

Dice
#:

[Handwritten signature]

3.21.94

2	1,1					
3	1,2	2,1				
4	2,2	1,3	3,1			
5	1,4	4,1	3,2	2,3		
6	3,3	2,4	4,2	1,5	5,1	
7	3,4	4,3	2,5	5,2	6,1	1,6
8	4,4	3,5	5,3	6,2	2,6	
9	5,4	4,5	6,3	3,6		
10	5,5	6,4	4,6			
11	6,5	5,6				
12	6,6					

3/21/94

M. L. S.

Give Player A Numbers 2-6.

Give Player B numbers 8-12.

2/21/94

Numbers 8-12 have the same amount of chances as 2-6 has.

~~2~~ If you roll 7 then you lose a turn because 7 has the most

chances. It wouldn't be fair if you gave player A 2-7 or Player B

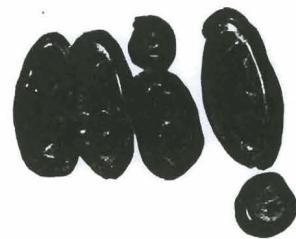
7-12 because the player with 7 would have the most chances of winning. This is a game of luck but

I think it would be ~~more~~ more fair this way.

THIS THEORY WAS MADE POSSIBLE WITH THE HELP OF STEFFIE'S CHART!!

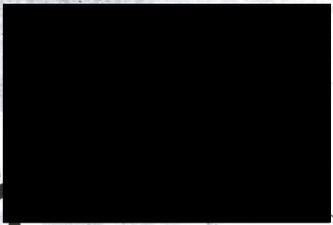
Brian M. :

Angela P.



1-1,2,3,4,5,6

Antony



2-1,2,3,4,5,6

3/21/94

3-1,2,3,4,5,6

4-1,2,3,4,5,6

5-1,2,3,4,5,6

6-1,2,3,4,5,6

MARCH 21, 1994

Remain
Mudde 

= impossible

$$1 = 1, 1$$

$$3 = 2, 1$$

$$4 = 3, 1 / 2, 2$$

$$5 = 4, 1 / 2, 3 -$$

$$6 = 3, 3 / 2, 4 / 5, 1 -$$

$$7 = 3, 4 / 5, 2 / 6, 1 -$$

$$8 = 4, 4 / 5, 3 / 6, 2 -$$

$$9 = 6, 3 / 5, 4 -$$

$$10 = 5, 5 / 6, 4$$

$$11 = 5, 6$$

$$12 = 6, 6$$

4:
People!

Player B has an advantage. A does
have a chance of winning because
B doesn't have that much of an advantage.

New game:

Player A) 2, 3, 4, 5, 6

Player B) 12, 11, 10, 9, 8

~~Player A) 1, 2, 3, 4, 5, 6~~

Jeff #1,
Michelle
Sarah
Romina

3/21/94

Score

new and
Player A

2
11
4
9
8

revised game!
Player B

12
3
5
10
6

7- Roll Again

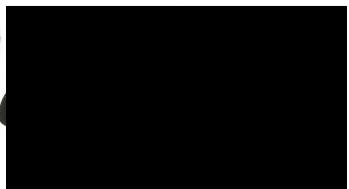
This is just a way to make the game fair. Now it is just based on the roll of the dice. Player A and Player B alternate every game in rolling the dice. It is the best of five series.

3

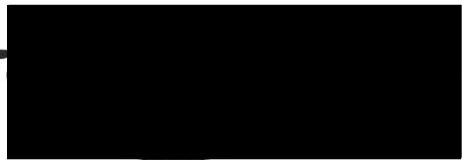
There are more chances of getting a 7 than getting a two. In order to get a two you have to roll 1+1 - nothing else. But a 7---you can roll 6+1, 3+4, 5+2. Just like 12, all you can roll is 6+6 - nothing else. Usually 6, 7, 8, + 9 come out.

3/21/94

Michael



Matt



To Make FAIR.

Just Rearrange The Numbers

Makelle Ruggin

Player A

Player B

2

5

3

6

4

7

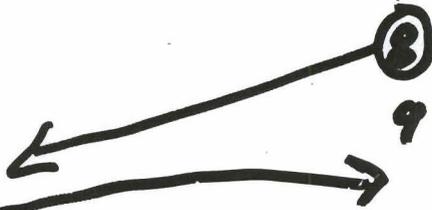
10

8

11

9

12



MATT
3-2-94

1,1
1,2
2,2
2,3
3,3
3,4
4,4
4,5
5,5
5,6
6,6
2,1

3,1
3,2
3,3
3,4
3,5
3,6

5,1
5,2
5,3
5,4
5,5
5,6
6

1,2
1,3
1,4
1,5
1,6

4

MIKE A.
IS COOL


1

Jeff
Michelle
Sarah
Romana

3/21/94

Player A = Blue
Player B = Green

1 - impossible

2 - 1, 1 - 1

3 - 2, 1 - 1

4 - 2, 2 / 3, 1 - 2

5 - 3, 2 / 4, 1 - 2

6 - 3, 3 / 4, 2 / 5, 1 - 3

7 - 4, 3 / 2, 5 / 6, 1 - 3

8 - 4, 4 / 6, 2 / 3, 5 - 3

9 - 5, 4 / 6, 3 - 2

10 - 5, 5 / 6, 4 - 2

11 - 5, 6 - 1

12 - 6, 6 - 1

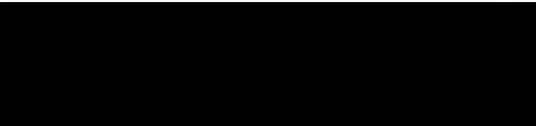
HT!

Player B has 13 possible chances of the Dice landing on these numbers.

Player A only has 9 chances.

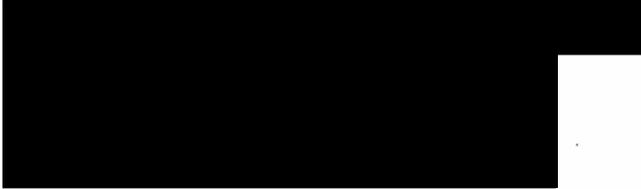
Player B ^{mostly} ~~always~~ wins because he has the most commonly rolled numbers. He has the numbers that have a lot of different ~~numbers~~ ^{numbers} that you can roll in the dice, to get the sum of the number you want.

Jmy-Lynn



3-7-74

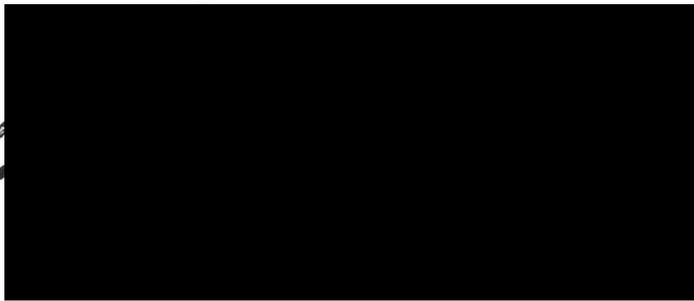
Magda



Matt



Wink



← BRUCE

A FINAL GAME: WINNER TAKES ALL

Directions: Roll two dice. If the sum of the two is ~~8~~⁷, Player A wins the game. If the sum is 8, Player B wins. Continue rolling the dice until there is a winner.

1. Suppose you have the choice to be Player A or Player B. Which would you choose? Explain your decision.

8
—
6, 2
2, 6
5, 3
3, 5
4, 4

7
—
6, 1
1, 6
5, 2
2, 5
4, 3
3, 4

Stephanie

<u>A</u>	2	3	4	10	11	12
	1,1	2,1	2,2 1,3	5,5 6,4	5,6	6,6

3/21/92

<u>B</u>	5	6	7	8	9
	1,4	3,3	4,3	4,4	5,4
	3,2	1,5	5,2	5,3	6,3
	4,2	6,1	6,2		

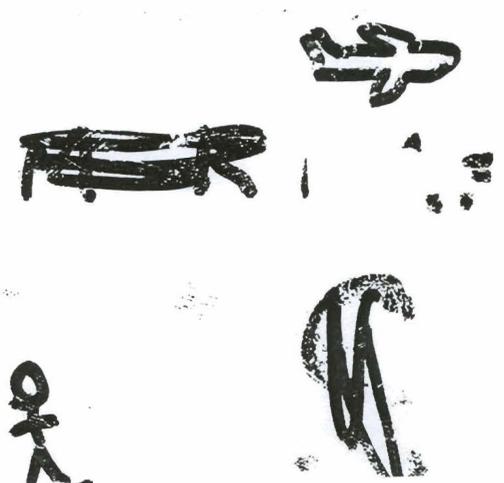
the most chances to get these numbers. That's why B always or most of the time wins.

Michael [redacted] is cool Amylyn [redacted]

Michelle [redacted]

Matt [redacted]

Magda [redacted]



10th #

1 2 3 4 5 6

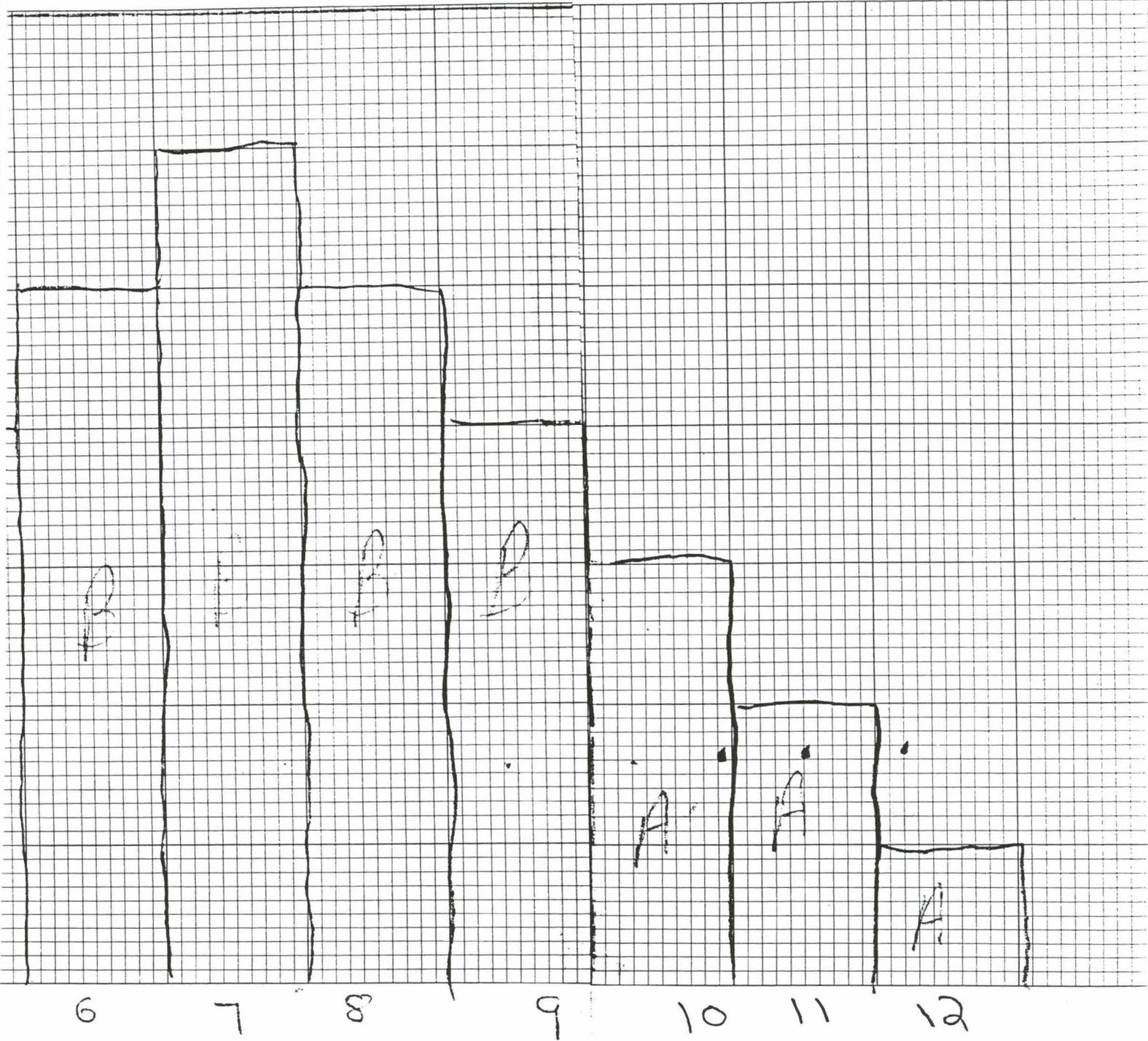
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

46 0700
2 1/4" 10" - A

KE 10 X 10 TO THE INCH • 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.

Sketch

...

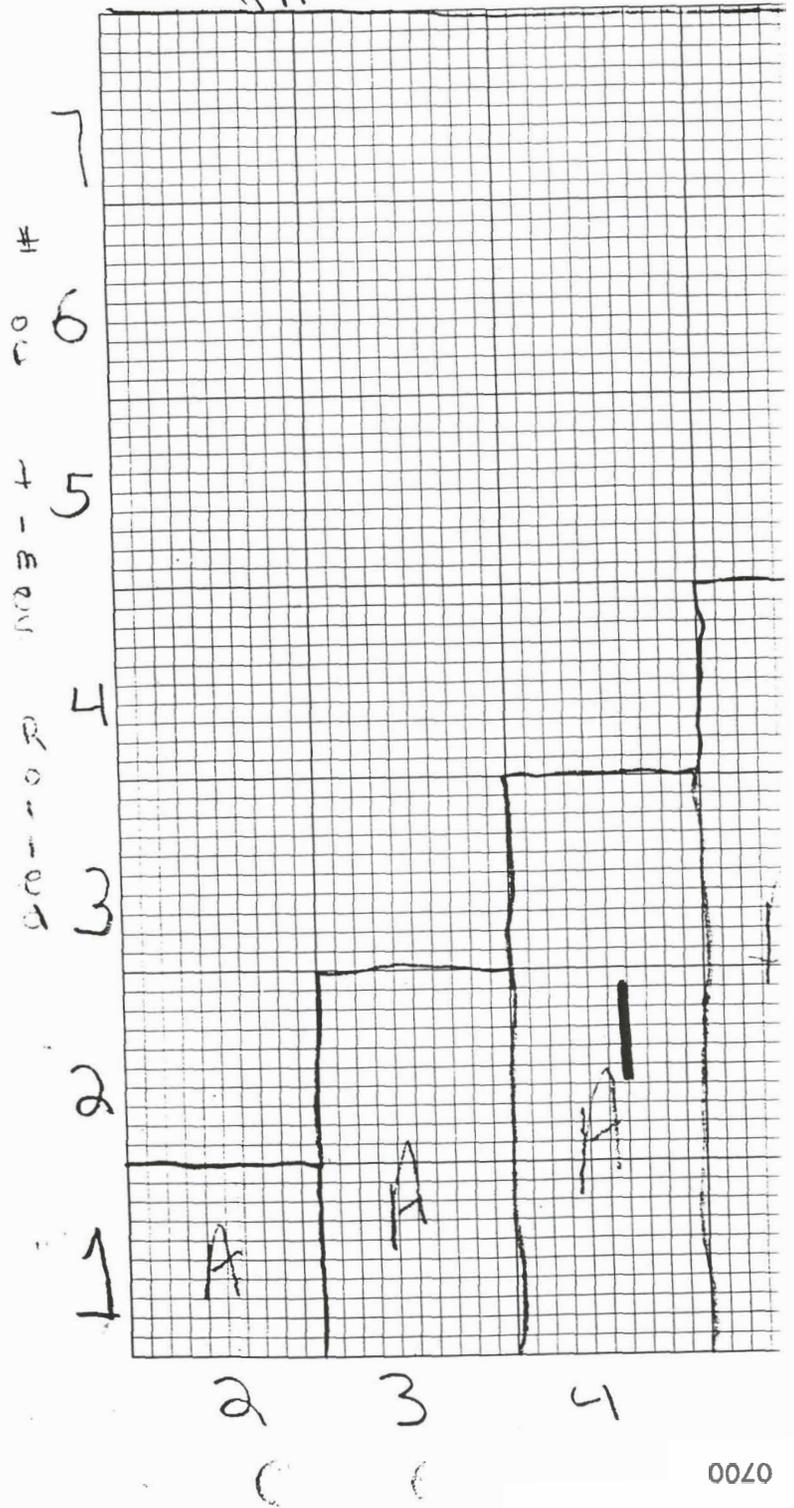


Dice number

March 19, 1994

10 X 10 TO THE INCH • 7 X 10 INCHES
 KEUFFEL & ESSER CO. MADE IN U.S.A.

Graph B.



0020

Stephanie J.

Romina

3/21/94

ANOTHER GAME FOR TWO PLAYERS

Directions: Roll two dice. If the sum of the two is 2, 3, 4, 10, 11, or 12, Player A gets 1 point (and Player B gets 0). If the sum is 5, 6, 7, 8 or 9, Player B gets 1 point (and Player A gets 0). Continue rolling the dice. The first player to get 10 points is the winner.

1. Is this a fair game? Why or why not? This game is almost fair but Player B has a little of an advantage because of its numbers.

has more pairs

2	1,1
3	1,2
4	1,3 / 2,2
5	1,4 / 2,3
6	1,5 / 2,4 / 3,3
7	1,6 / 2,5 / 3,4
8	2,6 / 3,5 / 4,4
9	3,6 / 4,5
10	4,6
11	5,6
12	6,6

2
- 5
- 6
- 8
- 9

~~Player A has an advantage because of its numbers~~
~~Player B has an advantage because of its numbers~~

2. Play the game with a partner (You can play several games if you need to). Do the results of playing the game support your answer to Question 1? Explain. Yes but Player A has a possibility of winning it is just that Player B has an advantage

3. If you think the game is unfair, how could you change it so that it would be fair?

Player A) 2, 3, 4, 5, 6

~~Player A = 6, 7, 10, 12~~
~~Player B = 8, 5, 11, 3, 12, 9~~

Player B) ~~2, 4, 10, 9, 8~~

Player A starts to roll and when lands on 7 then Player B to roll

7 9 10 11 12

5

8

- 2-1,1
- 3-2,1
- 4-3,1/2,2
- 5-4,1/2,3
- 6-3,3/4,2/5,1
- 7-3,4,5,2/6,1
- 8-6,2/5,3/4,4
- 9-6,3/5,4
- 10-5,5/6,4
- 11-6,5
- 12-6,6

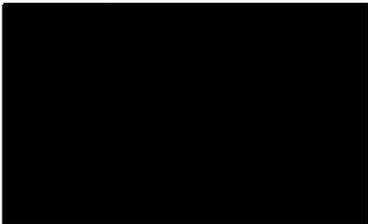
2,3,4,10,11,12 - Player A
 5,6,7,8,9 - Player B

Player A	Player B
HHH	HHH HHH winner
HHH HHH winner	HHH I
HHH	HHH HHH winner

Player A 2 3 4 5 6
 Player B 8 9 10 11 12

7

A	B
HHH HHH	HHH HHH HHH



Sarah 3/21/94

B won 10-7
" 10-9
" 10-5
" 10-9
A won 10-9
B won 10-2
" 10-4
" 10-3
" 10-3
" 10-1
" 10-5
" 10-6

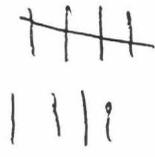
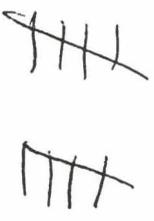
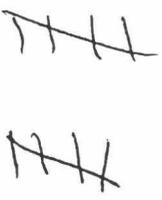
B - 11 wins

A - 1 win

3/21/94

A

B

Jeff



A 2

3

B 11
12

6
x 73
8

4

5

9

10

Math

$1 \neq$
 $e+1$

|

m/a

$a/-$

MATT 3/21/94

5 6 7 12 9

~~4~~ ~~4~~ ~~4~~ 1 2 ~~7~~
2 3 3

2 3 4 10 11 8

1 1 2 2 1 3 ~~4~~

Player A

5,5 1
6,6 1
2,1 1
2,2 1
2,2 1

Amy
Magda

5-9
Player B = Won AMY
MAGDA

3/21/94

1 5,4
1 6,1
1 4,3
1 4,1
1 4,1
1 3,2
1 2,3
1 4,3
1 4,1
1 6,3
1 5,1
1 5,4

Player A

1 4,6
1 2,2
1 5,6
1 6,4
1 6,4
1 5,5
1 3,1
1 2,1
1 1,1

Player B

1 6,3
1 5,2
1 4,2
1 3,2
1 3,2
1 6,2
1 6,1
1 4,2
1 5,1
1 4,1
1 5,1

Player A

Player B

Player A

Player B ^{Won}

- 1, 1
- 6, 5
- 2, 1
- 1, 1
- 1, 3

- 4, 2
- 6, 1
- 4, 4
- 6, 1
- 5, 3
- 6, 2
- 5, 1
- 5, 2
- 5, 1
- 5, 4
- 4, 1

Amy
Magda

- 4 = 11
- 5 = 5
- 6 = 6
- 7 = 7
- 8 = 8

- 3, 1
- 5, 6
- 6, 5
- 1, 1

- 5, 1
- 4, 2
- 6, 3 **3/21/94**
- 4, 1
- 5, 2
- 5, 4
- 4, 3
- 4, 3
- 5, 4
- 4, 2
- 3, 3
- 6, 2
- 5, 2
- 6, 2

Player A ^{Won}

Player B

Player A

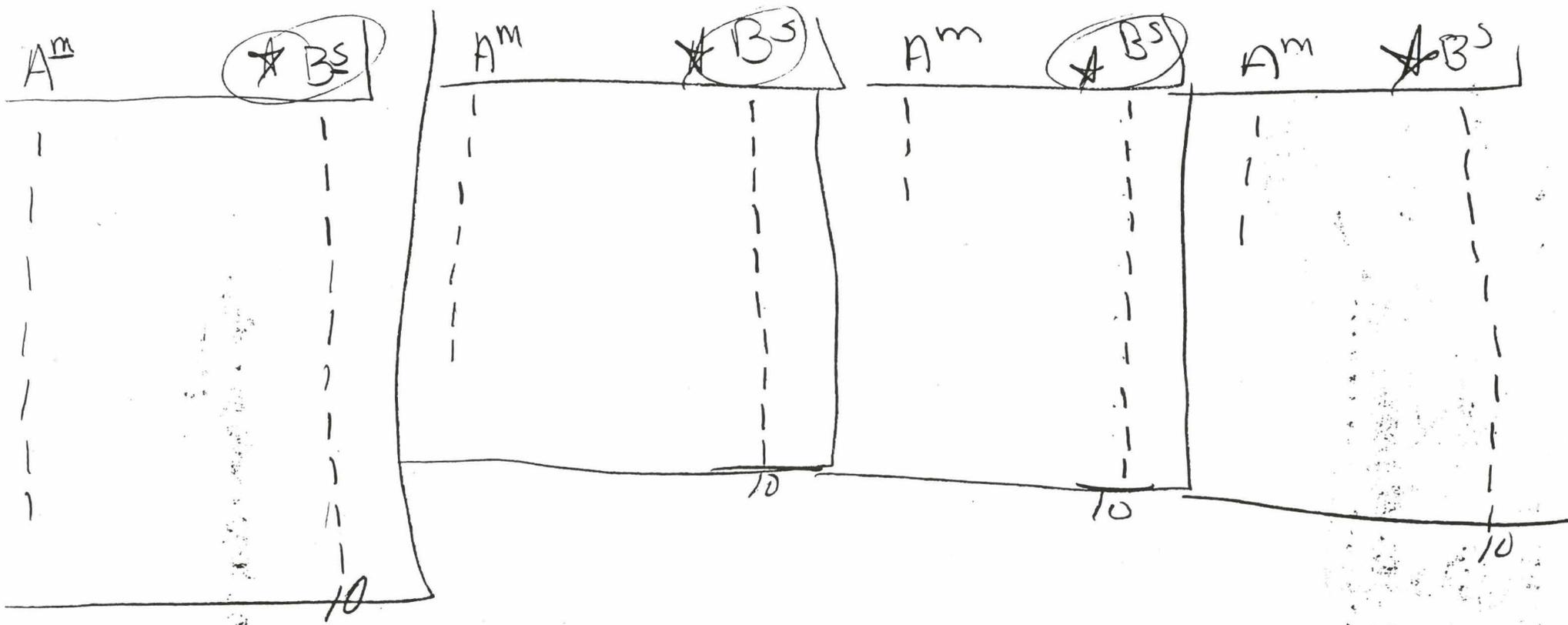
Player B

- 6, 6
- 2, 1
- 3, 1
- 3, 1
- 2, 1
- 5, 5
- 5, 6
- 6, 6
- 1, 2
- 2, 2

- 4, 3
- 3, 3
- 5, 4
- 5, 3
- 5, 2
- 5, 4
- 5, 4
- 5, 2
- 5, 1
- 2, 3

- 6, 5
- 1, 2
- 6, 5
- 5, 5

- 6, 2
- 3, 5
- 5, 1
- 6, 3
- 6, 3
- 5, 1
- 4, 2
- 2, 5
- 5, 4
- 6, 2
- 0, 3
- 4, 3

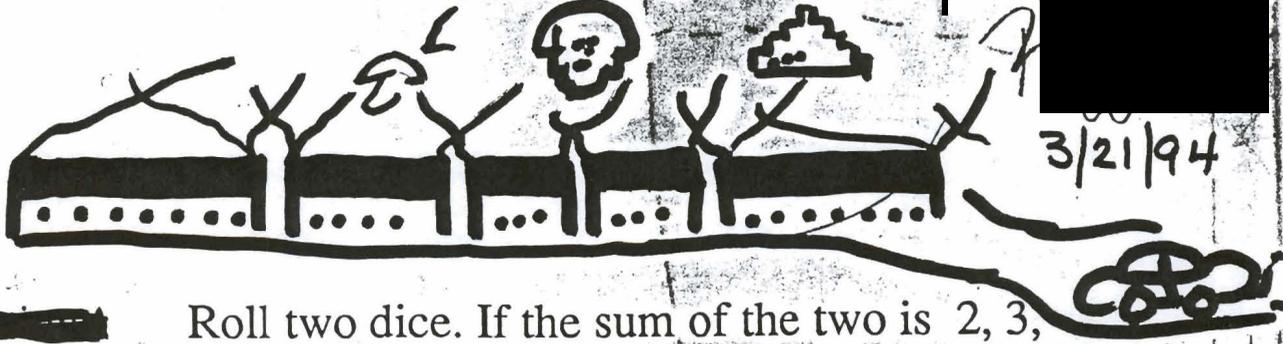


There are more chances of getting 7 than a 2. There are less chances of getting 3 than an eight. It seems the middle numbers 5-9 have a better chance of coming out than 2, or 12. Fours, twos, threes & sixes never come out

MICHELLE

Michelle

3/21/94



Roll two dice. If the sum of the two is 2, 3, 4, 10, 11, or 12, Player A gets 1 point (and Player B gets 0). If the sum is 5, 6, 7, 8 or 9, Player B gets 1 point (and Player A gets 0). Continue rolling the dice. The first player to get 10 points is the winner.

1. Is this a fair game? Why or why not? *No, there are more combinations in B's list of numbers, than*

A's list of numbers.

Example - Player A - Only way to get 2 - 1x1

B - Only ways to get 5 - 2+3, 4+1,

2. Play the game with a partner (You can play several games if you need to). Do the results of playing the game support your answer to Question 1? Explain.

Yes because out of 9 games, B won all of them.

3. *If you think the game is unfair, how could you change it so that it would be fair?*

Rearrange The List of Numbers

A gets 2 + Player B gets 12



MICHAEL MATT 3/21/94 B

A						
1,2	0	6		1		
0				4,3	1	7
1				1,2	0	3
2,1	1	3		0		
6,1	0	7		1		
0				5,2	1	
0				5,1	1	6
0				6,3	1	9
0				5,1	1	6
1			1 E	6,3 0		11
3,1	1	4		0		
2,2	1	4		0		
2,1	1	3		0		
6,2	0	8		1		
0				4,3	1	7
1				6,4	0	10
4,2	0	6		1		
				1,1		



A - Mich.

1 6+4

1 2+2

1 2+1

1 1+1

1 6+4

1 6+4

1 6+4

1 3+1

MICHELLE

B - A

Dr. B WON!

3/21/94

1 6+1

1 6+1

1 6+2

1 6+2

1 4+2

1 5+2

1 5+2

1 4+3

1 5+3

1 5+3

WINNER * 10 * *

4 tens

2 fours

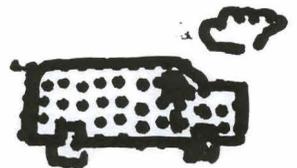
1 three

1 two

5 Sevens

4 Eights

1 Six



A.
2,3,4,10,11,12.

B.
5,6,7,8,9

~~A~~
~~1,2,3,4,5,6,7,8,9,10,11,12~~

5,5,10
6,4 10
6,5 11

3,5 8
6,11 7
5,2 7
4,3 7
5,2 7
4,4 8

3/21/94

A	B
6,4 10	4,4 8
6,5 11	4,3 7
3,1 3	4,3 7
5,6 11	4,4 8
5,6 11	3,3 6
6,6 12	5,2 7
6,6 12	4,1 5
	4,1 5
	5,1 6
	5,3 8

1/1
12
13
14
15
2,1
16
21
2,2
2,3
2,4
2,5
2,6
2,7

1/10
~~5,10~~

1,2.

2,2 1,3.

3,1
2,1
2,2
2,3
2,4
2,5
2,6
2,7

1,2.

Matt

H
H
H
H

ANOTHER GAME FOR TWO PLAYERS

Directions: Roll two dice. If the sum of the two is 2, 3, 4, 10, 11, or 12, Player A gets 1 point (and Player B gets 0). If the sum is 5, 6, 7, 8 or 9, Player B gets 1 point (and Player A gets 0). Continue rolling the dice. The first player to get 10 points is the winner.

1. Is this a fair game? Why or why not?
2. Play the game with a partner (You can play several games if you need to). Do the results of playing the game support your answer to Question 1? Explain.
3. If you think the game is unfair, how could you change it so that it would be fair?

MICHELLE I
3/21/94

ANOTHER GAME FOR TWO PLAYERS

Directions: Roll two die. If the sum of the two is 2, 3, 4, 10, 11, or 12, Player A gets 1 point (and Player B gets 0). If the sum is 5, 6, 7, 8 or 9, Player B gets 1 point (and Player A gets 0). Continue rolling the die. The first player to get 10 points is the winner.

1. Is this a fair game? Why or why not? This game is not fair because B has an advantage. Player A has harder numbers to roll.
2. Play the game with a partner (You can play several games if you need to). Do the results of playing the game support your answer to Question 1? Explain.
Yes because Player B won most of the time.
3. If you think the game is unfair, how could you change it so that it would be fair?

Player A
10 2
4

Player B
3 9
5 11
7

A 2 | 4 6
3 | 5
B 11 | 9
12 | 10 8
7 0 11 10 1

much here

3/21/94

1. Is this a fair game? Why or why not?
2. Play the game with a partner (You can play several games if you need to.) Do the results of playing the game support your answer to Question 1? Explain.
3. If you think the game is unfair, how could you change it so that it would be fair?

1. No because player A has to get the very low numbers and the very high numbers which are hard to get. It's still a game of luck.

2. Yes because Player B won most of the time but it's still a game of luck Player A can still win.

3. Player A would get

2

4

6

8

10

Both get a point for
12 if it is
rolled.

Player B would get

3

5

7

9

11

Magda

3/21/94

ANOTHER GAME FOR TWO PLAYERS

Directions: Roll two dice. If the sum of the two is 2, 3, 4, 10, 11, or 12, Player A gets 1 point (and Player B gets 0). If the sum is 5, 6, 7, 8 or 9, Player B gets 1 point (and Player A gets 0). Continue rolling the dice. The first player to get 10 points is the winner.

1. Is this a fair game? Why or why not?

No because player B has numbers that you are likely to get

2. Play the game with a partner (You can play several games if you need to). Do the results of playing the game support your answer to Question 1? Explain.

Player B wins because they have better chance of getting the numbers

3. If you think the game is unfair, how could you change it so that it would be fair?

Gives some of the numbers to player A.

12
11
10
9
8

Jeff
Player A

Rominaswad

12
11
10
9
8

Shelly
Player B

3/21/94

Jeff
Shelly

1
1
1
1
1
1
1
1
1
1

1
1
1
1

7's 1

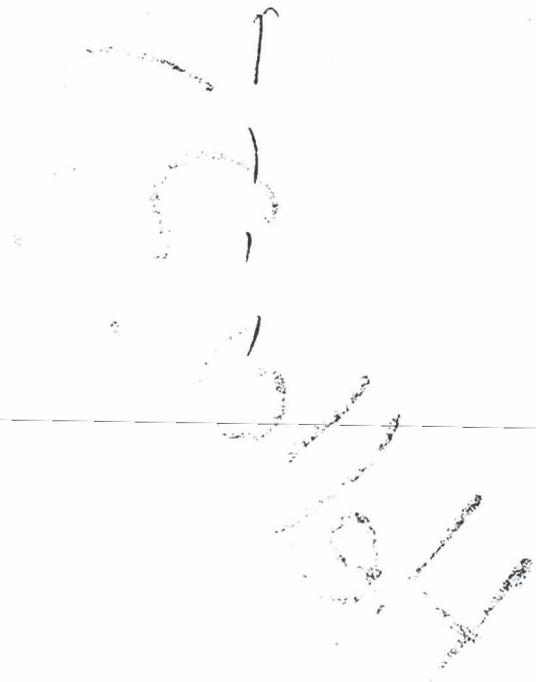
3/21/94

Jeff
Sherry
Players A

Ronina
Sarah
Players B

3
11
4
9
A

12
3
5
10
6



Game - 1 @
 Game - 2 @
 Game - 3 @
 Game - 4 1

7's - 1/1, 1/1, 1/1, 1/1, 1/1



Player A

23

②

Player B

ROMINA
SARAH 3/21/94

||||
|●||

||||
||||



||||

||||
||||



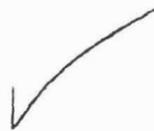
||||
||||



||||

||

||||
||||



2 Player A

11
4
9
8

0
1
1
1
1

12 Player B

3
5
10
6

1
1
1
1
1
1
1
1
1

75
E
D

⊗

⊙

Self
Agent

1
 1
 1
 1
 1
 1
 1
 1
 1
 1

12
 3

Phages

1
 1
 1
 1
 1
 1
 1
 1
 1
 1

shelly 3/21/94

7's - 1, 1, 1, 1, 1

③ 3-2
 Shelly self

3/21/94

Player D
Ankur / Milin

###

6 4

3 5

3 5

6 3

2 1

6 5

6 4

6 1

5 2

4 1

3 2

4 1

6 4

6 6

3 1

2 2

4 3

3 1

6 4

4 0

6 4

5 1

4 4

3 2

2 5

5 8

4 0

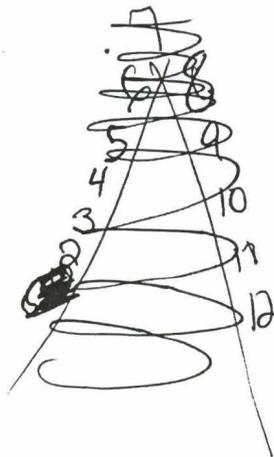
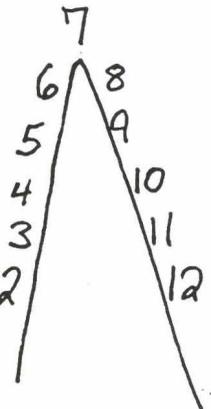
6 2

5 1

3 2

2 2

3 3



Player A	Player B
Ankur	milin
	### ###

Ankur



3/21/94

3/21/94

B

3 5

3 5

6 3

6 1

5 2

4 1

3

~~2 2~~

4 1

~~3 2~~

~~4 2~~

4 3

A

6 4

2 1

6 5

6 4

6 4

6 6

5 1

2 2

3 1

6 4

Angela



March 20, 1994

Player A

2-6

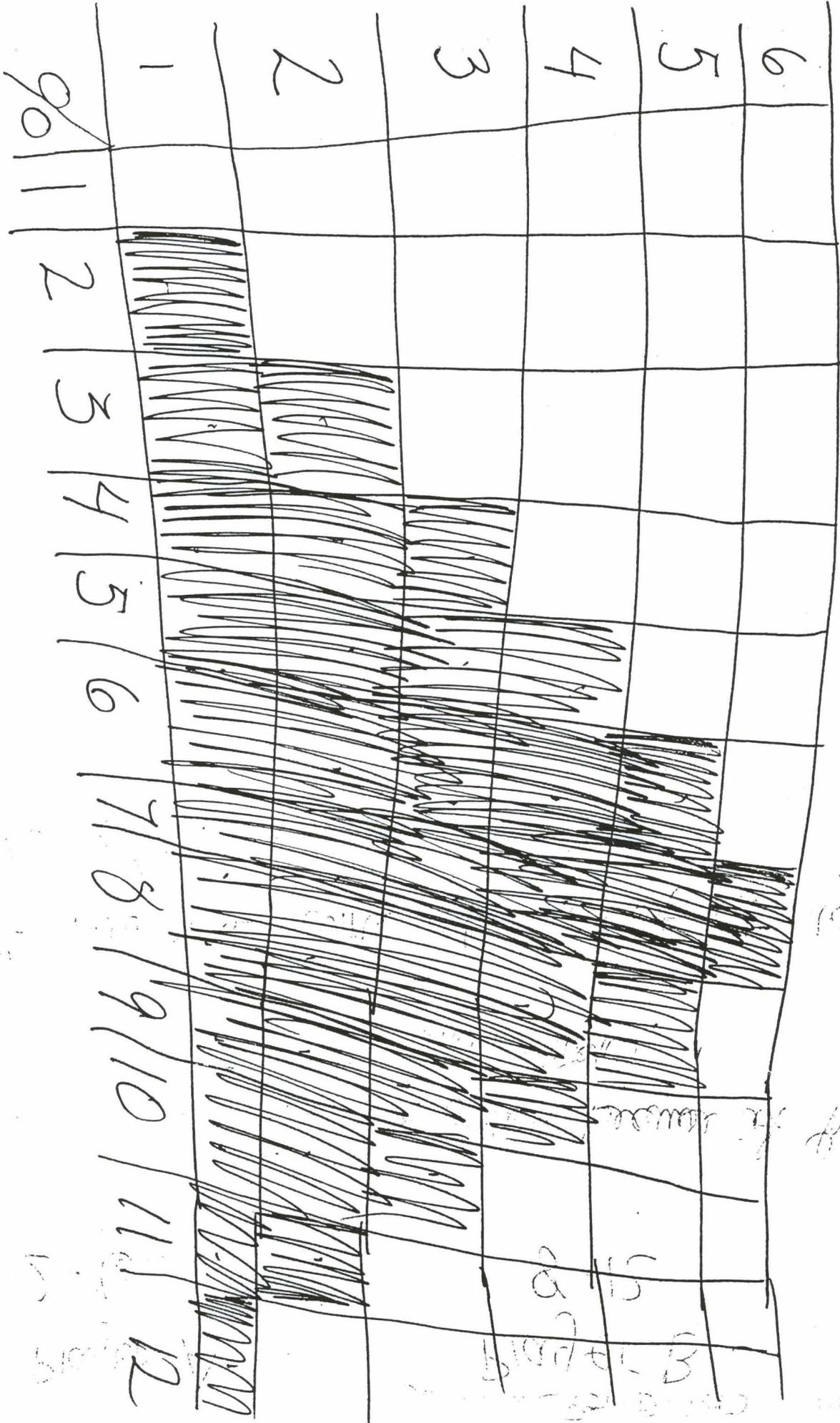
Player B

8-12

7 is ~~lose~~ a turn because it has the most combinations.

-6 has the same amount of chances as -12 does.

ANGELA
3/21/94



6x6

3
36

x 6

216

with each the mouse

2 15

10/12/94

12

3-21-94

ANOTHER GAME FOR TWO PLAYERS

Directions: Roll two dice. If the sum of the two is 2, 3, 4, 10, 11, or 12, Player A gets 1 point (and Player B gets 0). If the sum is 5, 6, 7, 8 or 9, Player B gets 1 point (and Player A gets 0). Continue rolling the dice. The first player to get 10 points is the winner.

1. Is this a fair game? Why or why not?

no. Player B's numbers are rolled more often (6 each) than Player A's numbers

2. Play the game with a partner (You can play several games if you need to). Do the results of playing the game support your answer to Question 1? Explain.
3. If you think the game is unfair, how could you change it so that it would be fair?



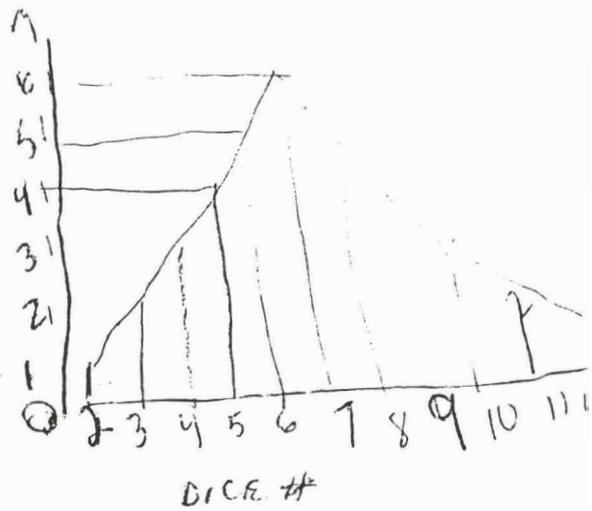
1 2 3 4 5 6
 1 x
 2 .
 3 .
 4 .
 5 .
 6 .

	1	2	3	4	5	6
1	.	.	.	.	.	.
2	.	.	.	.	.	.
3	.	.	.	.	.	.
4	.	.	.	.	.	.
5	.	.	.	.	.	.
6	.	.	.	.	.	.

DICE # (1)

	1	2	3	4	5	6
D I C E #	2	3	4	5	6	7
1						
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

OF TIMES ROLLED



Game 1

234 10 11R
Player A
Uncle

G 1 8-5

G 2 10-3

G 3 9-10

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F 2 10-5 5 6 7 8 9

F 5 10-6 Player B

Stef



Game 2

Player A
|||

Player B
|||||

F 3
|||||

|||||

L 4
||||

|||||

F 5
|||||

|||||

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2 3 4 10 11 12
player A

Step

1 3

1 4

1 10

1 3

1 11

1 3

1 10

1 4

5 6 7 8 9
player B

Step

1 8

1 5

1 8

1 9

1 8

1 6

1 7

1 8

1 9

1 9