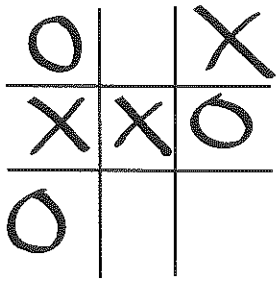
Number Tic Tac Toe



Materials: game board and pencils

1. Players decide who will mark X's and who will mark O's.

2. The first player crosses out any one number on the column on his or her side of the game board. Beginning with the second player the game continues as follows.

3. During a turn a player crosses out any one number in his or her column of nine numbers that has not yet been crossed out. The player then adds (or multiplies) that number to (or by) the last number the opponent crossed out. If the sum (or product) is on the number-tic-tac-toe grid and has not been marked, the player marks an X or O over it.

4. The game ends when any of the following occurs:

   - A player gets three marks in a row (as in tic tac toe)
   - All of the numbers on the grid are marked X or O
   - All nine numbers in each player's column of numbers are crossed out.

Add-Tac-Toe Grids

X
1
2
3
4
5
6
7
8
9

5	7	12
16	9	15
2	6	8

14	3	12
8	16	6
2	18	10

7	9	15
16	11	5
3	13	4

6	4	10
12	14	8
16	9	5

13	8	9
15	5	11
17	10	7

15	12	9
16	7	5
2	8	6

O
1
2
3
4
5
6
7
8
9

Multiply-Tac-Toe Grids

X
1
2
3
4
5
6
7
8
9

25	15	56
12	36	16
49	20	8

24	6	56
8	35	14
63	8	15

8	10	5
48	24	3
36	6	30

12	24	4
35	27	18
15	21	5

3	36	63
15	30	9
18	24	8

15	12	36
16	25	49
20	8	56

O
1
2
3
4
5
6
7
8
9

Triangle Tower

Materials: Triangle tower game mat (one for each player), pencils, 2 dice

1) Each player chooses 10 different products from the Products Table on the game board.

2) Each player writes one product randomly in each of the 10 squares on his or her game mat.

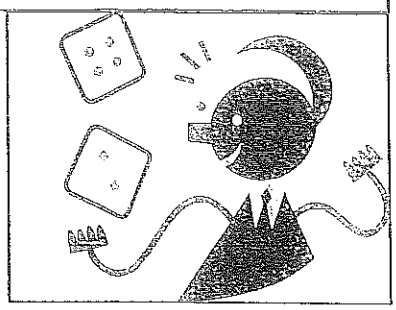
3) Choose who will go first. Player 1 tosses the dice and finds the product.

4) If the product is written on player 1's tower, he or she crosses it out. If the product is not on the tower, player 1 does nothing. Player two then tosses the dice and finds the product.

5) The first player to cross out all the numbers on his or her tower wins the game!

Triangle Tower

Choose 10 Products:					
1	2	3	4	5	6
8	9	10	12	15	16
18	20	24	25	30	36



Use 2 regular six-sided dice .

Little Shot

Materials: die, game sheet and pencils

1) Each player gets a game sheet and a pencil.

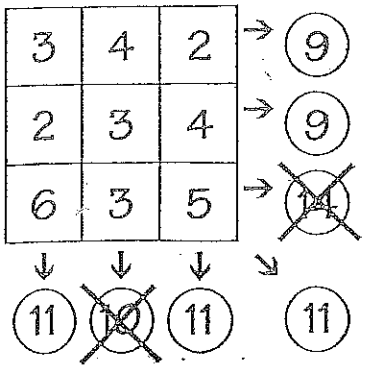
2) Choose one person to roll the die and announce each number.

3) After each number is announced and before the die is rolled again, players write the announced number in any empty square on their game sheet. Once written, a number cannot be moved.

4) After the nine numbers are written, the players find the sum of the numbers across the three rows, down the three columns, and through the diagonal. They record the sums in the corresponding circles.

5) Players cross out any sum that appears in only one circle.

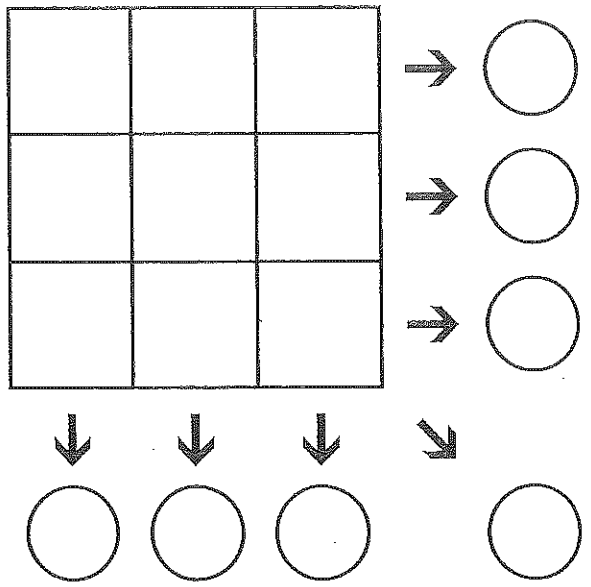
6) The number of sums that are not crossed out is a players score. The player with the largest score wins!



Score

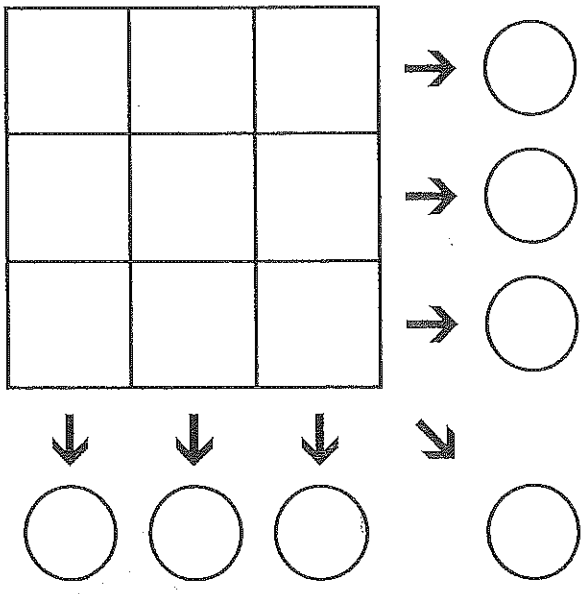
5

Little Shot



Score

Little Shot



Score

Tangram Puzzle

The Tangram puzzle is an ancient Chinese puzzle consisting of seven flat, geometric shapes called tans: 2 large congruent right triangles, 1 medium right triangle (similar to the large), 2 small, congruent right triangles (also similar to the large), 1 parallelogram and 1 square.
There are many shapes one can make with all seven pieces. The pieces, however, must lay flat.

Which shapes can you make with your 7 tangram pieces? Use only the "tans" in one set and the chart to see how many shapes you can make.

Tangram Puzzle

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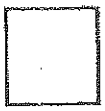
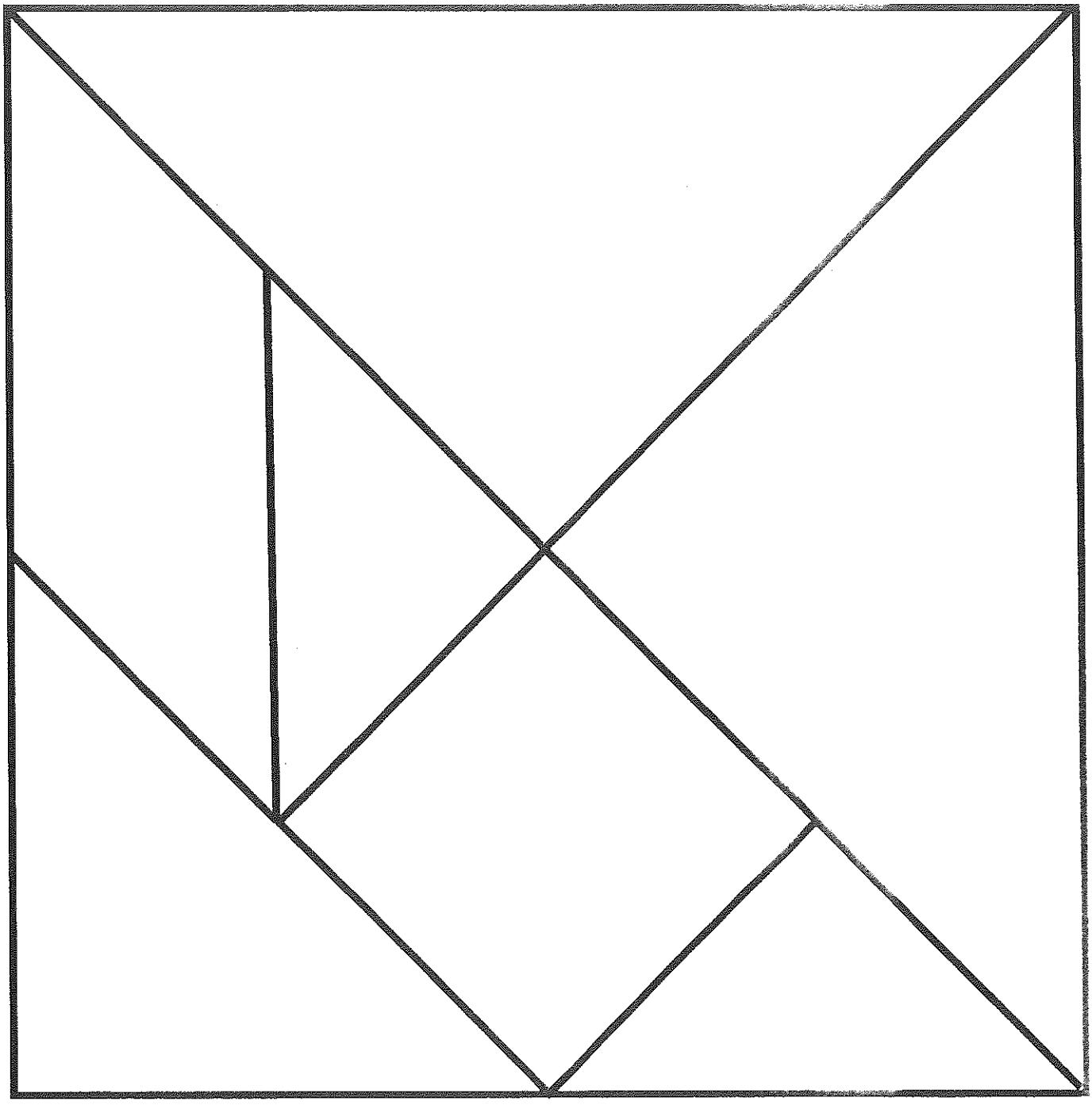
Which shapes can you make with your 7 tangram pieces? Use only the "tans" in one set and the chart to see how many shapes you can make.

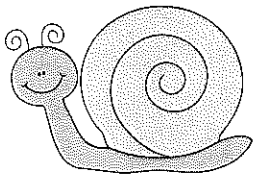
TANGRAM SHAPE SHEET

Which shapes can you make with your tangram pieces? Draw a sketch of your solution.

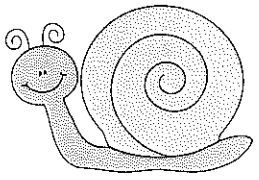
Number of pieces used / Shape Made	1	2	3	4	5	6	7
 Square							
 Triangle							
 Rectangle							
 Trapezoid							
 Parallelogram							
 Rhombus							
 Pentagon							
Other							

Tangram Pattern





Snail Trail



Materials: 3 dice, one game board each, 15 counters each

1) Decide who will go first.

2) Player 1 rolls the dice and tries to make one of the numbers on the snail trail board by adding or subtracting. Each number rolled must be played once.

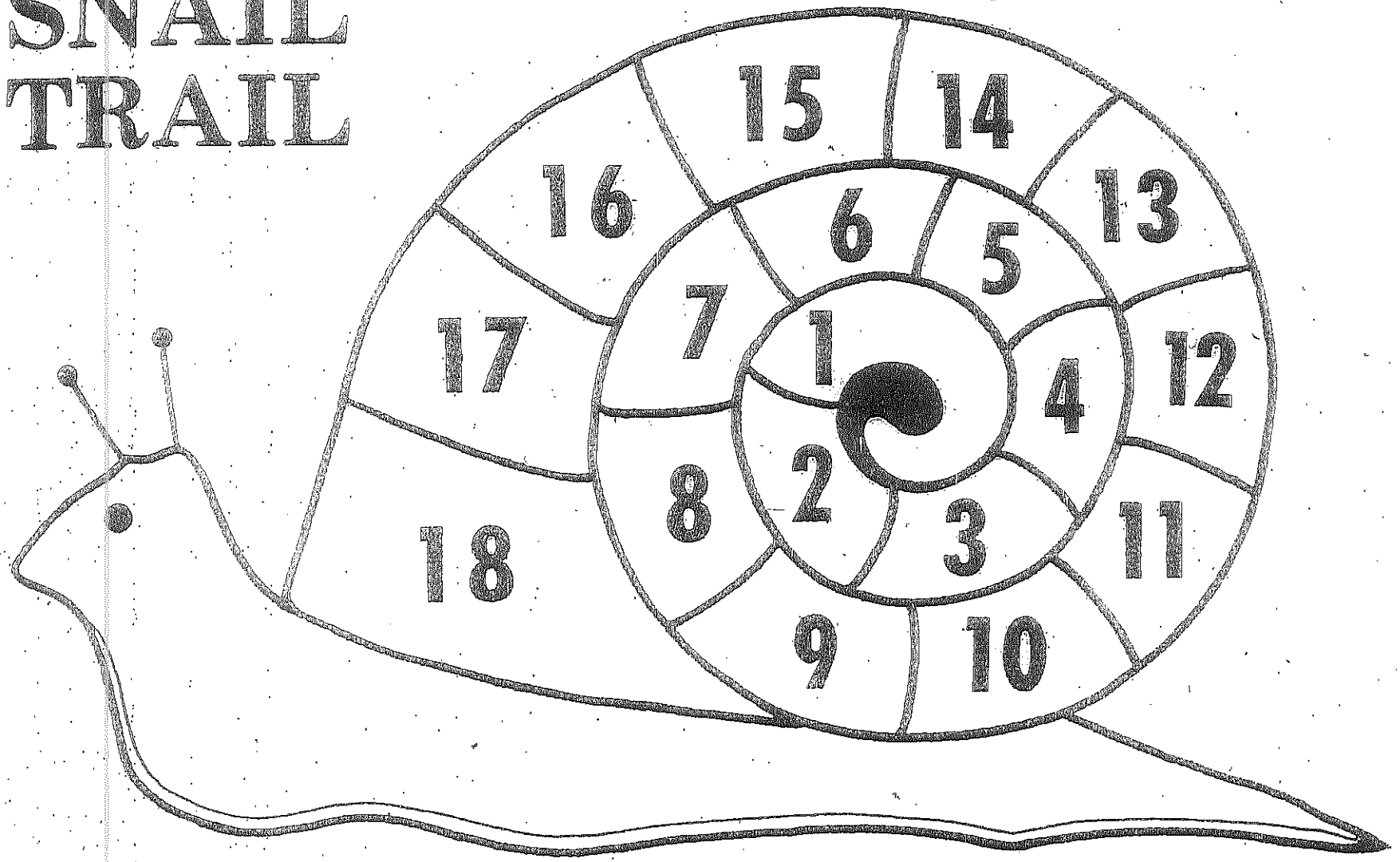
   Example: If a player rolls a 2, 3 and 4, that player could make:

   - 1 by adding 2 + 3 = 5 and subtracting 4
   - 3 by adding 2 + 4 = 6 and subtracting 3

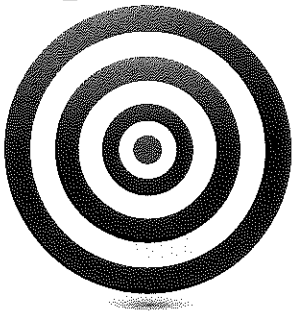
3) Place a counter over the number you make.

4) The player who fills up his or her board first is the winner!

SNAIL TRAIL



Target 300



Materials: 1 die, recording sheet, pencils

1) Decide who will roll first. Player 1 rolls the die and decides whether to multiply by 10, 20, 30, 40 or 50, keeping in mind that each player will have six turns and the target amount is 300.

2) Both players write the multiplication sentence representing the first player's choice and product. For example, Player 1 rolls a 2 and multiplies it by 20, and both players write the multiplication sentence $2 \times 20 = 40$.

3) Player 2 follows the same steps as player 1.

4) At the end of each turn, the player adds his new amount to his previous score to keep a running total.

5) At the end of six turns, players compare scores to see whose score is closet to 300.

Target 300

Player 1	Player 2

Product Shot

Materials: die, game sheet and pencils

1) Each player gets a game sheet and a pencil.

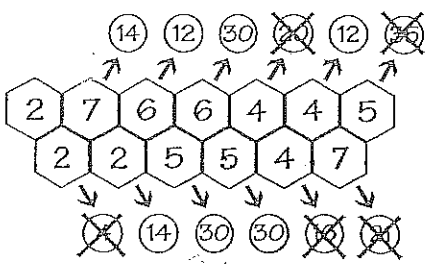
2) Choose one person to roll the die and announce each number.

3) After each number is announced and before the die is rolled again, players write the announced number in any empty hexagon on their game sheet. Once written, a number cannot be moved.

4) After the thirteen numbers are written, the players find the product of the numbers in diagonally adjacent pairs of hexagons (indicated by the arrows on the game sheet). Each product is recorded on the appropriate circle.

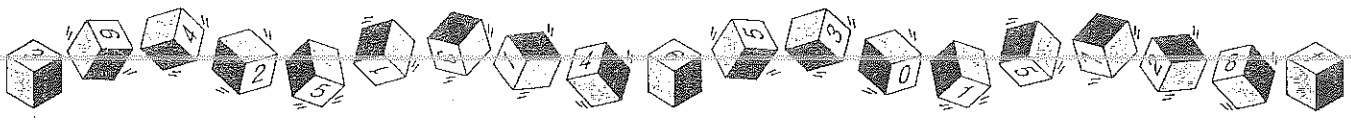
5) Players cross out any product that appears in only one circle.

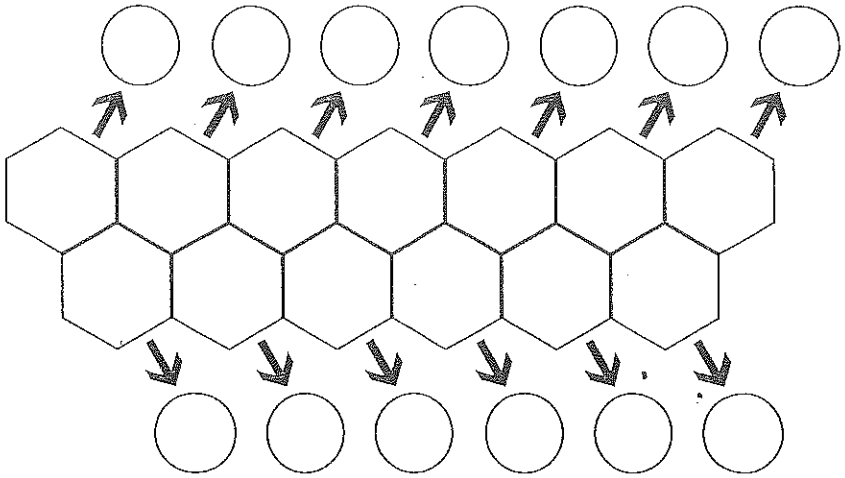
6) Players find the sum of the products that are not crossed out. These are their scores. The player with the highest score wins!



Score

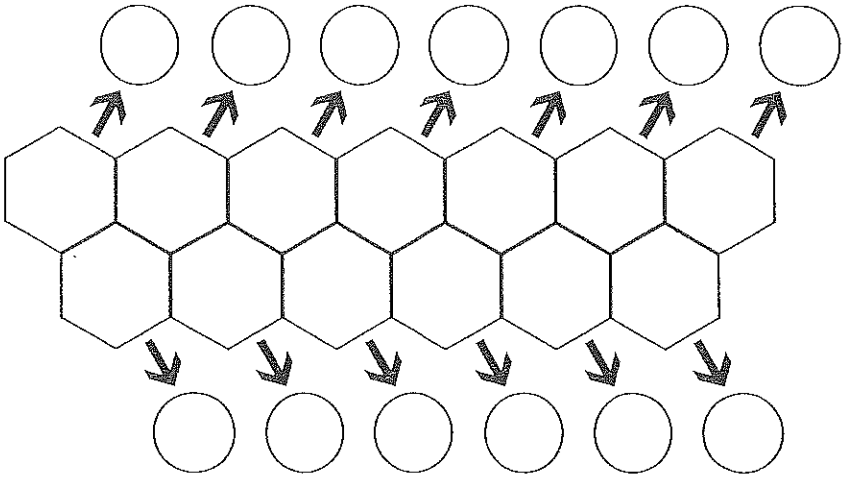
142





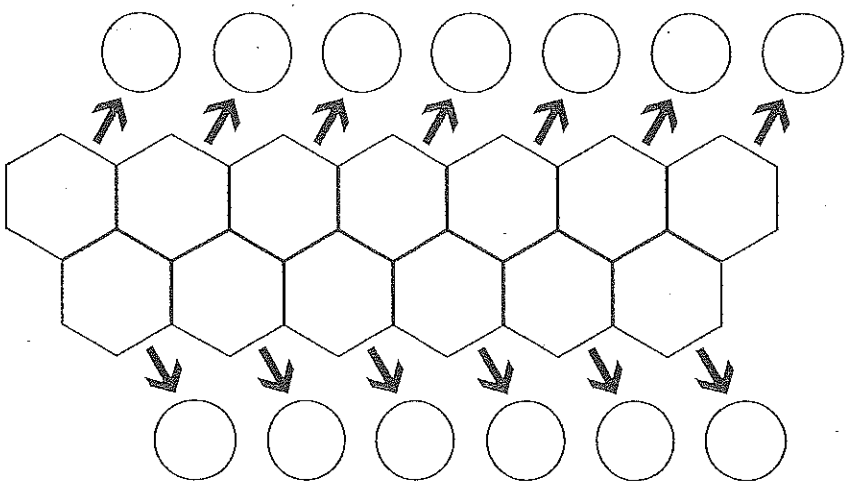
Product Shot

Score



Product Shot

Score



Product Shot

Score

Three Hundred

Materials: dice, pencil, game sheets

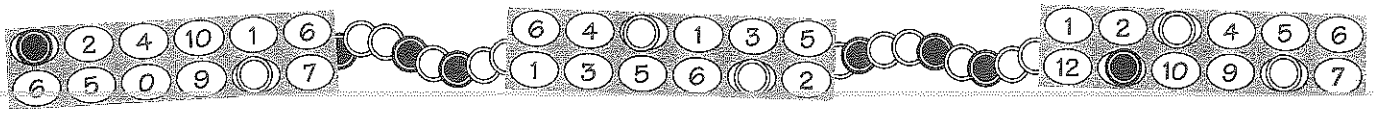
1) Decide who will be player 1 and player 2. Player 1 rolls the dice. Each player then writes down the two digits in either order to make a 2-digit number. For example if a 2 and a 5 are rolled, the player can create either 25 or 52. In the first round, each player records the first 2-digit number at the top of the paper.

2) During the second round, player 2 rolls the dice. The players record their second 2-digit number directly underneath the first number and either add or subtract.

3) During the game, each player may <u>add no more than 8 times and subtract no more than 2 times</u>.

4) At any time during the game, but 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.

5) The player who creates the number closest to 300 wins!



Three Hundred

+ + + + + + + + + − −

Three Hundred

+ + + + + + + + + − −

Three Hundred

+ + + + + + + + + − −

Count Down to Zero

Materials: Count Down to Zero Game sheet for each player, One die

Directions: Each player will start with 1000. And the object of the game is to get as close to zero as possible at the end of 7 rounds. For each round players roll a die and say the number on the die. Each player should record 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.

For ex. I roll a "4". I can have the 4 stand for 4 hundreds, 4 tens or 4 ones. If I make 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 make a decision about how to use a roll I cannot be changed.

Sample Game Card:

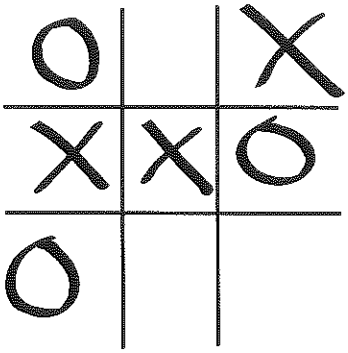
Round	Roll	Number
		1000
1	4 hundreds	600
2	5 tens	550
3	2 hundreds	350
4	3 hundreds	50
5	1 ten	40
6	5 ones	35
7	2 tens	15

Count Down to Zero Game Card

Round	Roll	Number
		1,000
1		
2		
3		
4		
5		
6		
7		

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?

Target Tic-Tac-Toe



Materials: Die, 1-9 die, game boards, pencils

1) Decide who will be X and who will be O.

2) Player X rolls both dice. The six sided die becomes the tens and the nine sided die becomes the ones. Say a 3 is rolled on the six sided die and a 5 is rolled on the nine sided die, the number is 35. That is the first factor.

3) Player X then chooses any number. Say that is 4. 4 is the other factor. Player X then multiplies 4 x 35 utilizing any method. Since the result is 140, an X is marked on the board labeled "110-150".

4) Player O takes their turn.

5) If a player gets a product that is already marked with an X or an O, that player loses a turn.

6) Play continues until one player gets three in a row!

Target Tic Tac Toe

100-150	350-400	150-200
200-250	300-350	200-250
250-300	50-100	400-500

100-150	350-400	150-200
200-250	300-350	200-250
250-300	50-100	400-500

Place It Right Game

This game can be played with any operation and with whole numbers or decimals. The object of the game is to try and make the largest sum when adding (difference when subtracting, product when multiplying, quotient when dividing) using the same digits to create an equation.

For example:

Each player must try to obtain the largest possible sum using the 6 cards that will be drawn. Players take turns drawing a card, 0-9 or rolling a 1-9 die (they do not go back in the deck and each number may only be used once). Both players record the same digit from the card on their individual recording sheets. Once a number is placed in a particular location, it cannot be moved. After all 6 numbers are placed, the players find their sum. The player with the largest sum wins the round.

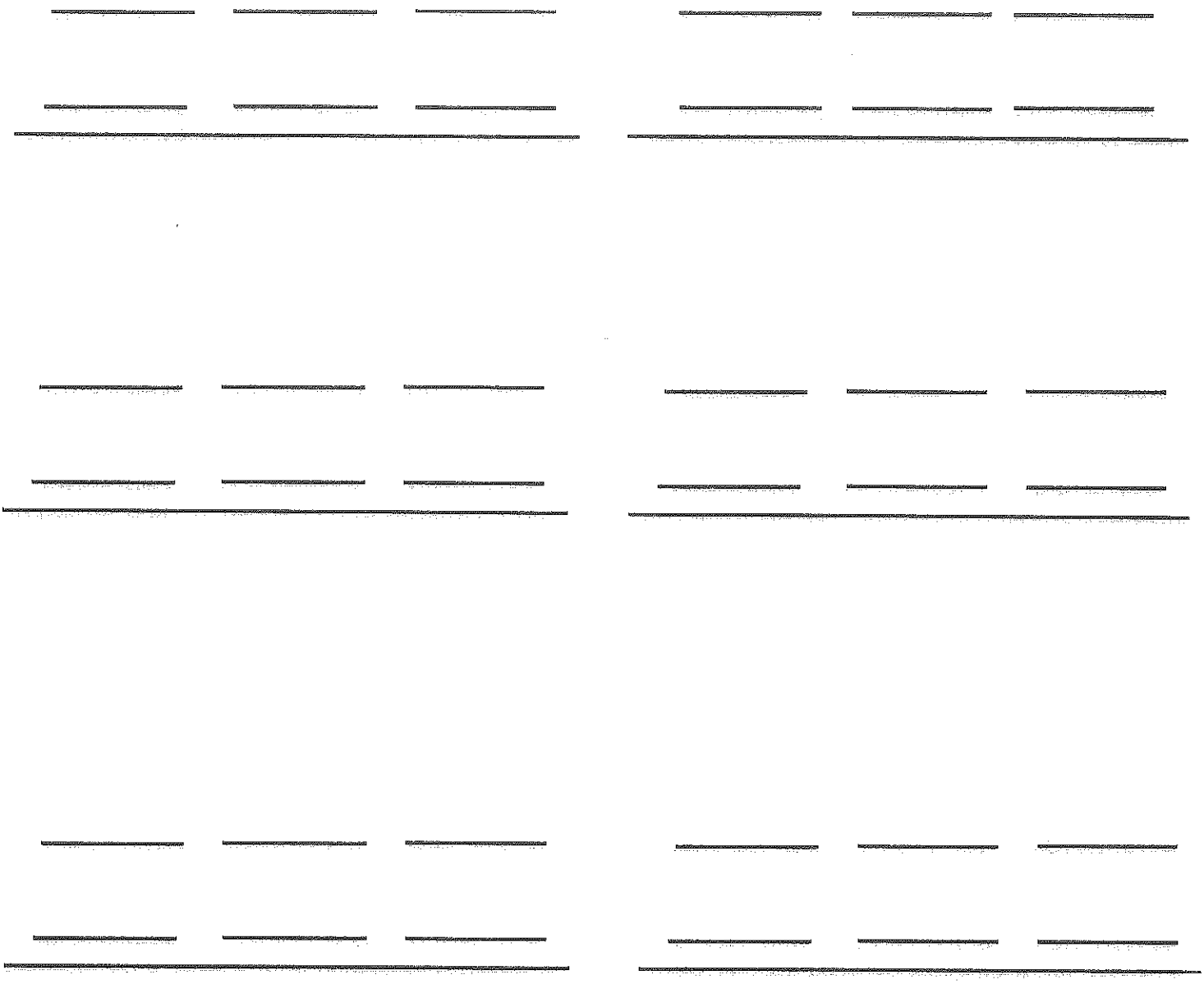
	8	4	1			4	2	1
+	6	2	3	vs	+	6	8	3
	1,	4	6	4		1,	1	0	4

Variations:

- Pick 4 numbers instead of 6 to add two double digit numbers
- Make subtraction problems and make the lowest difference the winner
- Make multiplication problems with the winner being the largest product: ___ ___ ___
  X ___
- Try the lowest sum, the lowest product, the highest difference

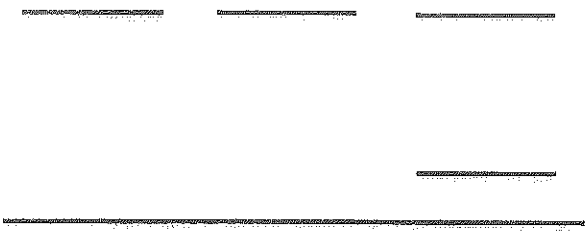
Place It Right Game

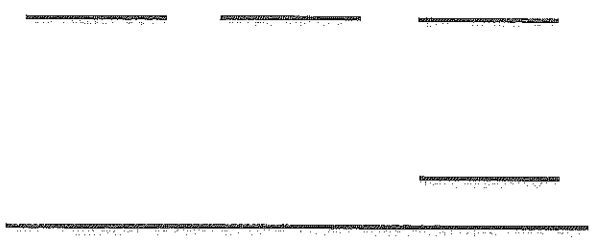
Recording sheet

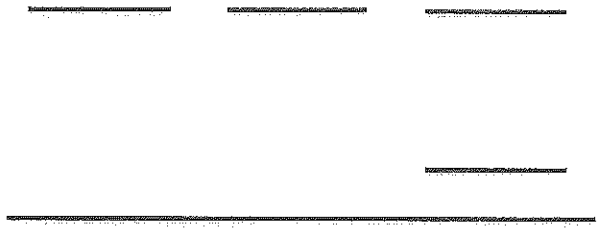


Turn the paper over and try one of the other variations on your own!

Place It Right Game







Fraction Capture

Materials:

Fraction Capture Gameboard

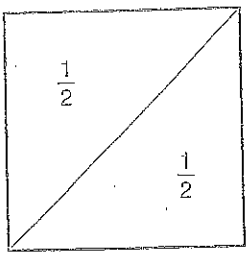
2 dice

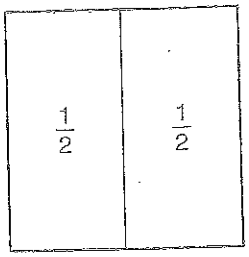
Directions:

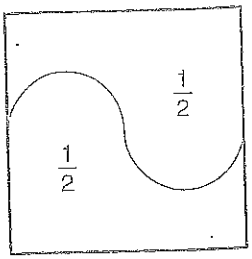
- Player 1 rolls the dice and makes a fraction with the numbers. The number on either die can be the denominator. The number on the other die becomes the numerator.
- A fraction equal to a whole number is NOT allowed. For example, if a player rolls 3 and 6 the fraction can't be $\frac{6}{3}$ because $\frac{6}{3}$ equals 2.
- Player 1 initials sections of one or more gameboard squares to show the fraction formed. This claims the sections for the player. Ex. The player rolls 4 and 5 and makes $\frac{5}{4}$. The player can claim five ¼ sections by initialing them.
- Equivalent fractions can be claimed. Ex. If 1 and 2 are rolled to make ½, a player can claim two ½ sections or three $\frac{1}{6}$ sections.
- Play ends when all squares have been captured or blocked. The winner is the player who has captured more squares.

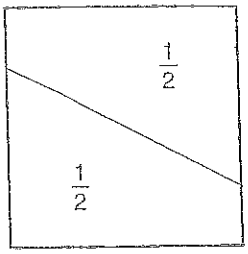
Fraction Capture Gameboard

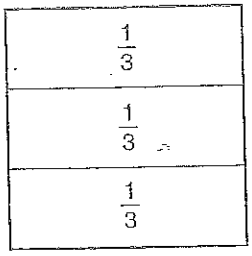
Game Master 81

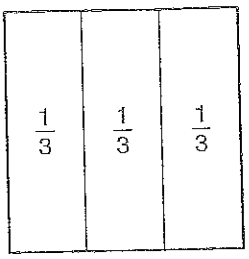


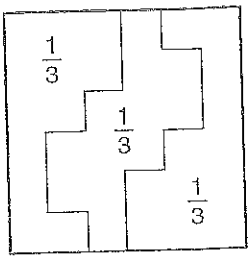


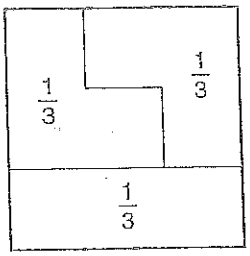


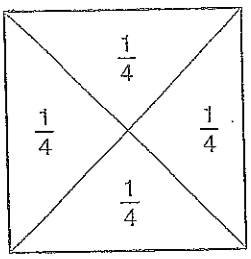


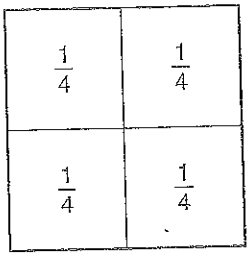


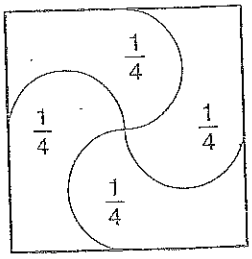


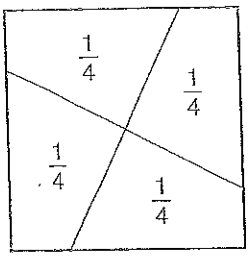


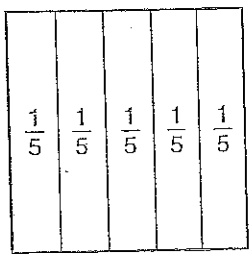


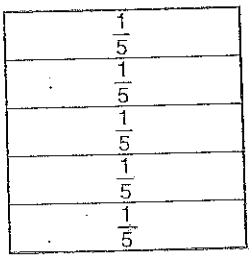


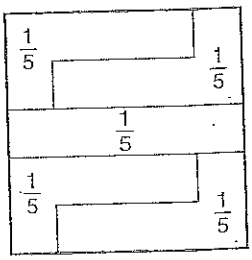


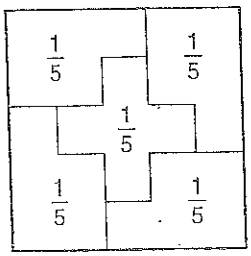


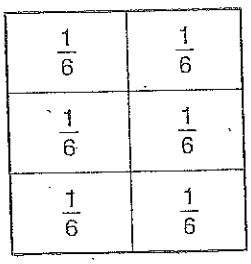


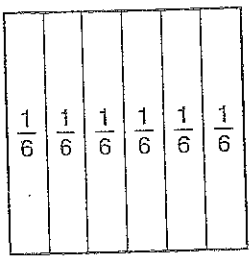


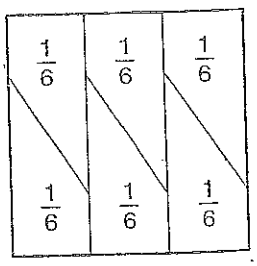


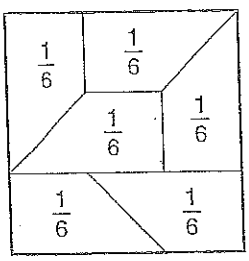




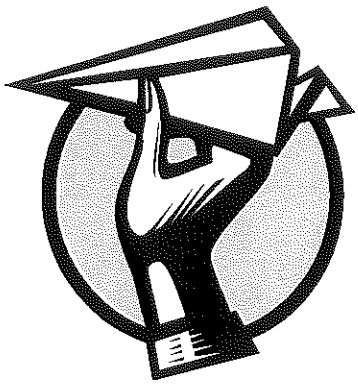






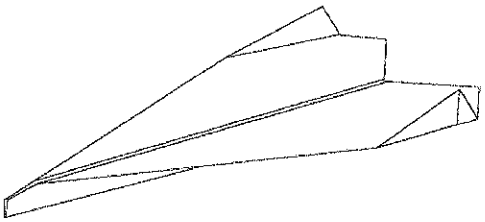


Go the Distance!

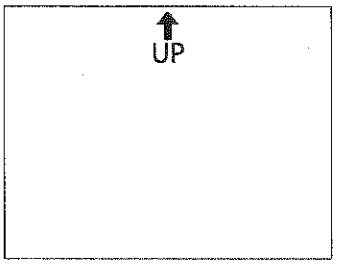


1. Construct a paper airplane with your guest.
2. Estimate how far you think your plane can fly. Record on poster
3. Stand at the Starting Point and release your plane.
4. Using a yard stick, measure the distance your plane flew and record the distance.

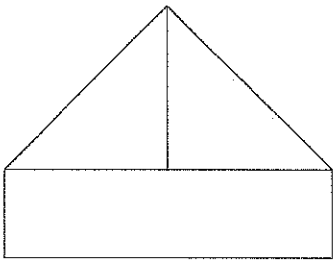
Delta



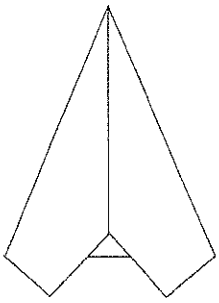
This plane flies fast and straight. It is easy to fold and a great all around flier. Add some up elevator if necessary to produce stable flights.



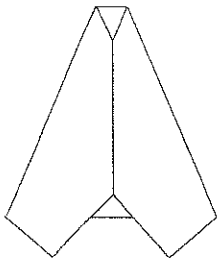
Orient the template so that the "UP" arrow is at the top of the page. Then flip the paper over so that none of the fold lines are showing.



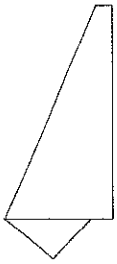
Fold the top left corner down toward you until fold line 1 becomes visible. Crease along the dotted line and repeat with the top right corner.



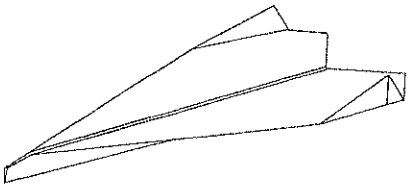
Fold the left side over again and crease along fold line 2. Repeat with the right side.



Fold the nose down and toward you along fold line 3.



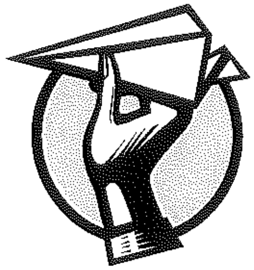
Fold the right half of the plane over the left half along fold line 4 so that the outside edges of the wings line up.



Fold the wings down along fold lines 5 and the winglets up along fold lines 6. Add wing dihedral by tilting the wings up slightly away from the fuselage. The wings will have a slight "V" shape when viewed from the front. You are ready to fly!

1
2
6
5
3
UP
4
5
2
6
1

Go the Distance!



Name	Class	Estimate	Actual Distance