

# TWISTED MATH

## MATHEMATICAL LEARNING OBJECT

By Samantha Einarson & Keiro Blyth - EDCI 405 - 3 February, 2020

### INTRODUCTION

#### INSPIRATION

We chose to put a mathematical twist on the game of Twister and came up with a few different Math Twister games. This is a great learning object to use in order to get the students moving and having fun while also working on their math skills. Thinking back on our childhoods, Twister was always a popular game option that could get any child excited, and continues to do so today. The bright colours, the movement, and being silly with friends all add to the fun. This game not only gets kids moving, but gets them thinking in the moment. Don't like your foot in that position? You'd better figure out the answer to move it! Adding a twisted spin to math and a mathematical spin to Twister, this game will get kids excited to do math, literally feeling their progress with every move they make. These games encourage students to be aware of their bodies, working around other students, stretching their bodies, seeing math in a different light, and thinking in the moment.

#### TARGET GRADES

We've outlined three different games targeting children from kindergarten to grade 5. These games can be configured to best suit the needs of the students playing. Each game states the grade intended, but this is merely a suggestion and can be adjusted based on the teacher's plans and the students' needs.

#### ADDRESSING CURRICULAR OBJECTIVES

We have come up with a variety of games that can be adjusted to meet various age levels and curriculum. With each game, we have stated the big ideas, curricular competencies, and content. These are subjective to the grade the game is intended for. These games focus on number recognition for kindergarten, exploring addition and subtraction for grade 1 (potentially grade 2), and getting comfortable with multiplication and reviewing multiplication facts for grades 3 to 5.

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### INTRODUCTION CONTINUED

#### FEATURES INCLUDED TO INCREASE EDUCATIONAL UTILITY

By using a mat with clear pockets on each coloured circle, teachers can change out numbers depending on the level students are at. This game is also easily adaptable and can be changed to suit a different area of math or even a different subject entirely (e.g. by altering the mats, spinner boards, and the types and amount of cards used depending on the desired learning goals).

Twister mats can easily be found in thrift stores if you don't want to buy it new. To create clear pockets to put numbers in on top of the coloured circles of the mat, simply find a clear classic casing, like from a page protector, or bed sheet cases; trace the plastic to match the circles on the mat; and hot glue two thirds of the way around, leaving a slot to stick numbers into.

#### ASSESSMENT

These games focus on formative assessment, giving students the opportunity to practice their newfound knowledge or brush up on older concepts while having fun. Teachers can assess by observing students playing and noting how often they get the correct answer, how long they take to work it out, and how difficult the concepts or numbers being worked on are for individual students. This is also a great photo opportunity to show parents how students are engaging with the math curriculum (e.g. via Freshgrade). Students can also make their own versions for home to practice and show off their math skills!

# TWISTED MATH

## SUBITIZING TWISTER

For Kindergarten

### WHAT YOU NEED

- Twister board (Left and right instructions not needed for this version)
- Subitizing cards from 1 to 6
- Twister mat numbered 1-6 in each coloured row
- 2 or more players

### BIG IDEA

One-to-one correspondence and a sense of 5 and 10 are essential for fluency with numbers

### CURRICULAR COMPETENCIES

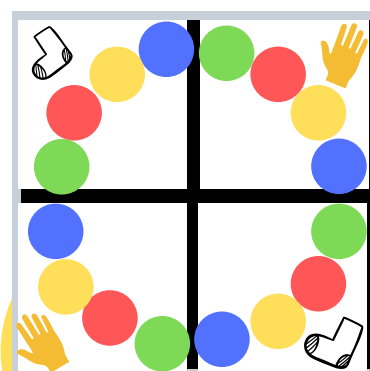
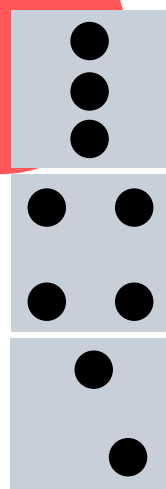
- Develop mental math strategies
- Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving
- Develop and use multiple strategies to engage with problem solving
- Communicate mathematical thinking in many ways

### CONTENT

- Number concepts to 10
- Ways to make 5

### HOW TO PLAY

- One person uses the spinner and takes note of what it lands on (e.g. hand on red)
- The same person immediately draws a card from the subitizing pile, telling the players what number they see (e.g. if they see four dots they would say put your hand on the red four)
- Players take turns putting their hand or foot somewhere on the coloured number called out
- Players can switch with being the person who spins the board and draws the subitizing cards and the player(s) who find the numbers on the mat
- Depending on what the class is working on, can use perceptual or conceptual subitizing cards (e.g. 4 dots equaling 4 versus adding 3 dots and 1 dot to make 4)
- Game can be adapted to use larger numbers



# TWISTED MATH

## CAN YOU MAKE...?

For Grade 1

### WHAT YOU NEED

- Regular twister spinner board
- Playing cards from 1 to 10
- Twister mat numbered 1 to 10
- 2 or more players

### BIG IDEA

Addition and subtraction with numbers to 10 can be modelled concretely, pictorially, and symbolically to develop computational fluency.

### CURRICULAR COMPETENCIES

- Develop mental math strategies
- Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving
- Communicate mathematical thinking in many ways
- Explain and justify mathematical ideas and decisions

### CONTENT

- Ways to make 10
- Addition and subtraction to 20 (if decide to play more advanced version using higher number sums)

|   |   |    |   |    |   |
|---|---|----|---|----|---|
| 1 | 5 | 9  | 3 | 7  | 0 |
| 2 | 6 | 10 | 4 | 8  | 0 |
| 3 | 7 | 1  | 5 | 9  | 0 |
| 4 | 8 | 2  | 6 | 10 | 0 |

### HOW TO PLAY

- Use subtraction or addition to make a number
- Draw from a deck of numbered cards and say "can you make..(draws an 8) 8, by putting your.. (spins twister board) left hand on yellow..(spins again) and your right foot on red?"
- For example, a student could put their left hand on the yellow 3 and their right foot on the red 5, and explain that 3 plus 5 equals 8.
- Another student could put their left hand on the yellow 9 and their right foot on the red 1 and explain 9 takeaway 1 is 8.
- If it is not possible to make the sum, the students verify it is not possible, and then the spinner goes again (e.g. Players could be asked to make 8 with their right hand on green and left hand on yellow and none of the addition or subtraction combinations make 8).
- This game could be adapted to only involve addition, or only involve subtraction, depending on what the students are working on
- This game could also be extended to have to make higher sums, just by using higher numbered cards of some sort
- Students could be encouraged to find a different equation than their peers to make the desired sum

# TWISTED MATH

## MULTIPLICATION TWISTER

For Grades 3 to 5

### WHAT YOU NEED

- Regular twister spinner board with the desired numbers for multiplication practice (can use number stickers)
- Playing cards from 1 to 10 (or higher)
- Twister mat with 4 rows of numbers to practice multiplication (ex. 6, 7, 8, 9)
- 2 or more players

### BIG IDEA

Development of computational fluency in addition, subtraction, multiplication, and division of whole numbers requires flexible decomposing and composing

### CURRICULAR COMPETENCIES

- Develop mental math strategies and abilities to make sense of quantities
- Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving
- Develop and use multiples strategies to engage in problem solving
- Communicate mathematical thinking in many ways
- Explain and justify mathematical ideas and decisions

### CONTENT

- Multiplication and Division Concepts

### HOW TO PLAY

- One person uses the spinner and calls out what it lands on (e.g. right hand on 6). For this version, the number is called instead of the colour.
- Players put their hand or foot somewhere on the number called out
- The person with the spinner then draws a card from a pile that the players have to multiply by and call out the answer (e.g. if the drawn card is 4 the players have to multiply 6 times 4)
- Once all the players have called out the answer, the spinner goes again and play continues
- This game can be modified so that players take turns calling out the answer
- Different numbers can be used depending on what multiplication facts the class is working on

