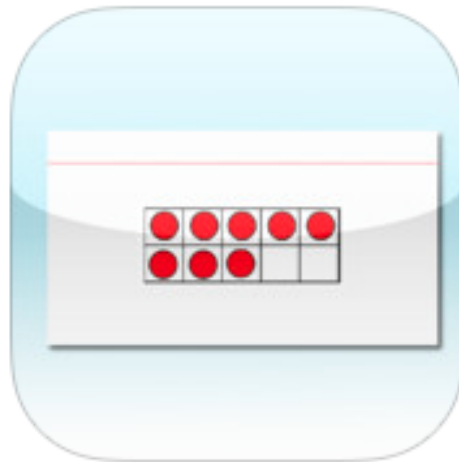
What's the Math?

Your child will:

- learn to quickly recognize and identify quantities (called 'subitizing')

- practice counting if he/she needs to count each dot (one-to-one, stable order, cardinality)

- learn quantities can be composed in different ways (your child might recognize 3 and then add 2 more dots)

Mobile Apps (K - Grade 3)

Hungry Fish

Quick Image

Geoboard

Hungry Fish - Feed your fish the number it wants to eat. You can add numbers together by dragging one onto another.
By playing this game, your child will learn that a quantity such as 20, can be composed of a variety of number combinations.

Quick Image – Quick images will flash on the screen momentarily. By planning this app, your child will develop new strategies for counting (being able to picture quantities in groups – for example, "I see 5 and then 3", rather than counting by 1s; or subtracting "I see 2 less than 10."

Geoboard - The Geoboard app is a tool your child can use to explore a variety of mathematical topics. By stretching bands around pegs to form line segments and polygons, your child will make discoveries about perimeter, area, angles, congruence, fractions, and more.

Mobile Apps (Grades 4-6)

Hungry Fish

Hay Day

Hungry Fish - Feed your fish the number it wants to eat. You can add numbers together by dragging one onto another.
By playing this game, your child will learn that a quantity such as 20, can be composed of a variety of number combinations.

Hay Day – On the farm, you are able to grow food, raise animals, sell product and purchase product. You become a farmer! Students learn about quantity in a real life context by managing the finances on a farm.

Mobile Apps (Grades 7-10)

Hay Day

24 Game

Hay Day – On the farm, you are able to grow food, raise animals, sell product and purchase product. You become a farmer! Students learn about quantity in a real life context by managing the finances on a farm.

24 Game – The goal is to make the number 24 using all four numbers on the card. You can add, subtract, multiply or divide. Each number can only be used once and yes,

Making Zero

OBJECT: Work with your partner to make zero by the end of the 12th round.
At the end of the game, you want to be as close to zero as possible or on zero.

HOW TO PLAY:
- Each team receives 4 dice
    - 2 Red (Negative)
    - 2 White (Positive)

- Roll all your dice at once
    - Using the numbers on the dice create a number sentence that equals zero or close to zero
    - Record your number sentence and your results on the tracking sheet

- Each roll and number sentence is recorded as one round
    - You will play 12 rounds in total

- At the end of the 12th round, you will need to add all of your sums together
    - The goal is for your sum to equal 0 or to get as close as possible to 0.

TIP:
Don't forget that you are going to have to add all the results together at the end.

Making Zero

Reflection Questions:

What strategy or strategies did you and you partner use to try to keep your sums close to or equal to zero?
What dice combinations would you like to see every time you roll to make the game really easy? Justify your answer.

Tracking Sheet

| Number Sentence	Sum
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
Total Sum of all 12 Rounds	

What's the Math?

Your child will:

- develop an understanding of the relationships between positive and negative integers

- learn that the order of operations in their number sentence may affect the sum

- practice mental math calculations involving positive and negative integers

Birds in the Bush

You will Need: Marbles or coins, cups (optional)

How to Play:

- Choose to play the game with 5, 10, 15 or 20 marbles, based on your child's counting ability. Let's suppose you are using 10 marbles. Each player puts 10 marbles in their cup or hides them in their lap. Players sit in a circle or across from one another.

- Player 1 takes some of the marbles out of her cup or lap and puts them in a closed fist. She shows the fist to player 2 and says "How many birds in the bush? Player 2 makes a guess about how many marbles are in player 1's hand. Player 1 reveals the marbles and they count them together. If player 2 guessed right, he takes all the marbles. If he guessed wrong, the players figure out the difference between the guess and the actual amount. If his guess had a difference of 3, he gives 3 of his marbles to player one. Then player 2 has a turn hiding marbles in his hand and play continues.
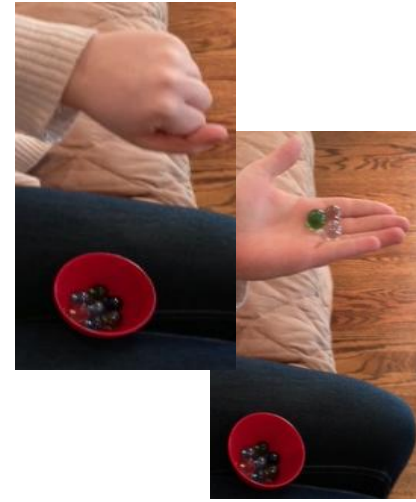
Talking With Your Child…

- You think I owe you two marbles? How can you be sure?
- What made you decide to guess 4?
- That was a close guess! How did you know?

Birds in the Bush

When playing this game, your child is using counting strategies to find out how many marbles are in the group.

He/she is also comparing quantities to see how much bigger or smaller one is to the other. ("I guessed 5 and you had 7 hidden, so I owe you two marbles." Your child is also learning how quantities are made up of smaller parts. For example, 20 marbles can also be thought of as 5 marbles in my hand + 15 marbles in my cup.
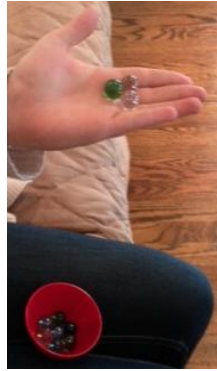
How Many are Hidden? (JK – 3)

You will Need: Coins & a magazine or tea towel

How to Play:

- Arrange a group of coins underneath a magazine, tea towel, etc.
- Tell your child that you're going to play a game in which they need to figure out how many coins you have hidden with only one quick peek.
- When your child is ready and watching, lift the cover for 1-2 seconds and then cover the coins back up.
- Ask your child: "How many did you see it?" and "How did you see them?" Then have them check their estimate by counting.
- The "peek" needs to be fast enough that your child can't count the objects one by one. The goal is to be able to recognize numbers by combining the smaller parts that they can recognize at a glance.
- Start with small numbers like 2 or 3 and work up to higher quantities as your child is ready. Keep it fun and keep it successful.

Talking With Your Child…

- How many did you see?
- How did you know there were 7?
- How did you see 7?
- How could you check to be sure?

How Many are Hidden? (JK – 3)

Your child is learning to see how quantities are related to one another. For example, they may see that six is made up of two 3's or that seven is one more than 6. This understanding of how numbers are composed and related is foundational to the development of flexible computation strategies.

Bunny Ears (K – 1)

You will Need: Hands

How to Play:

- Tell your child to put their closed fists on top of their head so they can make bunny ears with their fingers.
- Tell them how many bunny ears to make with their fingers. "Make (five) bunny ears." (Substitute any number up to ten, including zero.)
- When your child thinks she has made the correct quantity of ears, ask her to bring her hands out in front of her to check.
- Now it's your turn. Allow your child to direct you to make a quantity of bunny ears. Try to model different combinations of fingers that your child is using.

Talking With Your Child...
- How many ears did you make?   ("Five")
- How do you know that's five?
- How else could you make five ears?

Consider making a mistake every now and then that you can catch when you check. Making mistakes is a natural part of learning and will help your child to feel confident in taking a risk.

Bunny Ears (K – 1)

In this game, your child is doing a lot more than counting. By using both hands, he/she will make the quantity in two parts. Knowing how quantities are composed of smaller parts is necessary for developing flexible computation strategies. They will also likely see the same quantity represented in more than one way. For example, 5 ears can be made with 2 + 3 fingers or 1 + 4 fingers, etc. This helps them understand the concept of equivalence.

Broken Calculator (Grades 1 – 8)

You will Need: Calculator

How to Play:
Tell your child to imagine that the calculator is broken and only some keys work. He/she needs to figure out a way to get to a target number using only the keys that work. You and your child can make up challenges to try. Here are a few examples:

- Only the odd number keys are working.
  Can you get to an even number?
- Only the even number keys are working.
  Can you get to an odd number?
- The 2 and 8 keys are the only number keys working.
  How could you get to 24?
- Only the odd number keys and the multiplication key are working. How could you get to 30?
- Only the multiplication key and number keys are working. How many ways can you get to 100? 1000?

Talking with your Child:

- How else could you do it?
- Will that always work?
- Could you do it again without the subtraction sign?
- What did you notice?

Broken Calculator (Grades 1 – 8)

By playing broken calculator, your child is learning to:
-understand relationships between numbers – how *much* bigger or smaller one number is than another or how *many times* bigger or smaller one number is than another.
- understand how numbers are composed of smaller parts.
- understand how operations make quantities increase or decrease.

Domino Drop

Materials:
4-6 sets of real dominos or 10 full sets of 10 frame cards, music

How to Play:
- Dominos or 10 frame cards are dropped on the floor randomly throughout the classroom.
- Students turn over the dominos or cards so they are face up.
- Play music for a few seconds as students move around the room.
- Stop music. Ask students to find or make a certain number. For example, "Find 5 or make 5"
- When they find or make the quantity they need, ask students to bring their cards or dominos to you.
- Ask "How many?" "How do you see _____?" "How many was that?"
- The student response may be " I have 5. I see 3 here and 2 here and that makes 5".
- Ask students to place cards back on floor and start the music again. Continue through the steps again changing the quantity each time.

What's the Math?

Your child will:

- develop his/her ability to recognize quantities

- develop an understanding of equivalence
(different combinations of numbers can be equal / e.g.,   4+1 = 5, 2+3 = 5)

- learn there are many different ways to compose or decompose a quantity
(see how numbers can be put together and taken apart)

Coordinate Battleship
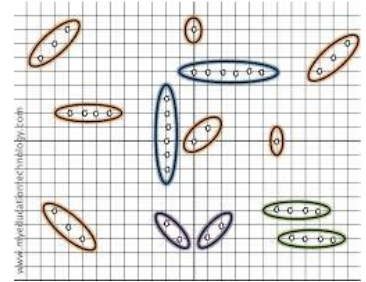
OBJECTIVE:

Sink your partner's battleships before they sink yours!

HOW TO PLAY:

- Each person places their ships on the Cartesian plane and records their coordinate locations without showing one another.
- Take turns calling out coordinates.
- If you call out a coordinate where a part your partner's ship is situated, they will say 'hit.' If not, 'miss.'
- Depending on the length of the ship, you may need multiple 'hits.' E.g., your ship is 3 units long – your partner will need to call out all three coordinates to sink your ship.

WIN:

Once a player has sunk all of the opponent ships, he/she is declared the winner.

What's the Math?

Your child will:

- practice identifying locations on a Cartesian plane

- develop their spatial reasoning skills as they try to picture the position of the ship

Great games for K - 3
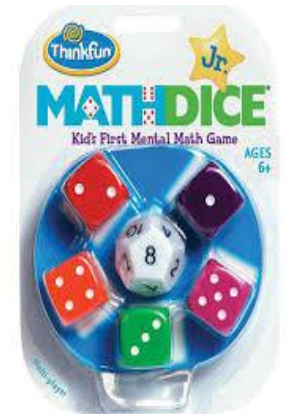
Mastermind: The object of the game is to break the code in the shortest number of guesses. One player sets a code. The other player(s) use any combination of the color pegs to guess what the code might be. By playing this game, your child will be using their logical reasoning to solve the problem.

Spot It: To play, your child will flip over cards to find a match. There are options for advanced play – looking for odd / even numbers, counting forward or backwards, or doubling numbers. By playing, your child will learn to recognize numbers and will see that the number seven always represents the same quantity of items.

Math Dice Jr.: The object of the game is to roll a target number to begin. Players then need to roll five dice, and choose whether to add or subtract their values to work towards reaching the target number.   When playing, your child will learn that when you add whole numbers they get bigger and when we subtract them they get smaller. They can see that a quantity can be represented in different combinations of parts. They'll also learn about number relationships – "12 is 4 bigger than 8, so I need to subtract 4 to get to 8".

Great games for Grades 4 - 6
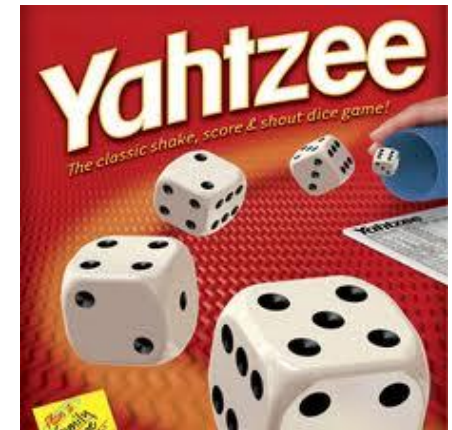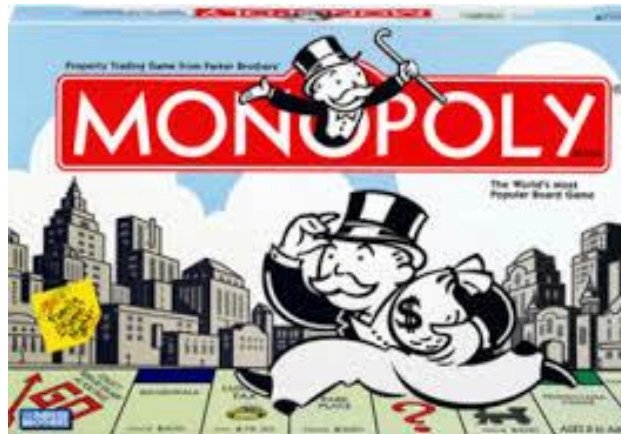
Monopoly: Your child will use dice to move around the playing board as he/she decides to purchase different properties. While playing, your child will:

- recognize quantities on dice and learn to combine quantities on dice;
- understand how quantities are made up of smaller quantities. Example: I can exchange $200 for many different combinations of bills.
- Use his/her knowledge of quantity to add and subtract. For example, making change – I need to give you back $40 from $200 because you only owed me $160. This requires knowing that 200 can be split into two parts (40 and 160).

Tip over: Your child has to visualize how much space the crate will span when tipped over onto the grid. Beneficial for developing their logical reasoning and problem solving ability.

Yahtzee: Your child will shake a set of dice and make combinations: 3 of a kind, 4 of a kind, full house, Yahtzee! When playing this game, your child will combine quantities to get larger quantities. They may also be learning to think of quantities in units. For example, when they say, "I have 3 sixes" they are thinking of each six as one unit. This understanding that numbers can represent groups of other quantities is foundational to many areas of mathematics.

Coins in My Pocket
Grades 3 - 8

I have coins in my pocket that have a value of 50 cents.

Which coins do you think I have?

You can ask me questions but I will only answer 'yes' or 'no.'

Let's see if you can figure out the coins with as few questions as possible!

What's the Math?

Your child will:

- develop an understanding of equivalence
  (there are different combinations of numbers that equal *50)*

- learn about the different parts of 50 and their relationships

- learn about coin values

For our school's spaghetti dinner, our class is responsible for setting up the tables and chairs.
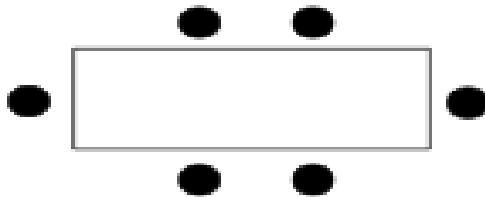
If we have 24 rectangular tables, how many people can sit together at these tables?

At each table, you can sit 6 people. We'd like to set up the 24 tables in one long row – like everyone is sitting around a dinner table together. The tables need to touch.
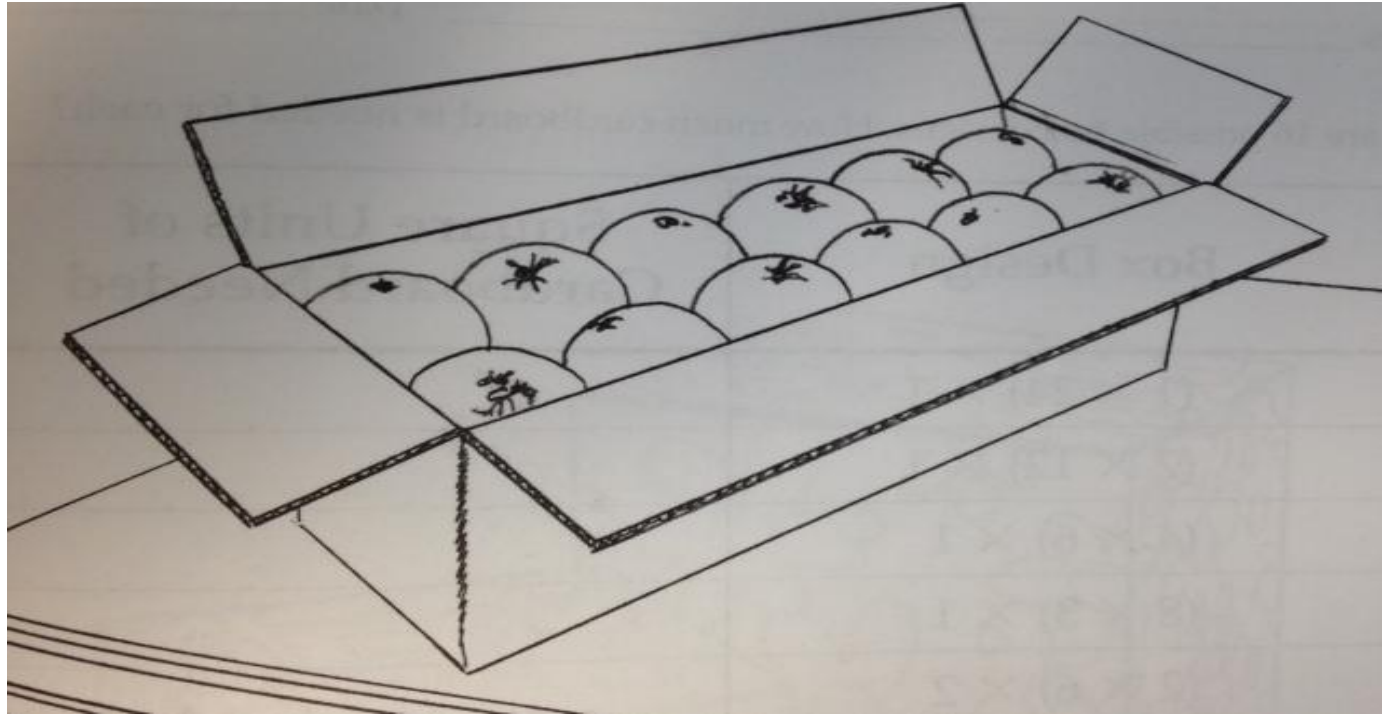
Planning for Earth Hour
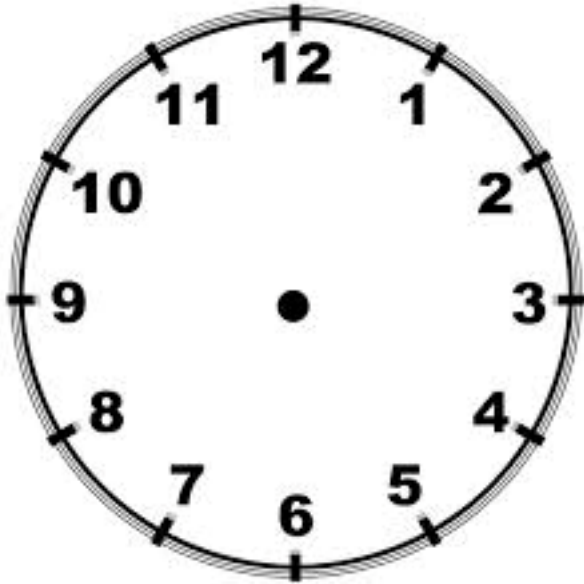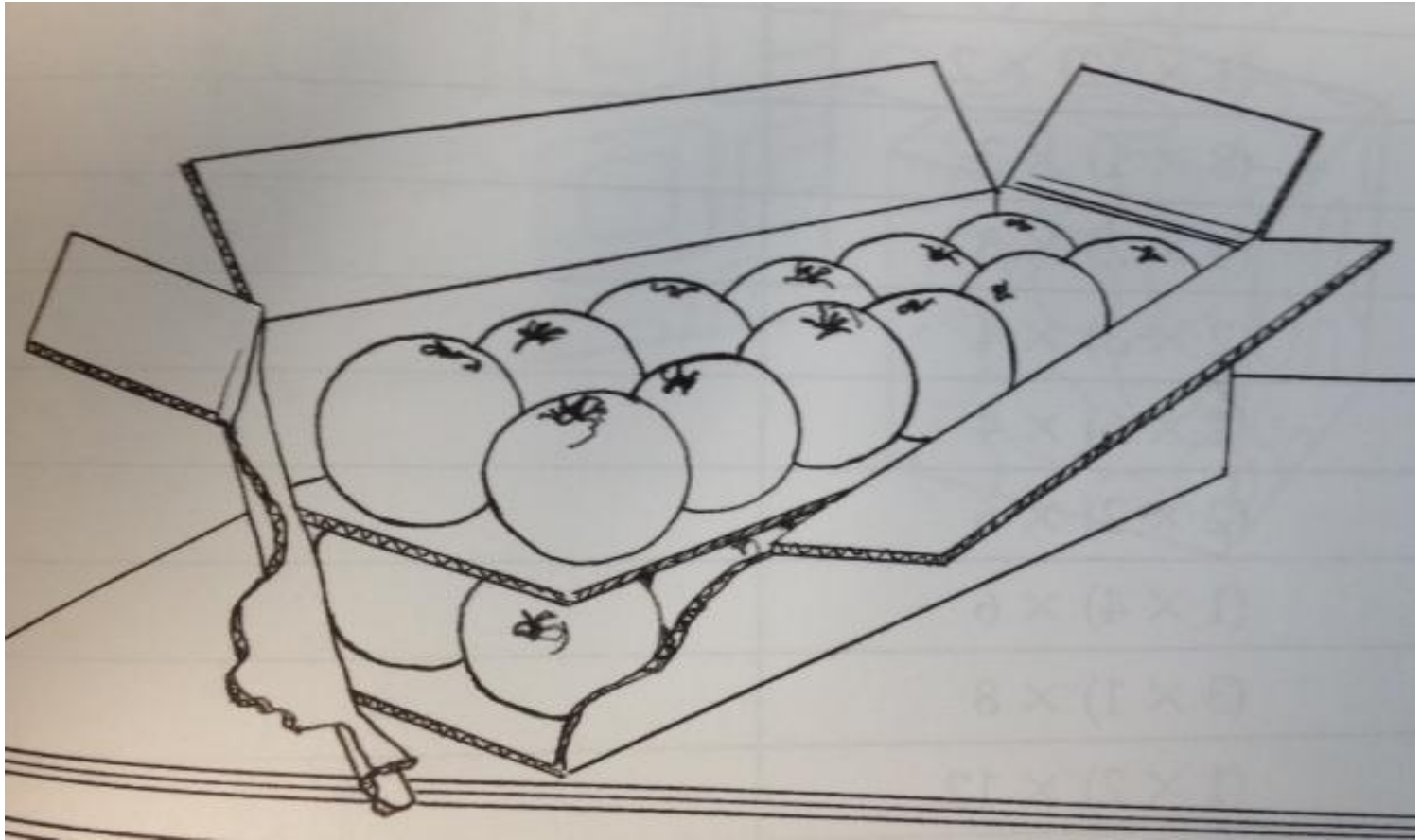

Lego

Games

Crafts

Jump Rope

How much time should we spend on each activity so that the total time is 1 hour?

A friend sent me a box of oranges the other day. I opened it up and noticed that the oranges in the box formed an array. See…rows and columns. What numbers describe this array?

Contexts for Learning Mathematics: The Box Factory.. Catherine Twomey Fosnot (2007) p.13 - 19.

Then I discovered that there was another layer of oranges underneath. What is the array for this bottom layer of my box? How many layers are there altogether? How many oranges are there altogether?
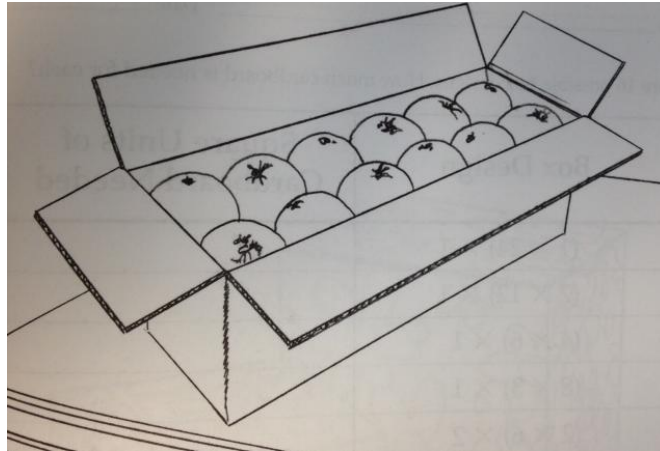
What other arrangements do you think there are for 24 items – arrangements of rows and columns with layers? How many possible designs are there?

We hope you enjoy the math games!