

DICE GAMES



Distance Education Maths activities by T. Shaw



This pack contains some (I hope) fun math's games you can play with 6, 10, 12 and 20 sided dice. Regular dies are very limiting. For example, you can't make all the combinations for 10 using the digits 1 through 6. If you're practicing your addition or multiplication facts, you never get above the sixes.

Ten-Sided Dice

Ten-sided dice have the digits 0-9, which is a perfect fit for our place value system. I have also included 12 and 20 sided dice. I have also included some game sheets, boards and counters you may need.

Handy hint: Say NO to Flying and Falling Dice

Dice can be mishandled. Try containing the dice in a small, covered plastic container. Students shake the container, set it down, and peer through the bottom (which is facing up) to see the numbers. Or, alternatively have a mat (rubber cloth used to help open jars which you roll the dice on.) They won't roll far on that.



If you lose your die (and you shouldn't) you can also play these games online courtesy of the Mathematics Association of Victoria and MathsStarters

<https://mathsstarters.net/dice/>

This site has short videos showing how to play dice games

<https://www.whatdowedoallday.com/dice-games-for-kids/>

The **Multiplication Roll and Cover** game boards are also included

Games for six sided dice

Blue Eyes

Players: 2 - 6

Maths concepts: addition, properties of numbers

The objective: The player with the highest total wins.

How to play:

- You play with three dice.
- On a roll, a player only adds up the even numbers.
- The player with the highest number wins.
- You may keep a running total up to 100.

Variations:

- You only add up odd numbers.
- The player with the lowest number after 10 rolls wins.

House Numbers

Players: 2 - 6

Maths concepts: place value

The objective: The player with the highest three-digit number wins.

How to play:

- You play with three dice.
- Combine the three numbers to create the highest three-digit number.
- You could have three goes, taking the highest dice out each time.
- The highest possible score is 666.

Variations:

- The lowest number wins.
- The second highest number wins.

Two-Dice Operations

Math concepts: Students of all ages can play this game, as long as they're able to add the numbers that come up on two dice. While younger children benefit from the practice of adding, older students have the opportunity to think about the probability of the sums from rolling two dice.

The object: to remove all the counters in the fewest rolls possible.

How to play: Two or more players can play. Each player needs a strip of paper with the numbers 1 to 12 on it or they can be written on the whiteboard in rows for each player. You need two dice. Here are the rules for playing:



1. Each player has their number strip set up.
2. Players take turns rolling the dice.
3. For each roll, the player has to calculate a number sentence so that they can cross off one of their numbers. All four number rules can be used.

If 2 and 6 were rolled, one of these numbers could be crossed off:

- *addition:* $6 + 2 = 8$
- *subtraction:* $6 - 2 = 4$
- *multiplication:* $2 \times 6 = 12$
- *division:* $6 \div 2 = 3$

4. *Whoever has all numbers crossed off first is the winner.*

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

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

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

Run For It!

Here is a very simple game of **sequences** or runs.

Skills learned: Recognizing numbers and sequences, early strategic thinking, and counting by in five

Players: 2 – 4

Dice needed: 6

Directions for play:

Each player takes a turn rolling the dice and looking for runs starting with (1-2, 1-2-3, and so on). Each dice part of the run scores five points. A player can only have one run in each roll. The first who reaches 100 points is the winner.

Examples of play:

Hand 1:

Player throws six dice and gets the numbers 1, 4, 2, 1, 3, and 2. The following sequences can be scored: 1, 2 (10 points) or 1, 2, 3, 4 (20 points). The hand is worth 30 points.

Hand 2:

Player throws six dice and gets the numbers 1, 4, 6, 6, 3, 3. No sequences can be formed, so no score is recorded.



Stuck in the Mud!

The fun of this dice game is the unpredictability. Some turns end immediately and some seem to go on forever. Players can only score on a roll which does not include the numbers 2 and 5. Any dice, which show a 2 or a 5, become “Stuck in the mud!”

Skills learned: Addition – mental and scoring

Players: 2 – 4

Dice needed: 5

Object of the game: To achieve the highest score

Directions for play:

- 1.The first player rolls all five dice. If any 2s or 5s are rolled, no points are scored for this throw. If no 2s or 5s are rolled, add up the total of the dice and write it down.
- 2.The player sets aside any 2s and 5s, and throws the remaining dice. Again, if any 2s or 5s are thrown, no points are scored. If there are no 2's or 5s, add the total to the previous score.
- 3.Continue in this way until all the dice are “Stuck in the Mud.” After the score is totalled, play passes to the left.

Agree a number of rounds – five works well – and total up the score.



Three or More

Skill learned: Adding

Players: 2 – 4

Dice needed: 5

Object of the game: To get the highest score

Directions for play:

Players take turns rolling all five dice and scoring for three-of-a-kind or better. If a player only has two-of-a-kind, they may re-throw the remaining dice in an attempt to improve the matching dice values. If no matching numbers are rolled, a player scores 0.

Scoring:

- 3-of-a-kind: 3 points
- 4-of-a-kind: 6 points
- 5-of-a-kind: 12 points

Set the number of rounds for the game and the player with the highest total score at the end of a game is the winner.



Round the Clock

Skill learned: Addition

Players: 2 – 4

Dice needed: 2

Object of the game: To be the first player to throw all the numbers from 1 to 12 in order

Directions for play:

1. Choose the first player with a dice throw; the player with the lowest total going first.
2. The first player throws both dice, hoping to throw a 1. Players then take turns (in a clockwise direction) trying to throw a 1.
3. On the next round, those players who threw a 1 will try to throw a 2. Any player who did not throw a 1 in the first round will try again this round. Players can do so by throwing a 2 or two 1s.
4. Play continues round-by-round with players trying to throw all the numbers from 1 to 12 in sequence. Players may count the spots on just one die or on both dice added together. For example, throwing a 3 and a 6 could be counted as 3, 6, or 9.
5. The first player to go “Round the Clock” – throw all the numbers from 1 to 12 in order – wins the game.

Variation: A player can keep throwing the dice during their turn until they fail to get the number for which they are trying.

Pig

Even though the directions make this game sound easy, unless you are good at throwing 1s, this game may



be hard for to play. The game is called “Pig” because the first player “hogs” the dice in an effort to win the game.

Players: 2 – 4

Dice needed: 1

Object of the game: To score 100 points or more

Directions for play:

1. Have the players throw the die to determine order of play. The lowest roll goes first.
2. The first player rolls the die and adds up the numbers after each roll. They may stop rolling at any time and end the turn
3. The player loses all points for the turn when a 1 is rolled.
4. If the first player gets to 100 points on their first turn, the other player(s) may take their turn to try to achieve a better score.

PIG SCORESHEET



Record your score at the end of each turn.

The first player to score 100 or more wins the game of PIG.

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

PIG SCORESHEET



Record your score at the end of each turn.

The first player to score 100 or more wins the game of PIG.

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

Play Knock Out

What you need:

- 2 dice
- 2 or more players

Objective: to be the first player to reach 100; or have the highest score at the end of a predetermined number of rounds. (*We prefer to play for 10 rounds.*)

Directions for play:

To set up the game decide if you will play to 100 or for a number of rounds. Chose 6, 7, or 8 as the “knock-out number.” The knock out number can be the same for all players, or each player can have a different knock out number. We find the best way to play is with 7 as everyone’s knock-out number. A round is complete when all players have had one turn.

Taking turns, players roll both dice, if they do not roll the knock-out number the total score is recorded for that turn and the pass the dice to the player on their left.

For example, if the roll is 2-3, the player earns 5 points.

If player rolls the knock-out number they receive no score for that round. But not only that, the player’s accumulated score is “knocked-out” and the player must start again on their next turn.

Only one roll per turn. Play until one player has achieved the game objective.



Ten sided dice

Crooked Rule

This is a game to develop understanding of place value. This is a quick and easy game and only lasts a few minutes.

You will need a game board (laminated so you can write on it with the whiteboard pen also included)

Age: 5+ (but can be adapted for different ages and levels)

Players: 2 – 4

Rules:

- Take turns to roll the dice.
- When you rolled the dice, you may put that number into any cell, your own or any cell of your opponents.
- Carry on until all the spaces are filled.
- The winner is the player with the smallest number.

Variations:

- Winner is whoever has the highest number.
- The winner is the player with the second highest or second lowest number.
- There may be a point in the game when an outright winner is established without all the cells being filled in. Discuss with your child how they know that there is already a winner and whether you should continue with that game or start another one. Let them decide how to change the rules to make it exciting until the last roll of die.
- If you decide that the highest or lowest number will win, leave the column with the highest place value empty. (In our table above, that would be the hundreds column.) This way the last roll each player has will decide winner and losers.

Crooked Rule



	Hundreds	Tens	Ones (units)
Player 1			
Player 2			
Player 3			
Player 4			

Connect 4- Doubles

Using a 10 sided die

With a partner, take it in turn to roll a ten sided die. Double the number you Roll and cover 9 counters provided) the square with that number. The first to 4 in a row wins (Decide first whether that means diagonal as well)

14	6	12	8	16	4
12	18	4	20	2	20
6	10	14	16	6	10
4	18	2	10	14	12
16	10	20	4	18	2
8	2	8	18	10	14
20	16	12	6	20	8

Use the 10,12 and 20 sided dice to invent your own games.

- Roll the 20 sided dice to see who can be the first to get *up to 100*
- Play the reverse of *up to 100* and take away your roll from 100 and be the first to get to zero.

Dice have been around for thousands of years, in fact they are so old, we don't know when they were invented, but they've appeared in cultures all over the world throughout history. Some historians believe they come from the practice of throwing knucklebones, which were used as a form of crude dice. These would later be carved out of bone, stone and wood and shaped into the dice we recognize today. The ancient Egyptians used dice in their games of Senet (dated from about 3000BC) and the game was so important they painted pictures of it in their tombs!

The Romans were huge fans of dice games, despite gambling being outlawed. Dice would even go on to inspire the creation of dominoes and playing cards in 9th Century China.

Nowadays most dice are made of plastic, and can be found everywhere in all sorts of shapes and sizes.

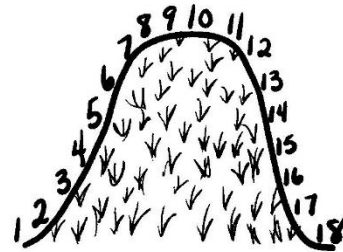


More games

Over the Mountain

Use the 20 sided die for this game instead of 3 dice.

Over the Hill



STRAND: Number Sense – Addition & Subtraction, Sequencing & Multiplication

Players: Party game of 4 or more, can also be 2 player without groups!

Materials Needed: At least 6 dot dice – 3 for each group

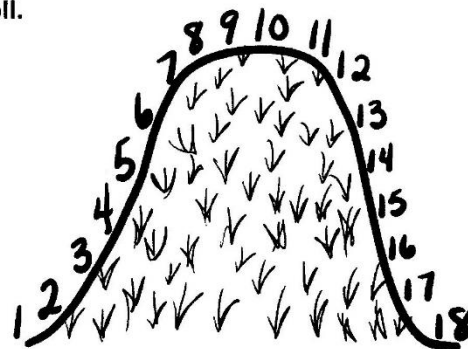
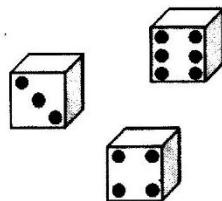
Gamesheet - below

Gameplay:

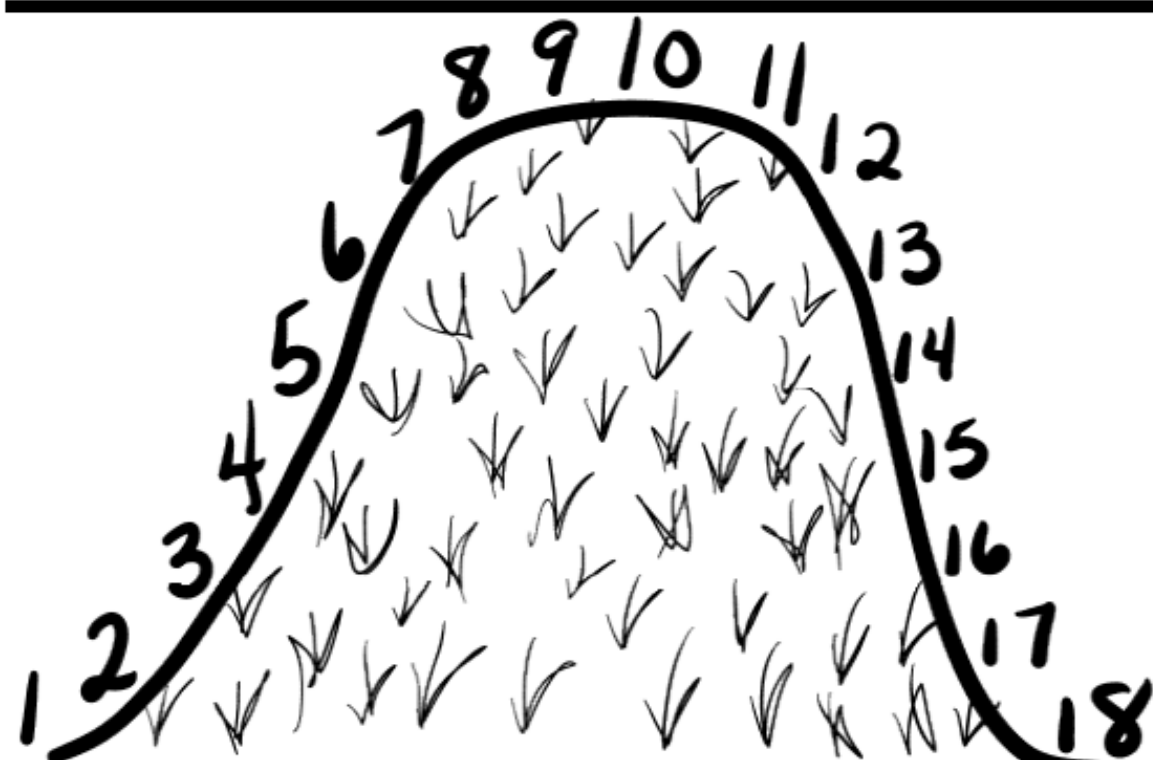
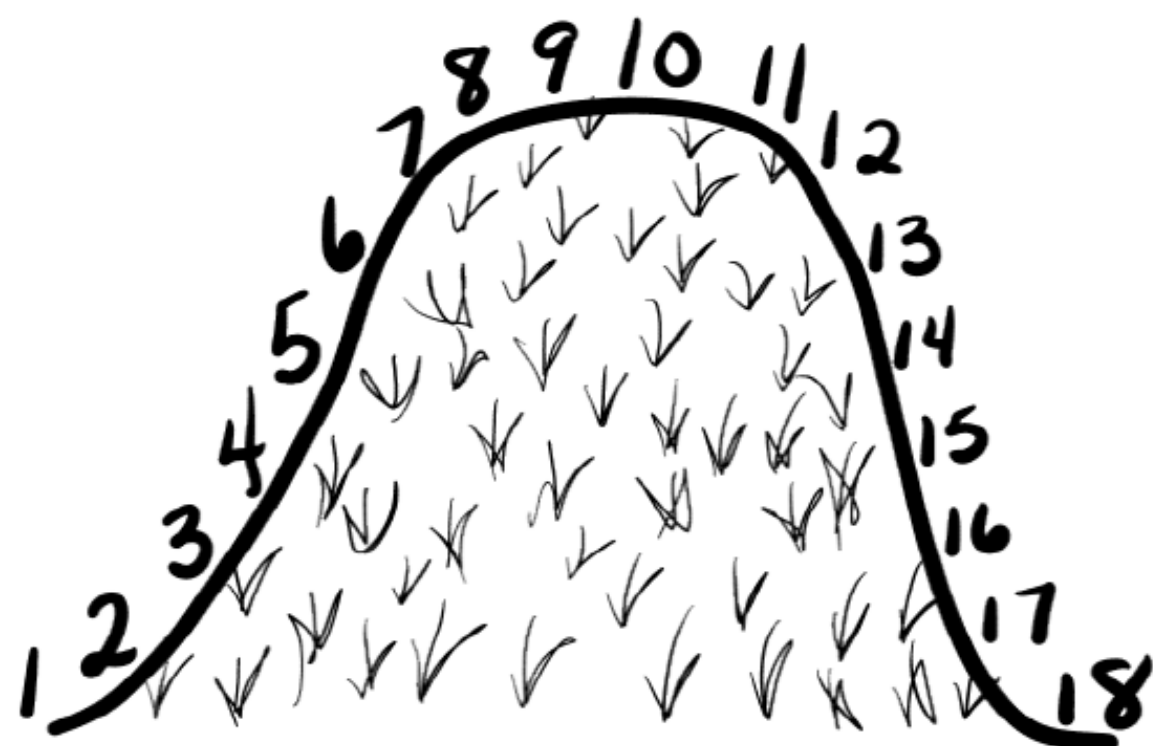
1. Group players into pairs; give each player an Over the Hill gamesheet and each pair three dice.
2. Players will take turns rolling all three dice. They are to add or subtract the amounts shown on the rolled dice and then cross off those sums or differences on their number line.
3. Players cross numbers off in numerical order starting at 1 and will cross off as many numbers as possible each turn. When they cannot create any more numbers from their dice, it is their partners turn.
4. Each player's turn starts at the end point from the previous turn. The first to reach 18 wins!

Example:

Player A rolls 3,4,6. She can cross off 1 ($4-3=1$), 2 ($6-4=2$) and 3 ($6-3=3$) from the worksheet. She cannot make a sum or difference of 4, so now it is her partner's turn to roll.

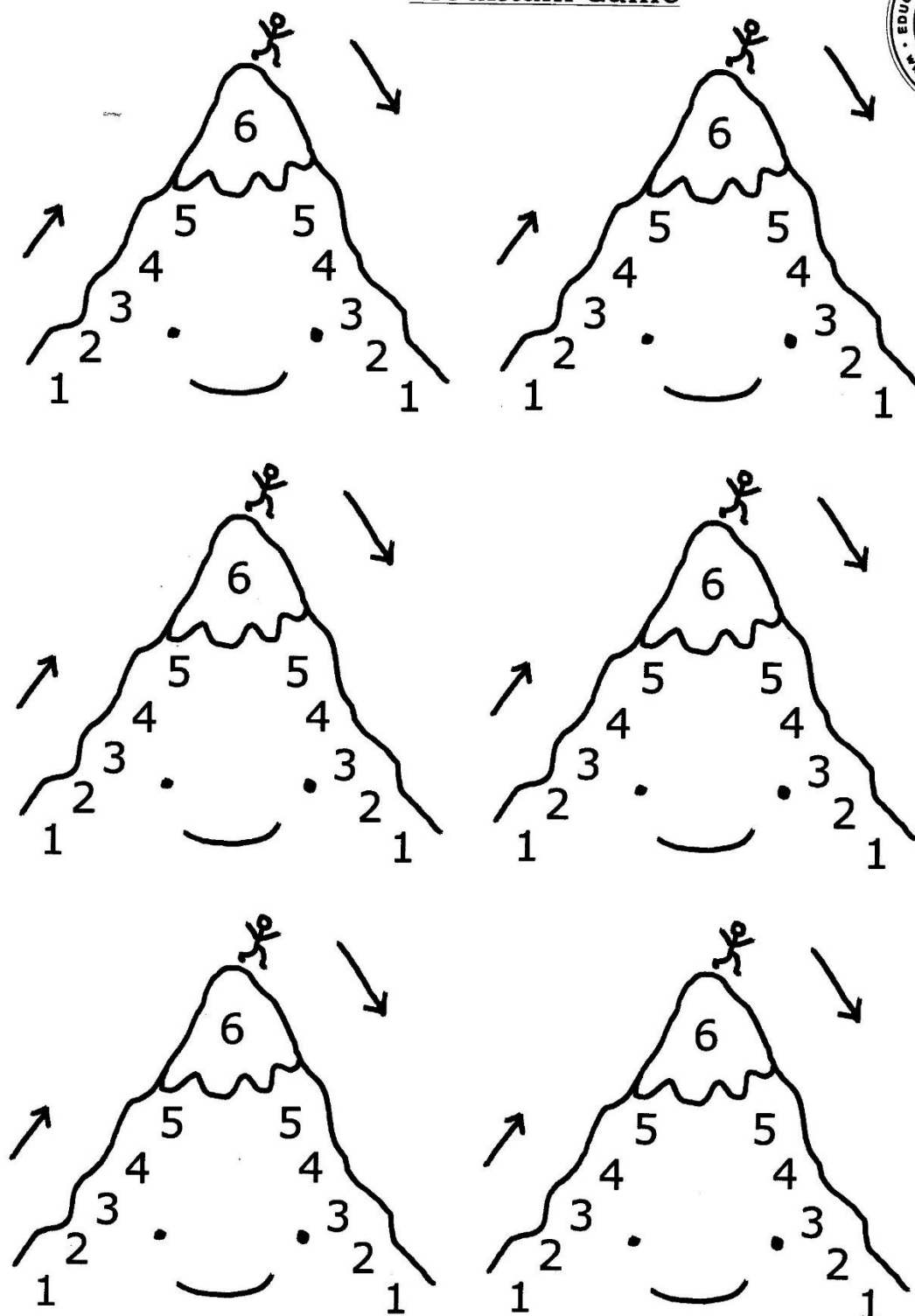


Over the Hill Gamesheet



Shorter variant

Mountain Game



The object of the game is to be the first to climb your mountain, in number order, and then descend the other side. You will need to roll a '1' to start, followed by a '2' etc. Circle the numbers as you go!

Roll-A-Doodle

Here is a silly drawing game that is a lot of fun to play. In this drawing game, you use dice to decide what parts of the drawing you will draw.

I have included a face drawing game and a landscape drawing game. This is a lot of fun and it helps children who might not be able to draw freely and creatively to get started.

Make sure parents have a go at this!



You can create your own. Blank board is included.

ROLL-A-DOODLE GAME

Let this game of chance predict your next drawing!



1. Either find a dice or fold the paper dice template (on the next page).

1st Turn Body						
2nd Turn Eyes						

1st Turn

2. Go to the turn that you are on ... so, for example, if you are on your first turn, then go to "1st Turn" on the first column.











































1st Turn Body						

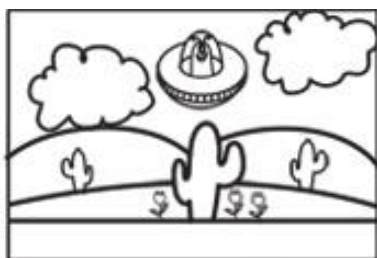
3. Roll the dice. Look for the number on the dice and match it to the dice pictured in the first row. If you are on the first turn, and you rolled a 3 on the dice, then you would draw a triangle shape (in the example above).

4. Continue on to "Turn 2" (and then the next turn, etc) until your drawing is done.



ROLL-A-FACE

						
1st Turn Face Shape						
2nd Turn Eyes						
3rd Turn Nose						
4th Turn Mouth						
5th Turn Ears						
6th Turn Hair						



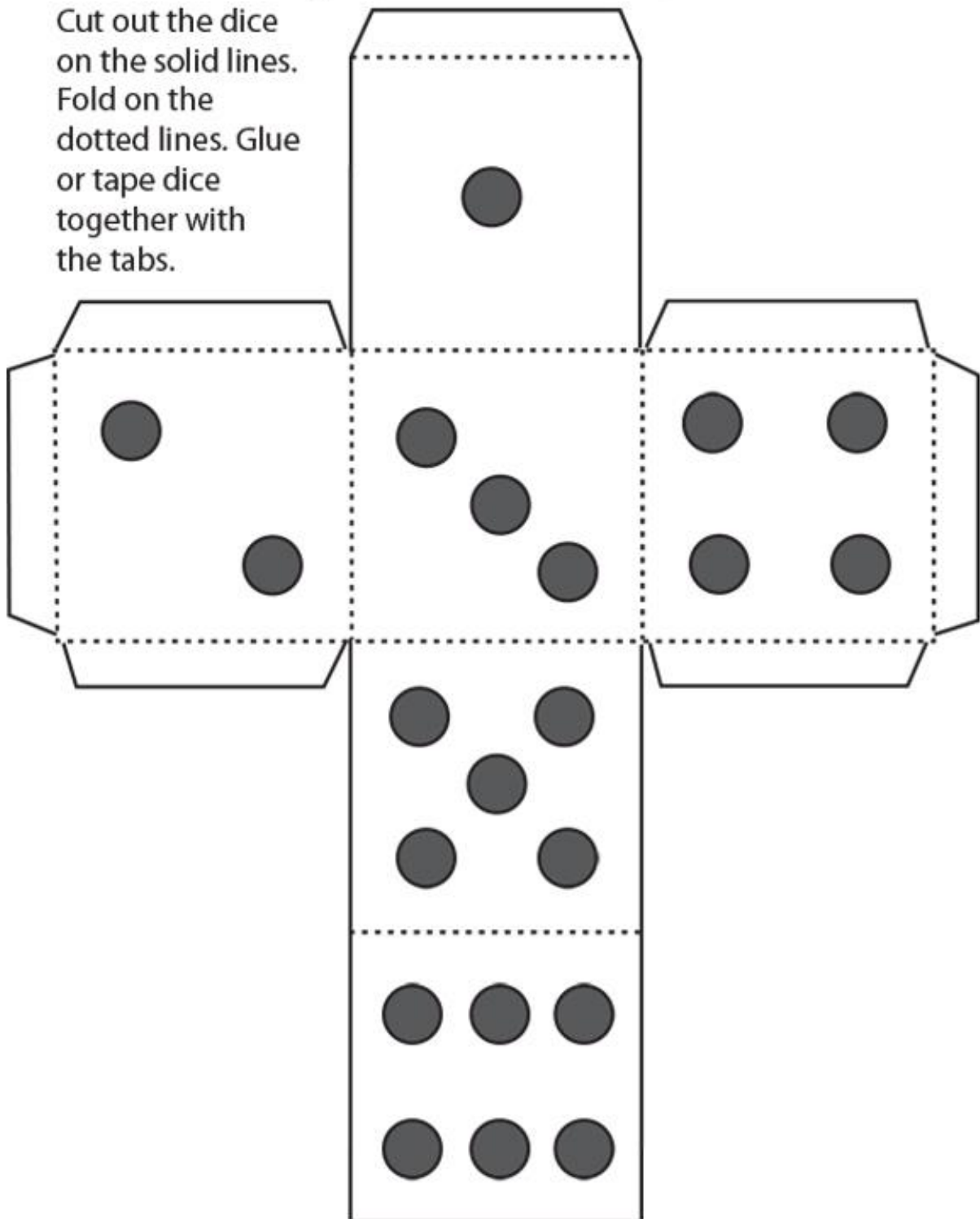
ROLL-A-LANDSCAPE

1st Turn Air/Sky						
2nd Turn Background						
3rd Turn Foreground						
4th Turn Trees						
5th Turn Flowers						
6th Turn Extras						







You won't need one of these because I have included dice in your pack...but you might like to make your own. I have included enough on card to make 2 plus a blank one.

FOLD-A-DICE

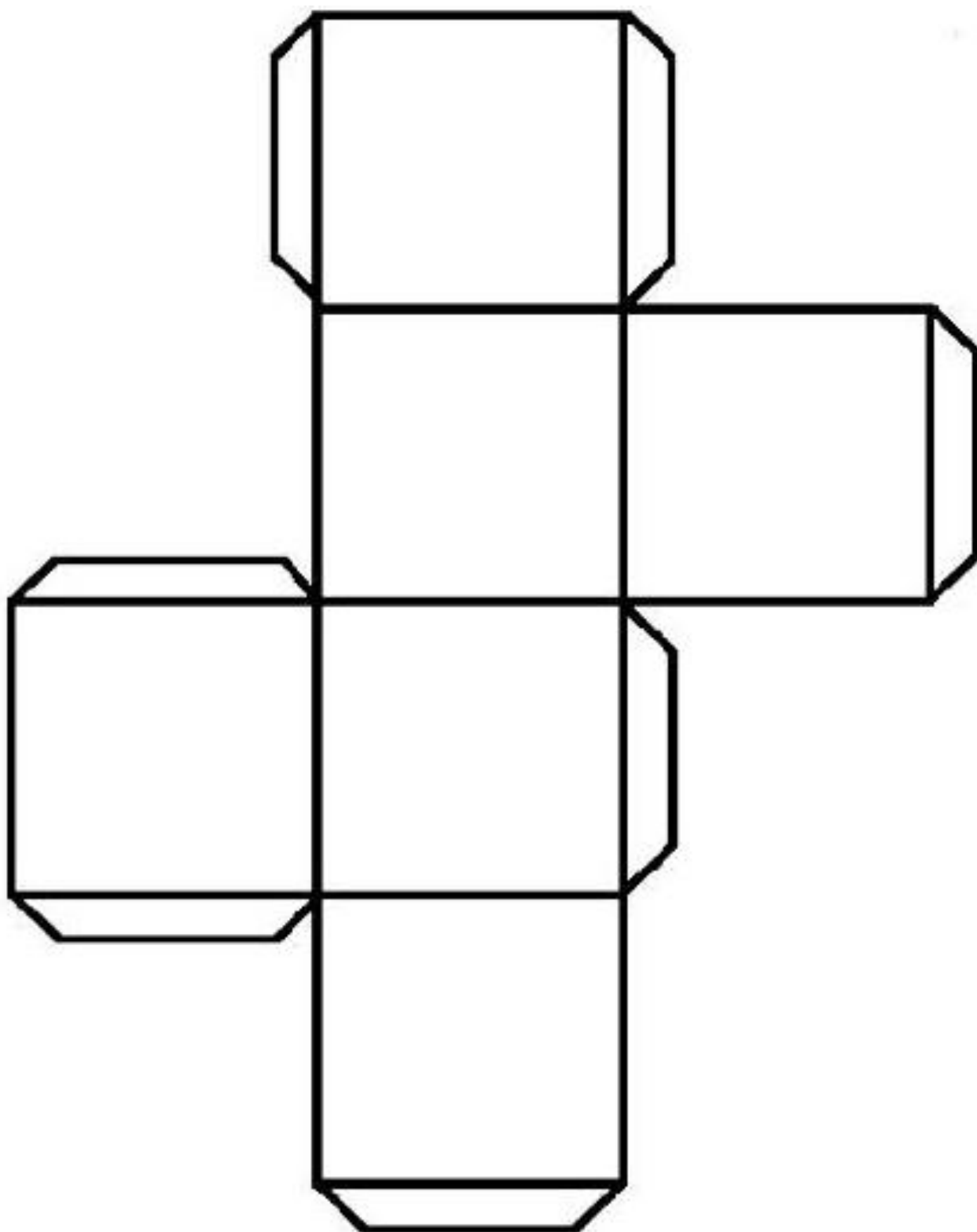
Cut out the dice on the solid lines. Fold on the dotted lines. Glue or tape dice together with the tabs.




Roll-a-Face

						
1 st turn						
2 nd turn						
3 rd turn						
4 th turn						
5 th turn						
6 th turn						

Make your own die



Roll and write

6th turn


Roll and Write a Story

Roll a Setting	Roll a character	Roll a Plot
Where: an ocean When: Wintertime	a crazy clown	looking for the Bermuda Triangle
Where: the mall When: midnight	an unhappy principal	going to a country concert
Where: School When: Dismissal	an angry surfer	stuck in the desert
Where: A sail boat When: Noon	a boat captain	finds a mysterious diary
Where: A Cave When: Summer	A talking gorilla	building a secret lair
Where: North Pole When: July 4 th	an NBA basketball player	running from big foot in the mountains

Mouse

Be the first to finish drawing your mouse.

Skills:

Number recognition

Pencil control

Equipment:

One die

Printable sheet

Pencil and paper

How to play

The aim of the game is to be the first to complete a Mouse. Each roll of the die enables a particular body part to be drawn as follows:

6 = body

5 = nose

4 = whiskers

3 = eyes

2 = ears

1 = tail

The body must be drawn before the other body parts are added to it, so players must therefore roll a 6 to start. Once the body has been drawn, the other parts of the mouse may be added in any order. If you roll a number which relates to a part you have already added, you miss your go and pass the die on.

Mouse!

Roll 6 - draw body
Roll 5 - add nose
Roll 4 - add whiskers
Roll 3 - add eyes
Roll 2 - add ears
Roll 1 - add tail



Mouse!



Roll 6 - draw body
Roll 5 - add nose
Roll 4 - add whiskers
Roll 3 - add eyes
Roll 2 - add ears
Roll 1 - add tail

Mouse!



Roll 6 - draw body
Roll 5 - add nose
Roll 4 - add whiskers
Roll 3 - add eyes
Roll 2 - add ears
Roll 1 - add tail

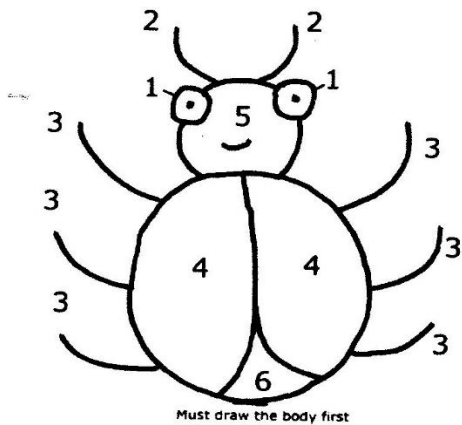
Mouse!



Roll 6 - draw body
Roll 5 - add nose
Roll 4 - add whiskers
Roll 3 - add eyes
Roll 2 - add ears
Roll 1 - add tail

Variant on **Mouse**

Beetle Game



Roll a die and draw the body parts!

- 6 - Body (you need a body first to add any parts to!)
- 5 - Head (you need a head first to add head parts)
- 4 - Wings
- 3 - Leg
- 2 - Antenna
- 1 - Eye

Math Game Monday

Nasty Game

2nd to 4th Grade
Small Group

Equipment

1 ten-sided dice (0 to 9)

Workbook or whiteboard, whiteboard marker and eraser

I recommend playing this game as a whole class for a few days with the teacher vs 3 students, prior to playing in small groups. When deciding where to put your numbers have a conversation with the children so they know your thinking.

How to Play

1. Children work in groups of 4 and draw up a grid as shown on the next page (with names omitted).
2. Use highest rolled number goes first to decide on the order and write names on the grid.
3. On the example on the next page, James rolls first, he rolls a 5 and can decide where he wants to put the number, in his own squares or in someone else's. The aim of the game is to get the largest number. By putting it in Samantha's "thousands column" he is stopping her from getting a large number. The idea being if you roll a high number, you keep it for yourself, a low number you give to someone else (that's what makes it nasty!).
4. The game continues with each player rolling the dice in turn and deciding where the number will go, in one of their boxes, or in another group members. See *the example on the next page*.
5. Once the game board is full, each player then gets one last roll. With that roll, they are allowed to change either one of their own numbers, or the number of another player. Eg. James was winning before the last roll, then Samantha was able to change her thousands number to a 9 and in the end she won.

Variations

- For younger year levels, play this game in partners using a six-sided dice and only with 2 or 3 digit numbers.
- Increase the number of squares for older children so they are working in 5 digit numbers.
- For older year levels, add a decimal point to add complexity.



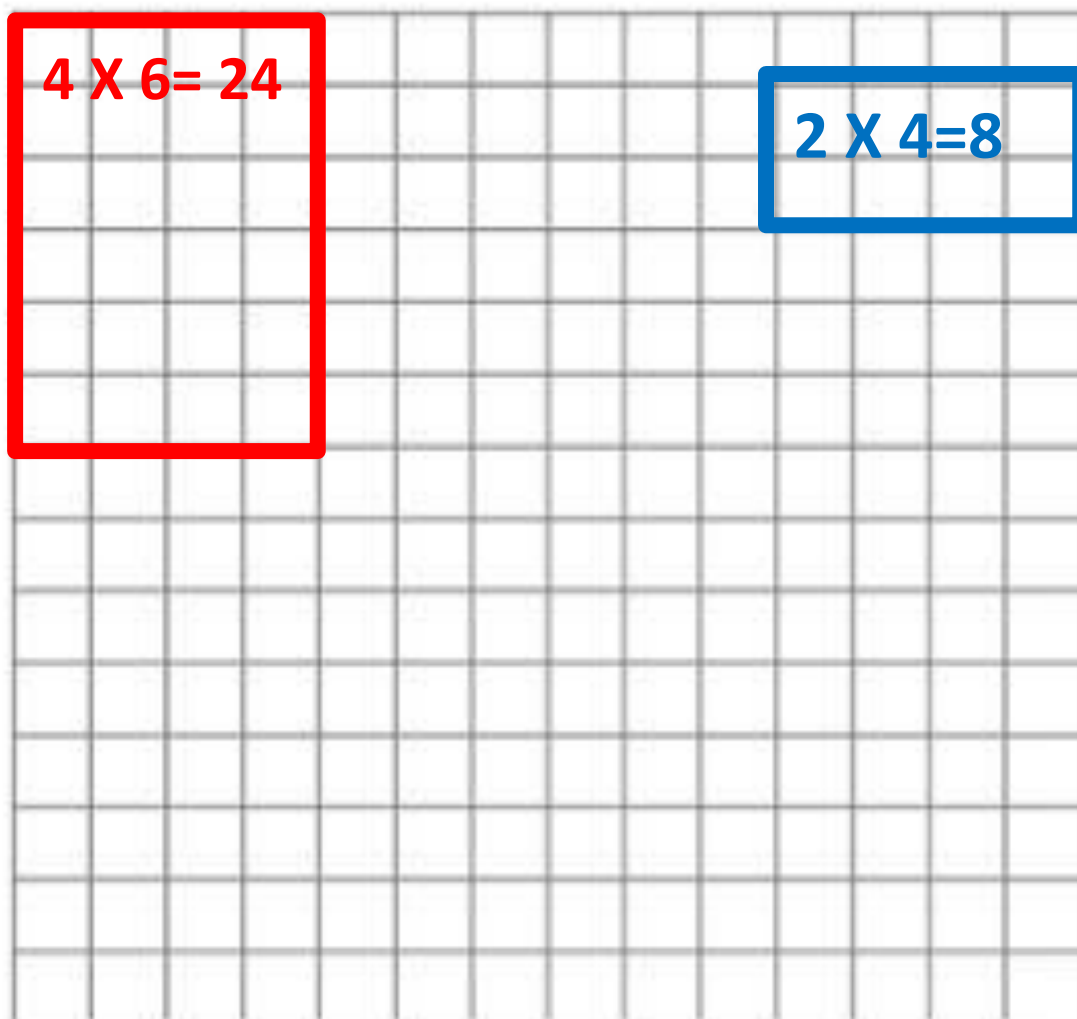
Block Out (or Array capture)

Players 2

Materials: 2 dice, graph paper, coloured pencil or crayon for each player

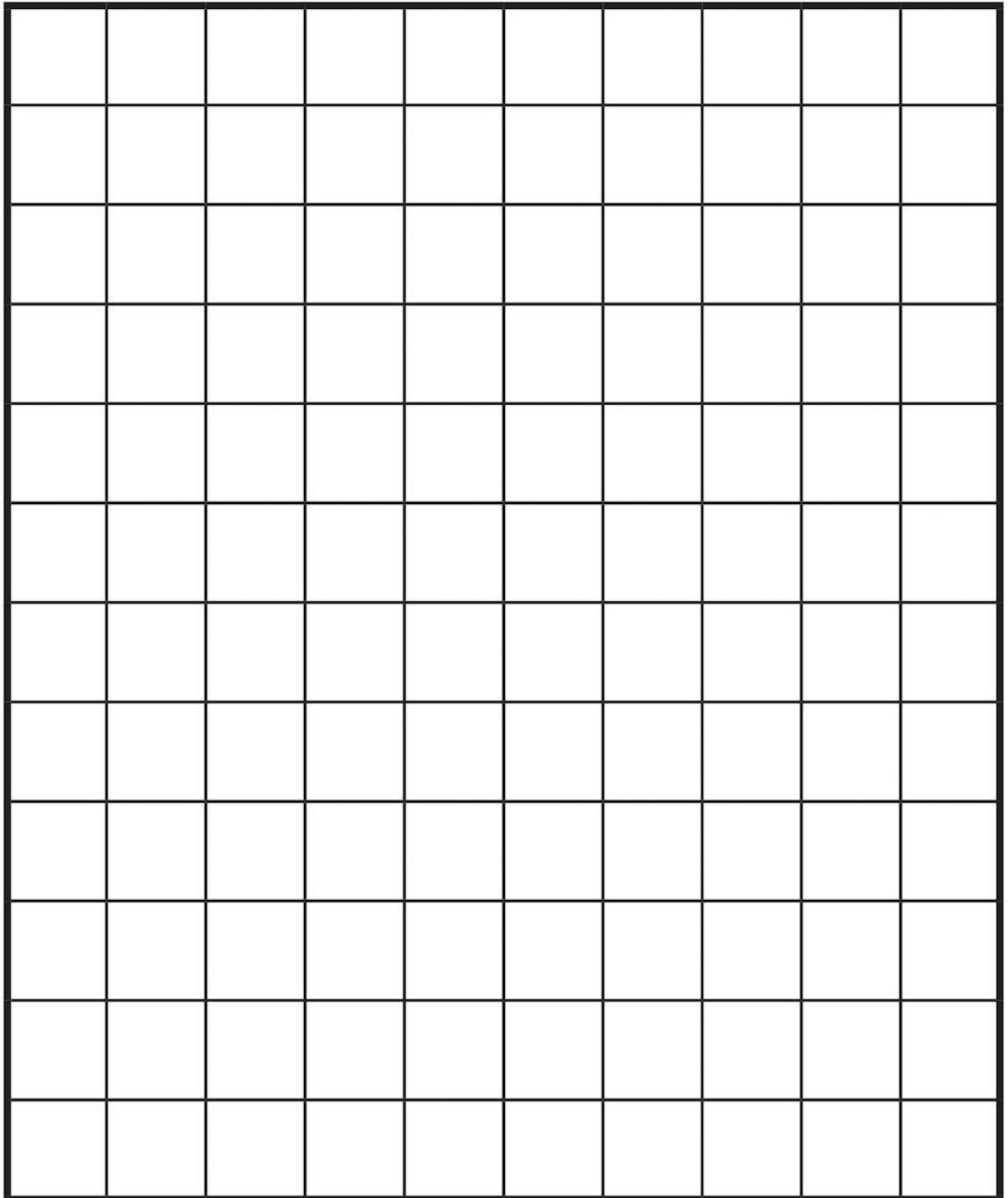
How to Play: Roll 2 dice and draw a rectangle using the numbers rolled as the length and width on graph paper. Continue until there is no room to draw any more rectangles. Add the areas of all your rectangles and the highest score wins.

In the example below one player (red) rolled a 4 and a 6 and blue rolled a 2 and a 4.



Block Out

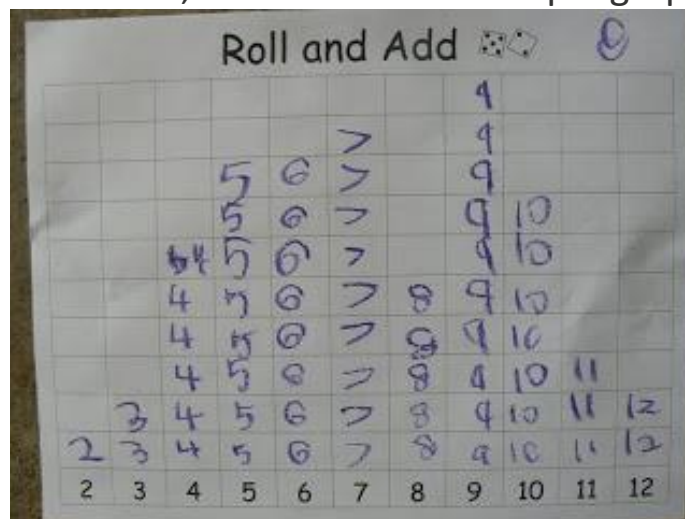
(Use a ruler and 2 different colours)



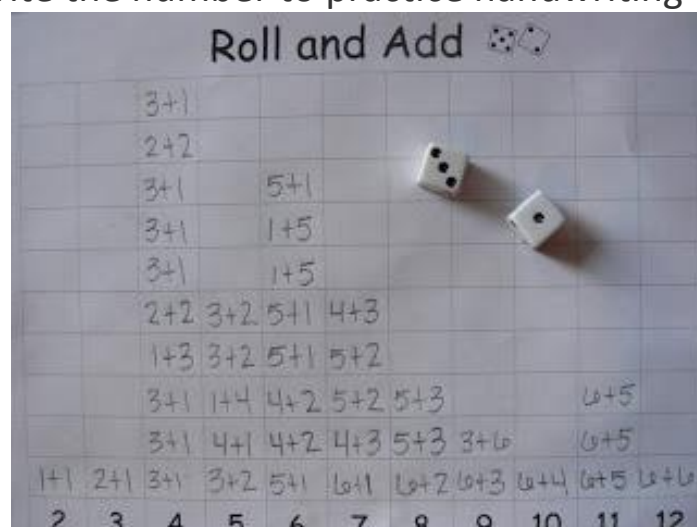
Roll and Add



Roll the dice, add and make a simple graph...



Write the number to practice handwriting or...



Roll a Dice in Dice cube and add the two numbers. Then graph that number on a line chart, or add it to a bar graph.

Two dice are shown. The top die shows a 5 (one dot in the center, four dots at the corners). The bottom die shows a 3 (three dots in a diagonal line).

Laminated board included.

Dice games have a list of benefits that just aren't possible with other pastimes, such as gaming. As well as the fun and bonding time between parents and children that can be achieved with a simple pair of dice, you can also expect the following benefits.

- Improved social interaction.
- Greater problem-solving skills.
- Gain techniques that promote visualization and innovation.
- Great stress relief.
- Improved communication skills.
- An increased sense of achievement.

Die or Dice?

Dice was once the plural of die, "but in modern standard English dice is both the singular and the plural: 'throw the dice' could mean a reference to either one or more than one dice."



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