Dice Games



16 Dice Games

Mathematical games should always be motivating and enjoyable. The 16 games in this book are designed to offer fun and interest while helping children develop their confidence using addition, subtraction and multiplication.

As children play the games they should be able to demonstrate their ability to:

- *use and apply mathematics in practical tasks*
- *select and use appropriate mathematics*
- *develop flexible and effective methods of computation*
- *check their results and consider if they are reasonable*
- *explain their reasoning*
- *take increasing responsibility for organising and extending tasks*

Most of the games use a number of normal (1-6) dice, counters and an A4 or A5 sheet or game board. Some game boards are in colour, but will work perfectly well if printed in black and white. The instructions can be printed separately and stuck to the reverse of the board. With younger children it is probably most useful to give the playing instructions verbally.

All of the games can easily be adapted or changed to meet the needs or more or less able children. The variation and additional notes for some of the games may give rise to new ideas. Children should also be encouraged to look for alternative ways to play or to adjust the rules as necessary.

We hope you and your children have as much fun with these games as we have in developing and testing them.

The mathsticks team

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16 Dice Games

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***** previously published on **mathsticks.com**

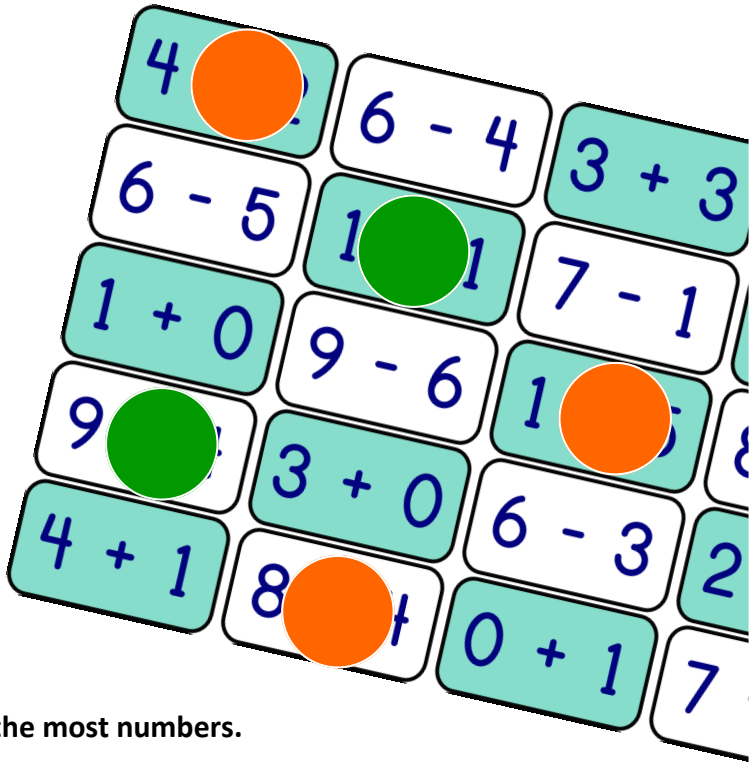
DICE GAMES

The Add and Subtract Game



You will need:

- 2 players
- 2 sets of counters
- An 'Add and Subtract' game board
- 1 dice



How to play:

Throw the dice

Look at the grid and find an answer that matches the dice number

Cover that number with a counter

The winner is the player who covers the most numbers.

DICE GAMES

The Add and Subtract Game



4 + 2	6 - 4	3 + 3	5 - 3	0 + 6
6 - 5	1 + 1	7 - 1	2 + 1	6 - 2
1 + 0	9 - 6	1 + 5	8 - 5	2 + 3
9 - 4	3 + 0	6 - 3	2 + 2	9 - 8
4 + 1	8 - 4	0 + 1	7 - 3	3 + 1

DICE GAMES

Cover the Windows



You will need:

- 2 players
- A quantity of counters for both players
- 2 dice (1-6 spots or numbers)
- A window game board



The window game board consists of two windows with identical numbers. Players sit side by side and play on their own window.

How to play:
Players take turns to roll both dice, they add the numbers together and tell the other player the total.

Next they **both** look for a combination of numbers on their own window that will add to this same total.

For example, Billy rolls a 3 and 5. The total is 8, he could:
Cover the 8 on his window with a counter;
Cover the 1 and 7, or 2 and 6, or 3 and 5, or both 4s;
Cover the 1, 1 and 6, or 1, 2 and 5...

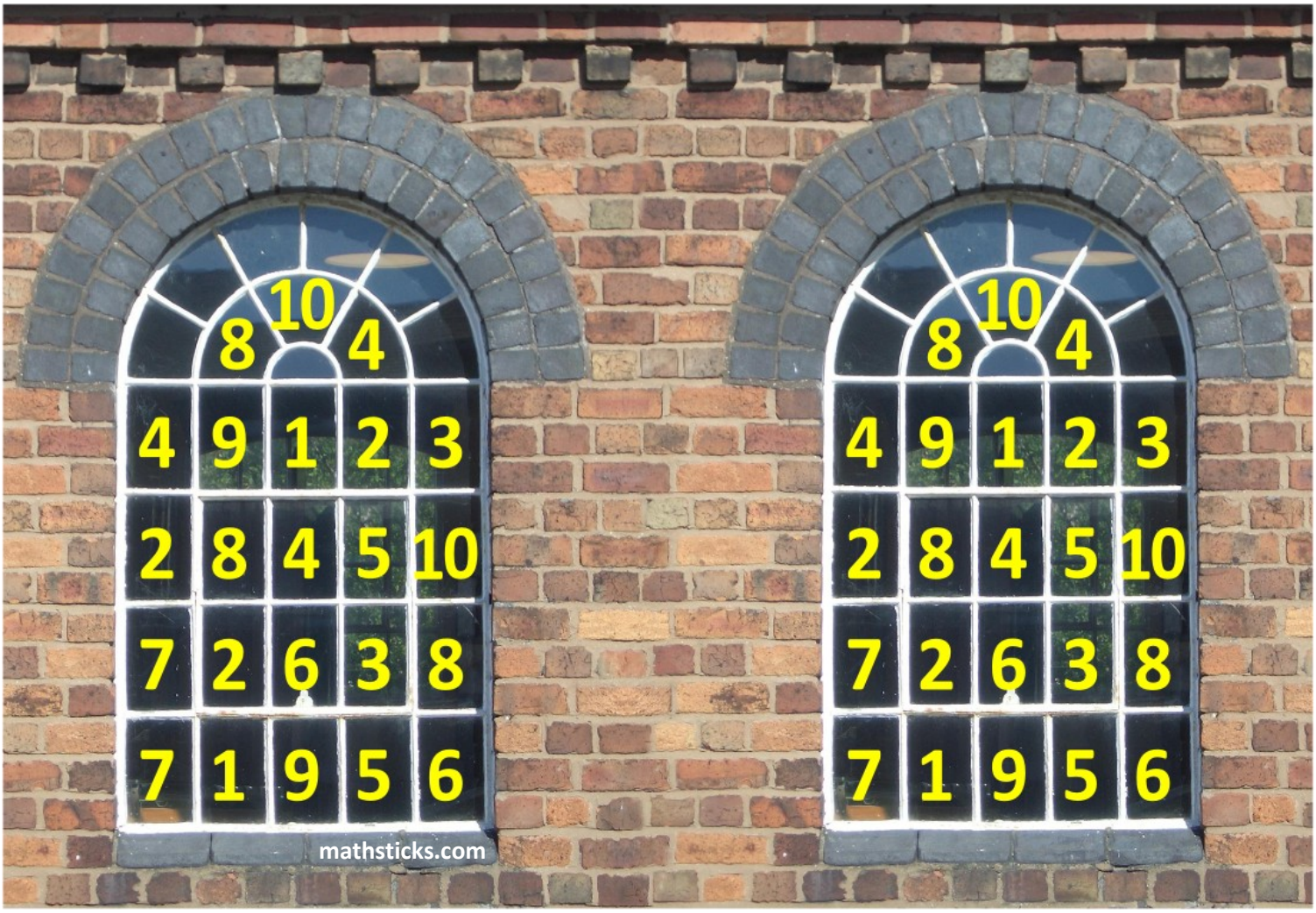
If a combination adding to the same total as the dice numbers is not visible then the player misses that go.

Play continues with the other player rolling the dice and then both players looking to cover combinations on their own window.

The first player to cover all of the numbers on his window is the winner.

After a few plays most children begin to see potential strategies. For example, with the dice roll described above, it is probably better to cover the single 8 than the combination of 1, 1 and 6 since this leaves those smaller numbers for use later.

Note:
The first two boards use numbers from 1 to 10, the second pair use a different combination of numbers, from 1 to 12 but with a greater proportion of lower numbers (1,2 and 3).


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


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


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


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

DICE GAMES

Dice Difference



You will need:

- 2 players
- A ‘Dice Difference’ board for each player
- A set of counters for each player
- 2 dice

How to play:

Players take turns to throw roll both dice. They can now find the difference between the dice numbers, locate this number on their board and cover it with a counter. If they cannot cover a number with a counter then they miss that go.

The winner is the first player to fill his/her board with counters.

Note: Some dice rolls may result in no legitimate moves being made.

Dice Difference

2	1	5	0
0	2	1	3
1	3	0	4

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Dice Difference

3	1	0	1
1	3	2	4
2	4	1	5

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DICE GAMES

Doubles



You will need:

- 2 players
- 1 dice (1-6 spots)
- A set of 9 counters each
- A 'Doubles' board game

How to play:

The 'Doubles' board features two sets of 9 numbers. Each child chooses which side of the board to use.

They roll the dice, double the number shown and cover that number on their half of the board with a counter. If at any time they find that the number they need has already been covered, then they miss that turn.

The winner is the first player to cover all of his/her numbers.

DICE GAMES

Doubles



6 10 4

8 6 10

2 12 8

8 4 6

2 6 12

4 2 10

DICE GAMES

BLOCKBUSTERS



You will need:

- 2 players
- 2 dice
- 2 sets of counters
- A 'BlockBusters' gameboard

How to play:

The players take it in turns to roll both dice.

They must now make a number by adding or subtracting the two numbers shown on the dice. If they can create any number that is on the grid they may cover that number with one of their counters. If they cannot create an appropriate number the must miss that go.

The winner is the player to get a line of counters across the grid

---

Development ideas:

Give each player a game board of their own, this enables them greater freedom when choosing where to place their counter.

Change the rule so that the winner is the first to create an unbroken line of four of hexagons, in any direction.

Instead of restricting the game to addition and subtraction, allow the children to use any of the four rules of number.

DICE GAMES

BLOCKBUSTERS



	9		5		2		5		
1		0		3		0		1	
	4		9		6		3		
6		5		1		2		9	
	8		4		9		8		
0		1		0		7		4	
	3		2		3		2		
5		9		8		0		7	
	7		4		6		5		

DICE GAMES

Little Piggy



You will need:

- 2 players
- 2 dice
- Paper and pencil to record calculations



This is based on the traditional dice game "Pig".

How to play:

The aim of this game is to be the first player to get to **50**.

The first player rolls both dice and finds the sum. He can keep rolling as long as he wants, adding all of the numbers to the sum. He can stop at any time, write down the score for that round and pass the dice to the other player.

It sounds like a good idea to keep playing, but...

Be Warned!

It could go wrong if you play too long.

If you roll a double 1 then that turns your score for that round to '0' and ends your go.

If you roll a double 6 then that **wipes out your entire score** and you have to start again!

Dare you play **Little Piggy**?

DICE GAMES

BRICKS



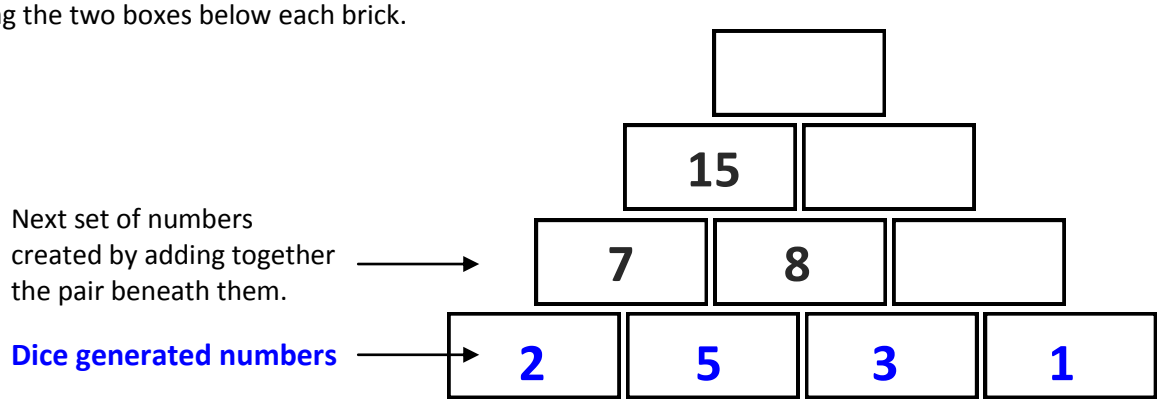
You will need:

- 2 players
- one dice (1-6 spots)
- The Brick pattern worksheet

How to play:

Each child will need a copy of the bricks sheet and a dice.

They throw a 1-6 dice 4 times and fill in the bottom row of the brick pattern. Now complete the next row by adding the two boxes below each brick.



The player who achieves the highest final number (at the top of the brick pattern) is the winner.

Development ideas:

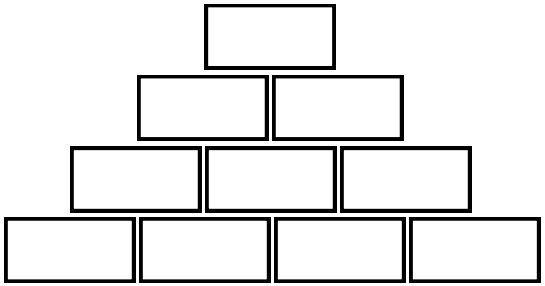
Challenge the children to reorder their starting numbers, can they arrange them so that they get a different final total?

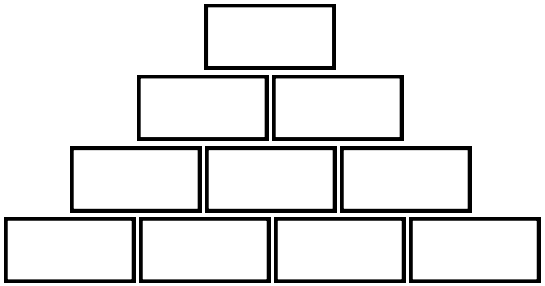
As an alternative, more able children could roll the dice three times and place those numbers in the second row of the Brick pattern. Now they must chose appropriate numbers to place beneath the dice numbers to make the pattern work. In some cases this may mean they need to use negative numbers.

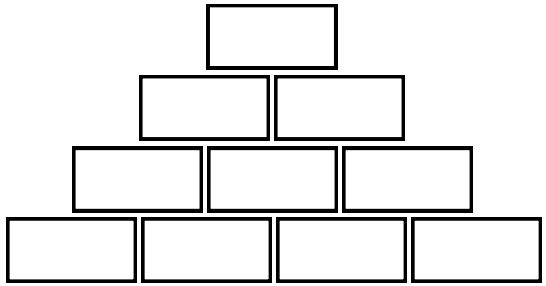
DICE GAMES

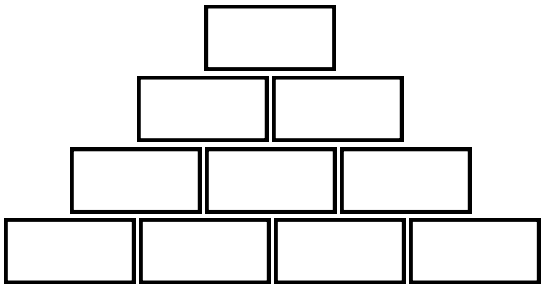
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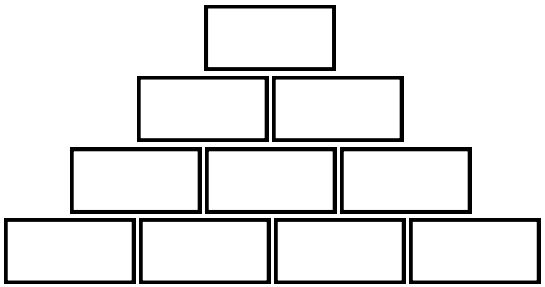


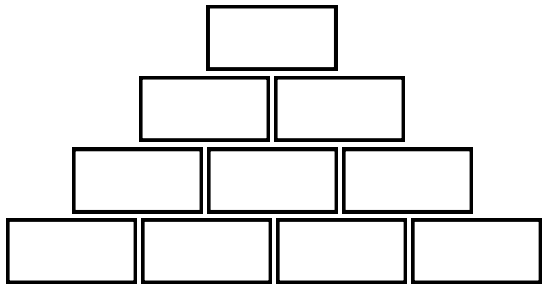












DICE GAMES

STEP ADDING



You will need:

- 2 players
- A 'Step Adding' board for each player
- 1 counter for each player
- 3 dice



How to play:

Players take turns to throw roll **all three dice**.

They can now use **any** or all of the dice numbers to create totals.

Each player moves along the 'Step Adding' board by landing on each number in order.

The winner is the first player to land on 12.

Example play:

The first player rolls a 2, 6 and 1.

He can make any of the following numbers: **1, 2, 6, 7** [6+1]**, 8** [6+2]**, 9** [6+2+1]

Since **3 cannot be made**, the highest number he can move to is **2**.

The second player rolls a 3, 1 and 2.

He can make any of the following numbers: **1, 2, 3, 4** [3+1]**, 5** [3+2] and **6** [3+2+1]

Since **7 cannot be made**, the highest number he can move to is **6**.

Note: Some dice rolls may result in no legitimate moves being made.

Step Adding



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Step Adding



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DICE GAMES

DICE CHOICE



You will need:

- 2 players
- 3 dice
- Coloured counters
- A 'Dice Choice' game-board

4	5	14	15	24
3	6	13	16	23
2	7	12	17	22
1	8	11	18	21
0	9	10	19	20

How to play:

Give each pair the game-board.

Throw the three dice and using only + and -, make the numbers on the grid.

The winner is the player who covers the most numbers.

Development ideas:

There are four different playing boards for this game. Once the children are familiar with the basic version using the first board, they can be introduced to the additional challenge of using a more advanced board.

There is also a 'blank' version of the board so you (or the children) can create your own board as complex, or as easy as necessary.

Ask the children to work together to find out:

- which numbers are the easiest to make
- if there any numbers they cannot make?

Give the children a blank grid and allow them to make numbers of their own. What numbers do they choose and can they make them all?

Ask the children to make their own grid but to use all four operations .

DICE GAMES

DICE CHOICE



0	1	2	3
4	5	6	7
8	9	10	11
12	13	14	15

DICE GAMES

DICE CHOICE



4	5	14	15	24
3	6	13	16	23
2	7	12	17	22
1	8	11	18	21
0	9	10	19	20

DICE GAMES

DICE CHOICE



42	43	44	45	46	47
36	37	38	39	40	41
30	31	32	33	34	35
24	25	26	27	28	29
18	19	20	21	22	23
12	13	14	15	16	17
6	7	8	9	10	11
0	1	2	3	4	5

DICE GAMES

DICE CHOICE



DICE GAMES

Number Maker



You will need:

- 2 players
- 1 'Number Maker' board for each player
- A set of 10 counters for each player
- A small pot or dish for 'used' counters
- 3 dice

How to play:

Players take turns to throw roll all three dice. They can now use any combination of addition, subtraction and multiplication to make a number on their board. If they cannot cover a number with a counter then they must place their counter in the 'used' container.

The winner is the player with most numbers covered after everyone has had 10 turns.

Note: Some dice rolls may result in no legitimate moves being made.

Number Maker



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Number Maker



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DICE GAMES

QUORN



You will need:

- 2 players
- 4 dice
- Copies of the **score sheet** to record calculations

This variation on the trademarked ***Yahtzee*** game is perfect for those children who "want to be right" and want to win. The rules are simple, and the scoring is clear, but it is in the application of the scoring system that the maths can become charmingly complex. Some will love this... others may not!

How to play:

The players take it in turns to roll the dice. They then score their 'hand' by comparing the dice numbers with the **Scoring Categories**.

There are five 'rounds' to a game. In each 'round' a player should aim to score the highest he/she can.

Players can roll all, or some of the dice up to three times.

At any time they can choose to end their round and determine their score.

Scores are recorded on the score sheet.

Play passes to the next player.

After five rounds the total scores are calculated.

The winner is the player with the highest final score.

QUORN - Scoring Categories	
1s, 3s & 5s	1 point each
2s & 6s	2 points each
4s	10 points each
2 of a kind	40 points
3 of a kind	80 points
3 of a kind	150 points
Run of 3	50 points
Run of 4	75 points
The Quorn	250 points

There are three copies of the ***Scoring Categories*** sheet on the next page. The first version clearly lists all potential winning combinations, and is useful when first playing the game. The second is less detailed, and more useful for experienced players. The third version is blank for your own customisation.

There are two related ***Score Sheets*** on pages 27 and 28.

QUORN - Scoring Categories	
1s, 3s & 5s	point each
2s & 6s	points each
4s	points each
2 of a kind 1,1,X,X 2,2,X,X 3,3,X,X 4,4,X,X 5,5,X,X 6,6,X,X	points
3 of a kind 1,1,1,X 2,2,2,X 3,3,3,X 4,4,4,X 5,5,5,X 6,6,6,X	points
4 of a kind 1,1,1,1 2,2,2,2 3,3,3,3 5,5,5,5 6,6,6,6	points
Run of 3 1,2,3,X 2,3,4,X 3,4,5,X 4,5,6,X	points
Run of 4 1,2,3,4 2,3,4,5 3,4,5,6	points
The Quorn 4,4,4,4	points

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QUORN - Scoring Categories	
1s, 3s & 5s	1 point each
2s & 6s	2 points each
4s	10 points each
2 of a kind 1,1,X,X 2,2,X,X 3,3,X,X 4,4,X,X 5,5,X,X 6,6,X,X	40 points
3 of a kind 1,1,1,X 2,2,2,X 3,3,3,X 4,4,4,X 5,5,5,X 6,6,6,X	80 points
4 of a kind 1,1,1,1 2,2,2,2 3,3,3,3 5,5,5,5 6,6,6,6	150 points
Run of 3 1,2,3,X 2,3,4,X 3,4,5,X 4,5,6,X	50 points
Run of 4 1,2,3,4 2,3,4,5 3,4,5,6	75 points
The Quorn 4,4,4,4	250 points

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QUORN - Scoring Categories	
1s, 3s & 5s	1 point each
2s & 6s	2 points each
4s	10 points each
2 of a kind	40 points
3 of a kind	80 points
4 of a kind	150 points
Run of 3	50 points
Run of 4	75 points
The Quorn	250 points

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QUORN *Score Sheet*

	Points	Round 1	Round 2	Round 3	Round 4	Round 5	FINAL TOTAL
1s	1 each						
2s	2 each						
3s	1 each						
4s	10 each						
5s	1 each						
6s	2 each						
2 of a kind	40						
3 of a kind	80						
4 of a kind	150						
Run of 3	50						
Run of 4	75						
QUORN	250						
Total for Round:							

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QUORN *Score Sheet*

	Points	Round 1	Round 2	Round 3	Round 4	Round 5	FINAL TOTAL
1s							
2s							
3s							
4s							
5s							
6s							
2 of a kind							
3 of a kind							
4 of a kind							
Run of 3							
Run of 4							
QUORN							
Total for Round:							

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DICE GAMES

Drop Zone



You will need:

- 2 players
- 1 **small** dice
- A 'Drop Zone' dice mat
- Paper to record calculations

How to play:

The players take it in turns to roll a small dice onto the 'Drop Zone' dice mat.

If the dice does not land on the mat they must miss their turn.

When the dice stops on the mat they must multiply the dice number by the number in the **Drop Zone**. The number on the coloured area where the dice fell. The player now makes a note of this number.

Play continues with each player taking it in turns to roll the dice and multiply it by the number where it lands.

All calculations must be recorded and each product added to the previous one, **the first player to reach, or exceed, 100 is the winner.**

In the example play here, **Alex wins** by passing 100 first.

Alex

Dice x Zone	Product	Running Total
5 x 4 =	20	20
3 x 9 =	27	47
6 x 4 =	24	71
5 x 2 =	10	81
4 x 7 =	28	109

The '**Drop Zone**' dice mat is on the next page, followed by a recording template.

The template may not be necessary or suitable for all children.

Jennifer

Dice x Zone	Product	Running Total
6 x 7 =	42	42
2 x 5 =	10	52
1 x 2 =	2	54
5 x 4 =	20	74
3 x 2 =	6	80

DICE GAMES

Drop Zone



2

5

6

8

9

3

7

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4

DICE GAMES

Drop Zone



Dice x Zone	Product	Running Total

DICE GAMES

Drop Zone



Dice x Zone	Product	Running Total

DICE GAMES

Drop Zone



Dice x Zone	Product	Running Total

DICE GAMES

Drop Zone



Dice x Zone	Product	Running Total

DICE GAMES

Multiplication Collection



You will need:

- 2 players
- 4 dice (2 for each player)
- 10 counters

This is a very simple game, relying solely on the luck of the dice roll to determine a winner. However, there is a great deal of maths being undertaken during the play, and in our experience, children love the simplicity of it. No board, just dice, counters, quick calculations... and, ultimately, a winner!

How to play:

All 10 counters are placed in a single pile between the players.

Now, both players take it in turn to roll their two dice. Each player must multiply the two dice numbers together and announce the result. The player with the larger product takes a counter. If both players have the same product then neither can take a counter.

When all of the counters have been used each player counts the counters they have collected.

The winner is the one with the most counters.

Notes:

- *this game can easily be made more challenging by using different numbered dice: 1-6 and 4-10 dice, for example*
- *if you label your own dice then putting a zero on one of the faces can add a further degree of interest; anyone who rolls a zero must replace one of their counters in the middle of the table!*

DICE GAMES

NUMBER GRID



You will need:

- 2 players
- one dice (1-6 spots)
- a copy of the grid, below
- a calculator

How to play:

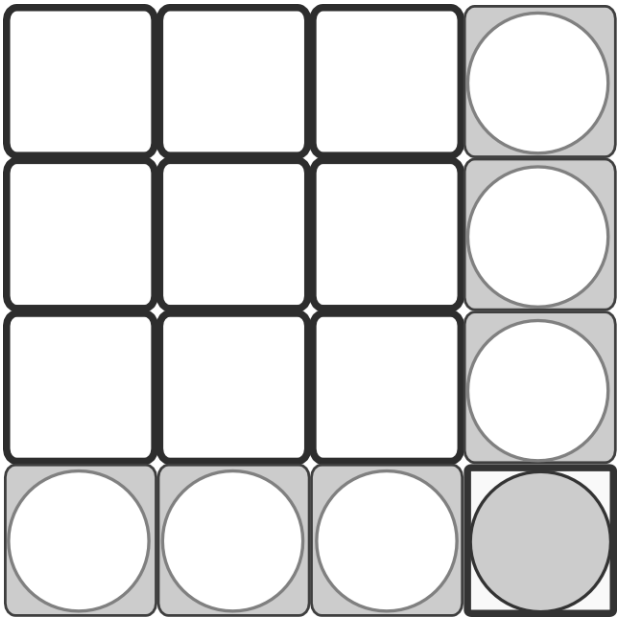
Each player rolls the dice nine times and writes the number in one of the light grey squares below.

Now, take it in turns to multiply the numbers across each row and write the final product in the white circle in the last column.

Next, multiply each of the three numbers in the columns and place the product in the bottom circle of each column.

Multiply the numbers in the three vertical circles and write this in the bottom grey circle.

As a final check, multiply the three numbers in the bottom white circles - what do you notice?



The winner is the player with the largest number in the final circle.

If you did not win, you have one more chance. ..

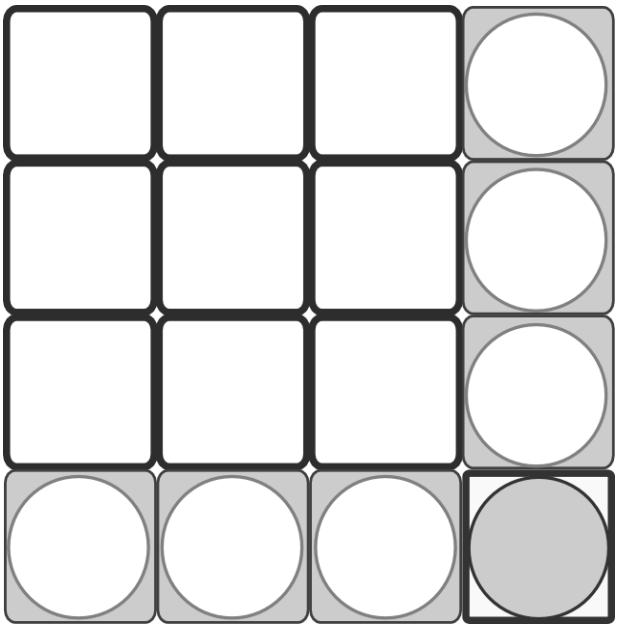
Can you re-arrange your nine starting numbers to give you a **bigger final product**?

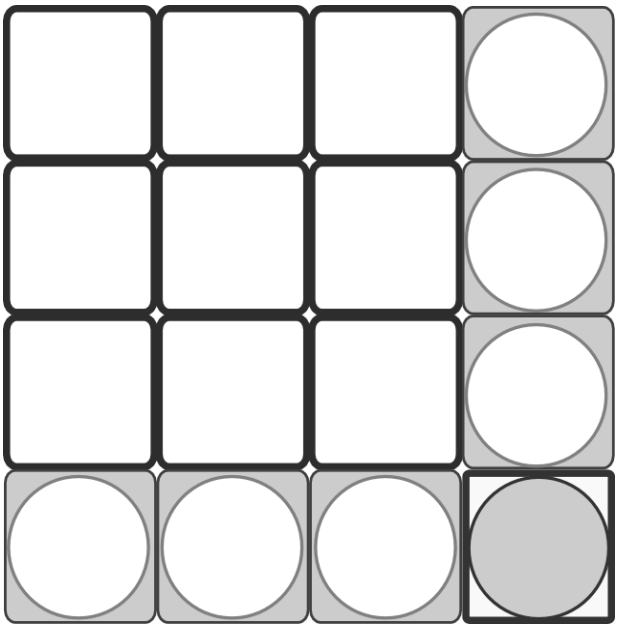
What is the largest product you can create?

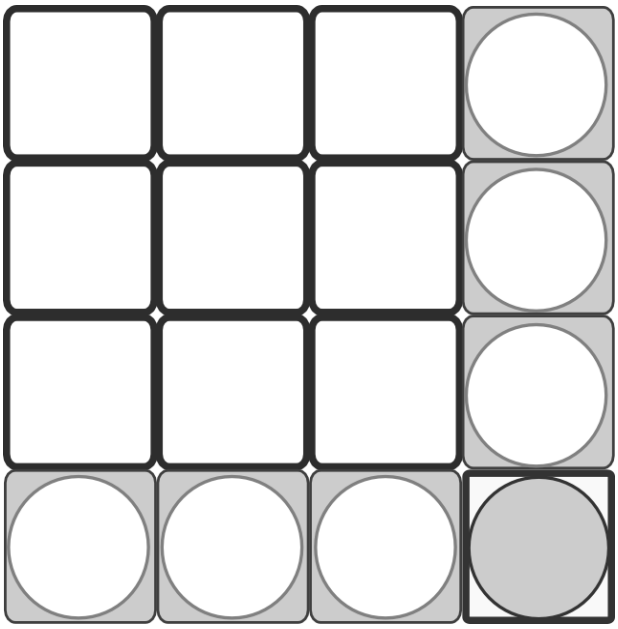
DICE GAMES

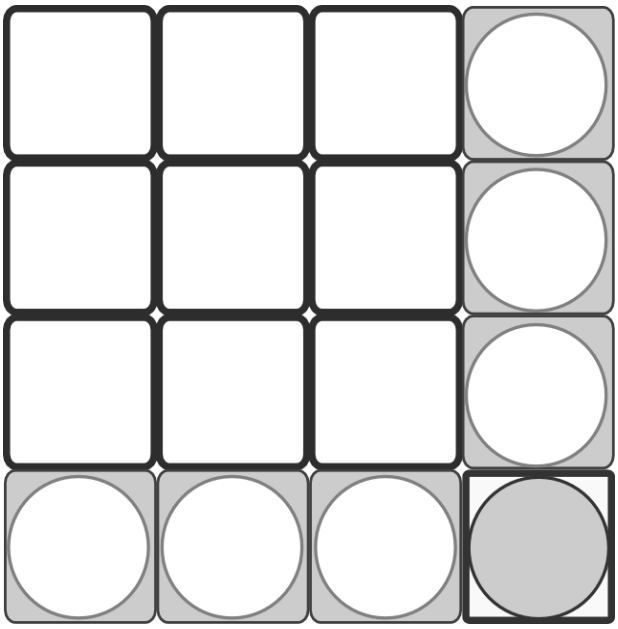
NUMBER GRID











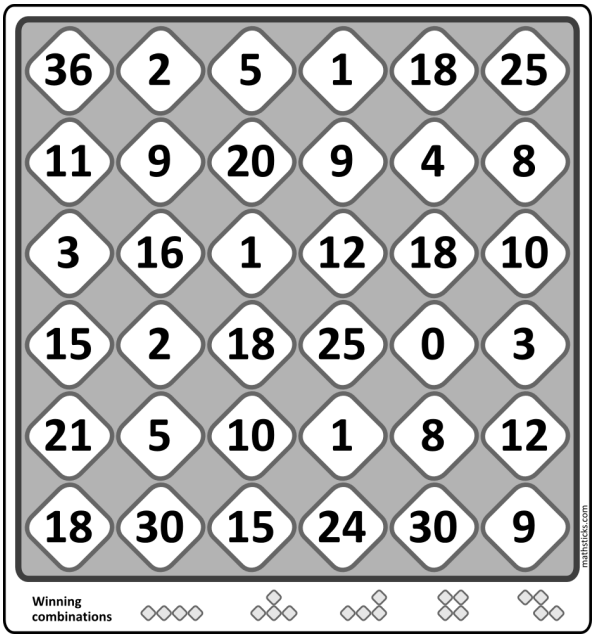
DICE GAMES

QUADROIT



You will need:

- 2 players;
- 2 sets of different coloured counters;
- 3 dice (1-6 spots);
- a copy of the game board.



How to play:

The players take it in turns to roll all three dice. They then choose **any two of the numbers** and use **any operation** (addition, subtraction, multiplication or division) in order to generate a number that is on the game board.

If there calculations are correct and they have obtained a number that is on they board they can cover it with one of their counters.

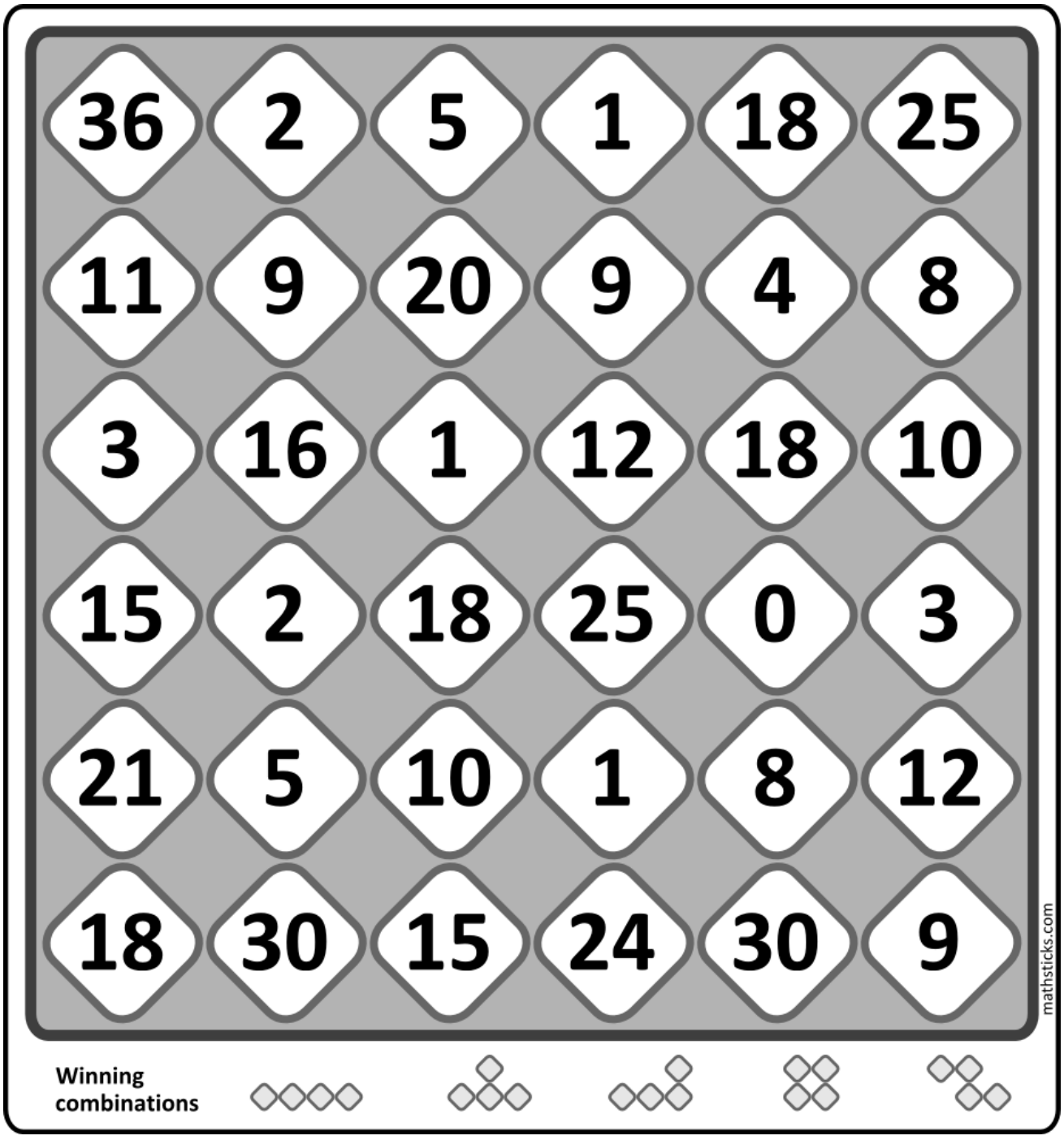
If they cannot create one of the numbers, or if they make a mistake with their calculations they miss that turn.

The winner is the first player to cover four connected numbers, as illustrated. The winning combinations can be either vertical or horizontal, rotated or flipped.

The game gives children plenty of opportunities to reinforce their problem solving and calculating skills. To enable greater collaboration it can be useful to ask the players to work together to create a winning combination in a set time.

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QUADROIT



DICE GAMES

Remainder Grid



You will need:

- 2 players
- one dice (1-6 spots)
- a copy of the playing board
- counters for each player

How to play:

The players take it in turns to choose any number between 20 and 60. They then roll the dice and mentally divide the number they have chosen by the number on the dice. They may then cover up the remainder on the game board.

For example, Billy chooses the number 45, rolls a 4 and makes the division ("*4 goes into 45 eleven times with one left over*"), he may now cover any '1' on the game board with one of his counters.

Play passes to the next player, who chooses another number and rolls the dice.

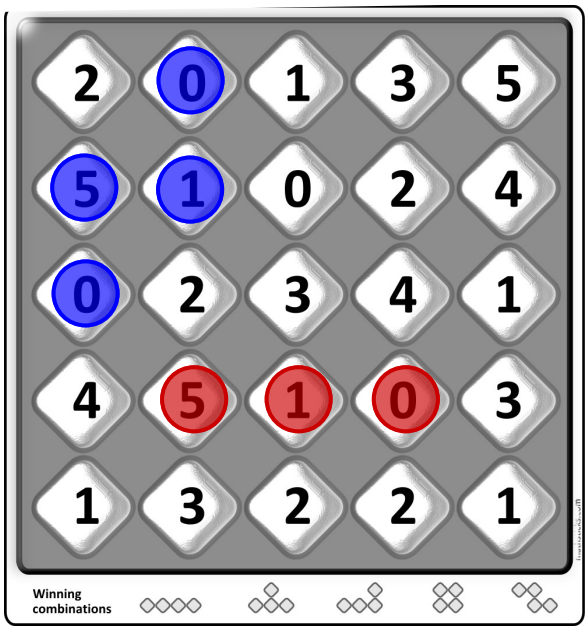
The winner is the first player to cover up a 'Winning Combination' of 4 numbers (in any direction) on the game board.

It may be useful to give the children note paper to jot down their calculations, or to keep a record of the numbers they have chosen.

The game can be simplified by asking the children to choose numbers from a lower range - between 10 and 20, for example.

After the children have played the game a few times they may begin to develop a strategy; choosing particular numbers that have more or less factors, for example, if they are aiming for specific 'remainders' on the game board.

There are four different boards associated with game, three with different arrangements of numbers and a blank one.



DICE GAMES

Remainder Grid



1	2	5	0	1
4	3	0	1	5
0	2	4	1	3
3	1	5	2	0
2	0	3	1	5

Winning combinations



DICE GAMES

Remainder Grid



2	0	1	3	5
5	1	0	2	4
0	2	3	4	1
4	5	1	0	3
1	3	2	2	1

Winning combinations



DICE GAMES

Remainder Grid



3	1	5	0	4
2	1	2	5	3
1	3	2	0	4
2	1	0	3	1
0	4	3	1	0

Winning combinations



DICE GAMES

Remainder Grid



Winning combinations



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Regards,

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- Is there a maths game you would like to use but cannot find? Let us know and we will aim to design it for you.
- Do you have an idea for a maths resource? Again, let us know and we will see what we can do. We are here to help.