NSS Family Math Night: Spring 2017

Try to allow 10 minutes per game.
Or pick 5-6 activities for about 15 minutes each.

HAVE FUN!

Stage

#1 Cross Out Singles	Gr. **2** & up	#2 Tangrams: Search For Three	Gr. **2** & up	#3 Place It Right	Gr. **2** & up
#4 Count Down To Zero	Gr. **3** & up	#5 The Game Of Pig	Gr. **2** & up	#6 Behind The Wall	Gr. **2** & up
#7 Something's Fishy	Gr. **2** & up	#8 Geoboards!	Gr. **2** & up	#9 Fraction Capture	Gr. **4** & up
#10 Target Three Hundred	Gr. **3** & up	#11 Pentomino Squeeze	Gr. **2** & up	#12 Beat The Teach	Gr. **2** & up

Estimation Jars! Prizes!

PLUS DON'T MISS:

HALLWAYS:

Poster Challenges & Surveys

&

"Go The Distance"
AIRPLANE FLYING!
(estimation & measurement)

Cross Out Singles

Materials:
Cross Out Singles recording sheet, and 1 die.

How To Play:

1. The die is rolled. Both players put this number in whichever one of the squares on their Round 1 chart they choose. Once a number is recorded, it cannot be changed.

2. The die is rolled again. Again, both players put this number in a different square on their chart. Players take turns rolling until all 9 squares on their Round 1 charts are filled.

3. Players then find the sums of the rows, columns, and diagonal, and record them in the respective circles.

4. Players examine their sums. Any sums that appear in only one circle must be crossed out.

5. The added total of the sums that are not crossed out is the player's score for that round.

6. Play two more rounds, then compare the totals.

Cross Out Singles

Player 1

Round 1 total: _____

Round 2 total: _____

Round 3 total: _____

Player 2

Round 1 total: _____

Round 2 total: _____

Round 3 total: _____

Tangrams: Search For Three

Materials:
A set of Search For Three cards, and a set of tangram pieces.

How To Play:

1. The cards are placed face-down in a stack. The tangram pieces are spread out for both players to use.

2. Player 1 draws a card, looks at the shape on it, and selects 3 tangram pieces he/she thinks will form the shape, and then attempts to cover the shape with the pieces selected.

3. If the selected pieces cover that shape exactly, the player keeps the card. If not, the card goes in the discard pile. The tangram pieces are again made available for the next player to use.

4. Player 2 goes next, and then players take turns. The player who has the most cards when the game ends is the winner.

Place It Right

Materials:
A Place It Right recording sheet, and a set of 1 - 9 playing cards.

How To Play — VALUE version:

1. Players take turns drawing a 1-9 card. (The cards do not go back in the deck and each number may only be used once.)

2. Both players record the same digit from the card on their side of the **Place It Right — VALUE version** recording sheet, each choosing to place the number in one of the blanks for the thousands, hundreds, tens, or ones spot.

   For example:

8	5	3	2	VS.	5	8	2	3

3. Once a digit is recorded, it cannot be changed. After all 4 digits are placed for the round, the player with the <u>largest</u> <u>number</u> possible wins that round.

4. Is there a strategy for trying to get the highest number? If so, what did you do?

5. Does is make a difference that you can only use a digit once? Why or why not? How might the game change if you can use the digit more than once?

Variations:
Try to make the <u>smallest</u> number.

How To Play — COMPUTATION version:

1. Same as above, except that players use the **COMPUTATION version** recording sheet, draw 6 cards, and try to obtain the <u>largest</u> <u>answer</u> possible.

   For example:

   $$\begin{array}{r} 8\quad 4\quad 1 \\ +\ 6\quad 2\quad 3 \\ \hline 1,\ 4\quad 6\quad 4 \end{array} \qquad \text{VS.} \qquad \begin{array}{r} 4\quad 1\quad 3 \\ +\ 6\quad 8\quad 2 \\ \hline 1,\ 1\quad 9\quad 5 \end{array}$$

Variations:
Make subtraction problems and try to make the <u>smallest</u> result.
Or make multiplication problems and try to make the <u>largest</u> result.

Place It Right — VALUE

1. Player 1   Player 2

     ☐ ☐ ☐ ☐   VS.   ☐ ☐ ☐ ☐

2.

     ☐ ☐ ☐ ☐   VS.   ☐ ☐ ☐ ☐

3.

     ☐ ☐ ☐ ☐   VS.   ☐ ☐ ☐ ☐

4.

     ☐ ☐ ☐ ☐   VS.   ☐ ☐ ☐ ☐

5.

     ☐ ☐ ☐ ☐   VS.   ☐ ☐ ☐ ☐

6.

     ☐ ☐ ☐ ☐   VS.   ☐ ☐ ☐ ☐

7.

     ☐ ☐ ☐ ☐   VS.   ☐ ☐ ☐ ☐

8.

     ☐ ☐ ☐ ☐   VS.   ☐ ☐ ☐ ☐

9.

     ☐ ☐ ☐ ☐   VS.   ☐ ☐ ☐ ☐

10.

     ☐ ☐ ☐ ☐   VS.   ☐ ☐ ☐ ☐

Place It Right — COMPUTATION

1.   Player 1   Player 2

```
  _ _ _          _ _ _
+            vs. +
  _ _ _          _ _ _
_____         _____
```

2.

```
  _ _ _          _ _ _
+            vs. +
  _ _ _          _ _ _
_____         _____
```

3.

```
  _ _ _          _ _ _
+            vs. +
  _ _ _          _ _ _
_____         _____
```

4.

```
  _ _ _          _ _ _
+            vs. +
  _ _ _          _ _ _
_____         _____
```

5.

```
  _ _ _          _ _ _
+            vs. +
  _ _ _          _ _ _
_____         _____
```

6.

```
  _ _ _          _ _ _
+            vs. +
  _ _ _          _ _ _
_____         _____
```

7.   Player 1   Player 2

```
  _ _ _          _ _ _
             vs.
  _ _ _          _ _ _
_____         _____
```

8.

```
  _ _ _          _ _ _
             vs.
  _ _ _          _ _ _
_____         _____
```

9.

```
  _ _ _          _ _ _
             vs.
  _ _ _          _ _ _
_____         _____
```

10.

```
  _ _ _          _ _ _
             vs.
  _ _ _          _ _ _
_____         _____
```

11.

```
  _ _ _          _ _ _
             vs.
  _ _ _          _ _ _
_____         _____
```

12.

```
  _ _ _          _ _ _
             vs.
  _ _ _          _ _ _
_____         _____
```

Count Down to Zero

Materials:
A scorecard for each player, and one die.

How To Play:

Each player starts with 1000. The object of the game is to get as close to zero as possible after 7 rounds. For each round the player rolls the die and says the number rolled. The player then records the number in the "roll" column in the appropriate row. They have the choice of using each roll as a number of hundreds, tens, or ones. That number is then subtracted from their total.

For example:

I roll a "4".
I can choose to have this 4 represent 4 hundreds, 4 tens, or 4 ones.
If I make it 4 hundreds, I will have 600 left over.
If I make it 4 tens, I will have 960 left over.
If I make it 4 ones, I will have 996 left over.
Once you declare how to use a roll it cannot be changed.

Sample Score Card:

Round	Roll	Hundreds, Tens, or Ones?	Total
		(circle your choice)	1000
1	4	**(Hundreds)** Tens Ones	600
2	5	Hundreds **(Tens)** Ones	550
3	2	**(Hundreds)** Tens Ones	350
4	3	**(Hundreds)** Tens Ones	50
5	1	Hundreds **(Tens)** Ones	40
6	5	Hundreds Tens **(Ones)**	35
7	2	Hundreds **(Tens)** Ones	15

When the game is over, talk with your partner about what strategy you used to count down to zero. Did you use bigger numbers first or last? Why?

Count Down to Zero Scorecard

Game 1

Round	Roll	Hundreds, Tens, or Ones?			Total
		(circle your choice)			1000
1		Hundreds	Tens	Ones	
2		Hundreds	Tens	Ones	
3		Hundreds	Tens	Ones	
4		Hundreds	Tens	Ones	
5		Hundreds	Tens	Ones	
6		Hundreds	Tens	Ones	
7		Hundreds	Tens	Ones	

Game 2

Round	Roll	Hundreds, Tens, or Ones?			Total
		(circle your choice)			1000
1		Hundreds	Tens	Ones	
2		Hundreds	Tens	Ones	
3		Hundreds	Tens	Ones	
4		Hundreds	Tens	Ones	
5		Hundreds	Tens	Ones	
6		Hundreds	Tens	Ones	
7		Hundreds	Tens	Ones	

The Game Of Pig

Materials:
The Game Of Pig recording sheet, and two dice.

How To Play:

1. Player 1 rolls both dice as many times as he/she wants, mentally keeping a running total of the sums that come up. When the player stops rolling, he/she records the total and adds it to his/her score from previous round.

2. SPECIAL RULE A: But, if a 1 comes up on one of the dice before the player decides to stop rolling, the player scores 0 for that round and it's the next player's turn.

3. SPECIAL RULE B: Even worse, if a 1 comes up on both dice, that player's turn ends AND that player's entire accumulated total returns to 0.

4. Player 2 goes next, and then players take turns. The first player to score 100 points or more is the winner.

After you've have had the chance to play the game a few times, discuss the strategies you used. Then, test the different strategies to try and determine the best way to play.

The Game Of Pig

Round	Player 1	Player 2	Round	Player 1	Player 2
1			1		
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		
9			9		
10			10		
11			11		
12			12		
13			13		
14			14		
15			15		
16			16		
17			17		
18			18		
19			19		
20			20		
21			21		
22			22		
23			23		
24			24		

Behind The Wall

Materials:
Pattern blocks, and a file folder.

How To Play:

1. The players sit facing one another with the file folder upright between them.

   This is The Wall, which prevents both players from seeing each other's work and creations.

2. To begin, Player 1 makes a pattern blocks design behind The Wall, out of sight of Player 2.

3. Player 1 then gives verbal instructions to Player 2, so that Player 2 can re-create the design on his/her side of The Wall from these instructions.

4. When both players believe the design has been recreated, lift The Wall and compare designs.

5. Players reverse roles and play the game a second time. Was it easier to give or receive instructions?

Geoboards

Materials:
A geoboard, rubber bands, and dot paper

How To Play:

1. The game is played with square units. *1 square unit* = the area of a square made by stretching a rubber band around four pegs with no pegs inside.

2. Find shapes with an area of four square units. Record them on dot paper with a 4 inside.

3. SPECIAL RULE: Fractions of a square unit CAN be used.

   For example:
   Two halves of squares of the same size (equal halves) count as 1 square unit.

4. Find shapes with an area of five square units. Record them on dot paper with a 5 inside.

5. Find shapes with an area of square square units. Record them on dot paper with a 6 inside.

Fraction Capture

Materials:
Fraction Capture gameboard, two dice

The Game:
Each player generates fractions, and captures those sections of squares on the gameboard.

How To Play:

1. Player 1 rolls both dice and makes a fraction with the numbers. The number on either die can be the denominator. The number on the other die becomes the numerator.

2. Using the fraction formed, Player 1 selects and writes his/her initials in the appropriate number of sections of one or more gameboard squares. This captures these sections for the player.

   For example:
   The player rolls 4 and 5 and makes $^5/_4$. The player can then claim five ¼ sections by initialing each of them.

3. SPECIAL RULE A: A fraction equal to a whole number is NOT allowed.

   For example:
   If a player rolls a 3 and a 6 the fraction can't be used as $^6/_3$, because $^6/_3$ equals 2.

4. SPECIAL RULE B: Equivalent fractions CAN be claimed.

   For example:
   If a 1 and 2 are rolled to make ½, a player can capture two ½ sections or three $^1/_6$ sections.

5. Player 2 goes next, and then players take turns. Play ends when all squares have been captured or blocked. The winner is the player who has captured the most squares.

Target Three Hundred

Materials:
A scorecard for each player, and two dice.

The Game:
Generate two-digit numbers, and choose to add or subtract them to get as close as possible to 300.

How To Play:

1. Each player rolls the dice, and writes down the two digits in either order to make a two-digit number.

   For example:
   If a 3 and a 5 are rolled the player can choose to create either 35 or 53.

   In the first round each player records the first two-digit number at the top of their scorecard.

2. Next, the players roll again, then record their second two-digit number directly under the first number and either add or subtract. The result is written under the two numbers.

3. For each round, the players roll the dice and record the new two-digit number under their previous total, and either add or subtract to get a new total.

4. NOTE: Each player may *add no more than eight times* and *subtract no more than two times* in the game.

5. At any time during the game, before beginning a new round, players can declare that they are satisfied with their result and stay with that answer for the remainder of the game.

6. The player who creates the number closest to 300 wins.
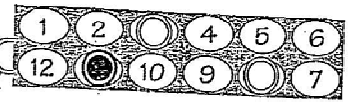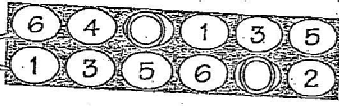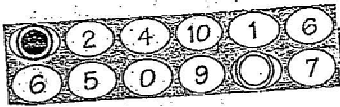
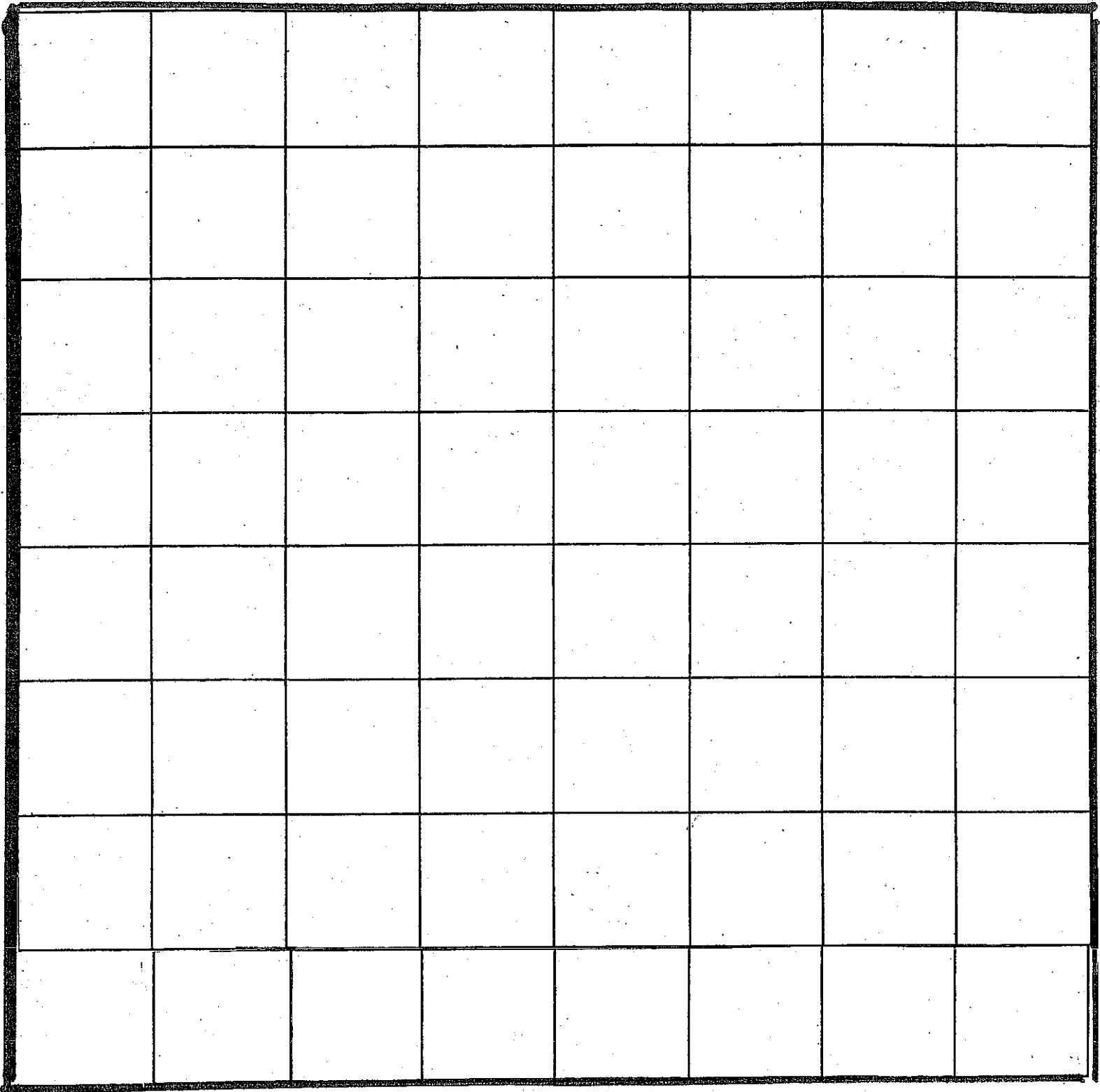| Three Hundred	Three Hundred	Three Hundred
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Pentomino Squeeze

This game is for 2 players.

Each player selects a pentomino from the set of 12 and places it on the grid. The squares of the pentomino must match with the squares on the grid. The pentominoes may be turned over or rotated in any manner however they may not overlap another piece. Once played they may not move. The winner is the last person to be able to place a piece on the game board.

Beat The Teach

Materials:
Beat The Teach gameboard, two indicators on number strip, and colored pieces for each player.

The Game:
Get three colored pieces in a row.

How To Play — ADDITION version:

1. Player 1 places one indicator on each of two numbers on the top 1-9 number strip at the top of the **Beat The Teach — ADDITION version** gameboard. Player 1 then places one of his/her pieces on the game board on the <u>sum</u> of those numbers.

2. It is now player 2's turn. Player 2 moves only one of the indicators on the 1-9 number strip to a different number to make a new sum. Player 2 then places his/her piece on that sum found on the game board.

3. SPECIAL RULE A: The indicators on the number strip CAN be placed on top of each other. For example: 3 + 3 = 6.

4. SPECIAL RULE B: Players may choose to NOT move any indicators on the 1-9 number strip, keeping the same addends as the previous player, and thus capture the same sum found elsewhere on the board.

5. Players take turns until one player has three pieces in a row, column, or diagonally.

How To Play — MULTIPLICATION version:

1. Same as above, except that players use the **MULTIPLICATION version** gameboard and find the <u>product</u> of the numbers under the indicators.

How To Play — FRACTIONS version:

1. Same as above, except that players use the **FRACTIONS version** gameboard (with the number strip containing 7 fractions and the whole number 1) and find the <u>sum</u> of the numbers under the indicators.

Beat The Teach

ADDITION

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

2	3	14	8	15
18	10	9	6	12
11	4	6	18	10
7	17	8	13	19
10	9	12	14	15

Beat The Teach

MULTIPLICATION

1	2	3	4	5	6	7	8	9

1	2	3	4	5	6
7	8	9	10	12	14
15	16	18	20	21	24
25	27	28	30	32	35
36	40	42	45	48	49
54	56	63	64	72	81

Beat The Teach

FRACTIONS

| $^1/_8$ | ¼ | $^3/_8$ | ½ | $^5/_8$ | ¾ | $^7/_8$ | 1 |

¼	$^3/_8$	½	$^5/_8$	¾	$^7/_8$
1	$1^1/_8$	$1^1/_4$	$1^3/_8$	$1^2/_4$	$1^5/_8$
1¾	$1^7/_8$	2	$^2/_8$	$^3/_8$	$^4/_8$
$^5/_8$	$^6/_8$	$^7/_8$	1	$1^1/_8$	1¼
$1^3/_8$	$1^4/_8$	$1^5/_8$	$1^6/_8$	$1^7/_8$	2
¼	$^3/_8$	½	$^5/_8$	¾	$^7/_8$
1	$1^1/_8$	1¼	$1^3/_8$	1½	$1^5/_8$