

MOVING ON UP!



Introduction

This pack has been designed to support your child in preparing to move up to their new year group in September. The activities included have been selected to encourage children to practise and develop a range of mathematical skills in fun and motivating ways.

We suggest that you spread the activities over the summer holidays, by completing a variety of activities each week, but you may choose to use them in a different way to suit the needs of your family.

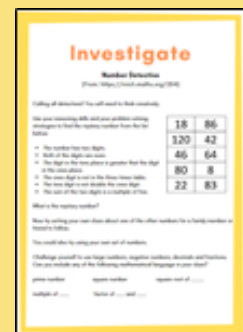
The following activity types are included in the pack:



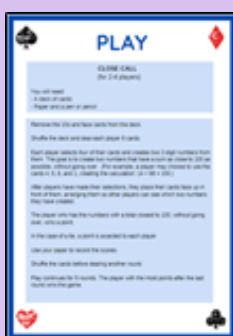
These activities support children in engaging with real-life maths, linking different areas of maths, and developing their use of mathematical vocabulary.



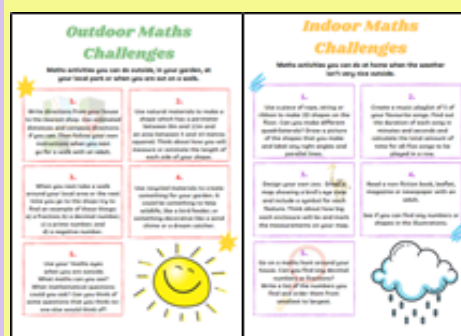
These activities support children in developing mathematical fluency and confidence.



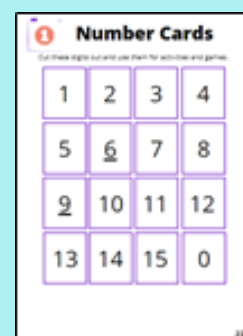
These activities support children in developing problem solving and reasoning skills and applying their learning to new situations.



These activities support children in developing mathematical fluency and strategy. If you do not have a pack of cards, use the resource sheets at the end of this pack.



These activities support children in understanding the usefulness of maths and allow them to apply their skills to real-life situations. Your child could choose one to complete each day.



At the end of the pack, there are several resource pages which can be used for some of the activities.

If you would like more activities and ideas to try this summer, visit:
<https://www.cambslearntogether.co.uk/home-learning/summer>

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Be a Maths Detective

- Can you think of any mathematical questions which you could ask and answer using the picture?
- Try to include questions about as many different areas of maths as you can.
- If you are stuck, have a look at the prompts below.



Try to include questions about as many of these areas of maths as you can:

Addition and Subtraction
Multiplication and Division
Fractions, Decimals & Percentages
Position and Direction
Measures
Shape (including angles)

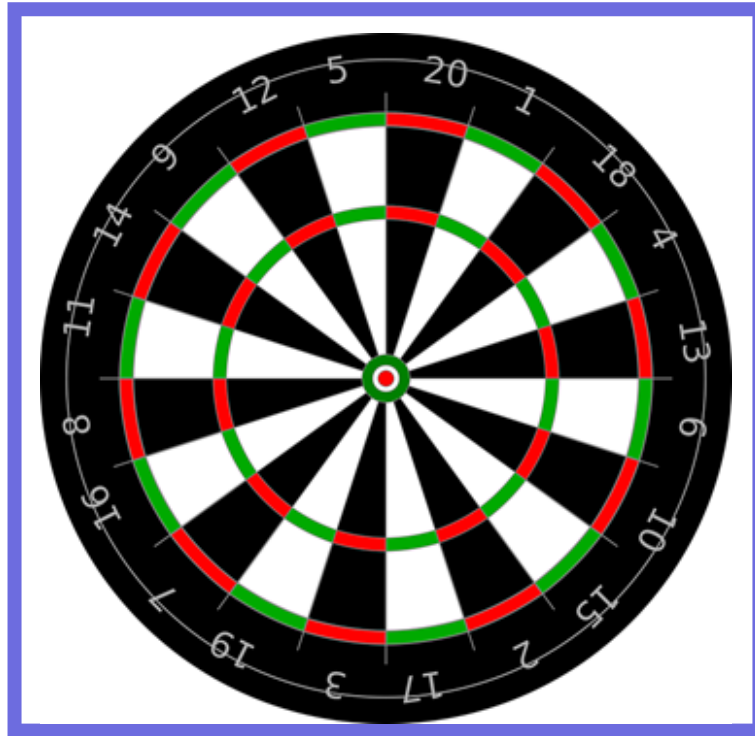
Here are some question frames which might help you:

- How many are there altogether?
- How many more than are there?
- What fraction of the windows have?
- If this is a $\frac{1}{5}$ of the floors in the block,?
- What percentage of the?
- How many?
- If people live in this building,?

My mathematical questions:

Be a Maths Detective

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Shape (including angles)

Here are some question frames which might help you:

- How many are there altogether?
- How many more than are there?
- How many different can you see?
- If you scored, and on your go?
- What fraction of the are?
- If each players go takes minutes,?
- I scored altogether in three throws. What are the different ways I could have done this?
- How many different ways are there to score ?

My mathematical questions:

Be a Maths Detective

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Try to include questions about as many of these areas of maths as you can:

Addition and Subtraction
Multiplication and Division
Fractions, Decimals & Percentages
Position and Direction
Money
Measures
Shape

Here are some question frames which might help you:

How many ?

How many more than are there?

If each ice-cream costs £.....,?

What fraction of the?

If this is $\frac{1}{9}$ of the ice-cream flavours in a shop,?

If % of the ice-creams are sold,?

My mathematical questions:

Be a Maths Detective

- Can you think of any mathematical questions which you could ask and answer using the picture?
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Try to include questions about as many of these areas of maths as you can:

Addition and Subtraction
Multiplication and Division
Fractions, Decimals & Percentages
Position and Direction
Money
Measures
Shape

Here are some question frames which might help you:

- How many ?
- How many more than are there?
- If each costs £.....,?
- What fraction of the?
- If there are rows of behind the front row,?
- If one bottle of contains ml of liquid,?

My mathematical questions:

PRACTISE

Reach the Target!

(For 1 or more players)

In this game, you will practise your calculation and problem solving skills.

You will need the 1 - 12 number cards from page 22 (remove the zero) and a pen/pencil and paper.

Shuffle the cards and lay them out face down.

Ask someone in your family to give you a three digit target number, e.g.: 136.

Turn over six of the cards. Now try using some or all of the six cards to reach your target number. You can add, subtract, multiply and divide and you can use any of your six numbers more than once.

Example: Imagine you have turned over these numbers:

9 10 6 4 12 1

You could reach your target number of 136 in a number of ways, e.g.:

$$\begin{array}{lll} \mathbf{12} \times \mathbf{12} = 144 & 144 - \mathbf{9} = 135 & 135 + \mathbf{1} = 136 \\ \text{Or: } \mathbf{10} \times \mathbf{12} = 120 & \mathbf{4} \times \mathbf{4} = 16 & 120 + 16 = 136 \end{array}$$

Can you think of any other ways?

If you are playing with somebody else, you can both try to reach each target number. Each correct solution is worth 10 points.

Keep a record of your points.

PRACTISE

Multiply Me!

(For 1 or more players)

In this game, you will practise your recall of multiplication facts.

You will need the 0 - 12 number cards from page 22.

Choose a multiplication table to focus on (e.g.: the 9 times table).

Shuffle the 0 – 12 number cards and lay them out face down in a pile.

Take the card on the top of the pile and turn it over.

Multiply the number on your card by your chosen number (e.g.: if you are focusing on the 9 times table and you turn over 12, you need to multiply 9 by 12).

If you are playing on your own, keep turning over cards until you have used them all. You could time how long it takes you to get through them all and then try to beat your time if you like.

If you are playing with others, you could take turns turning over cards.

When you have mastered all the multiplication tables from 2 - 12, challenge yourself, e.g.:

- practise multiplying by 13, 14, 15 or 20.
- try turning over 2 cards to make a decimal number (e.g.: if you turn over 4 & 5, you could make 4.5 or 5.4 and multiply them by your chosen number).

PRACTISE



Add or Subtract!

(For 1 or more players)

In this game, you will practise addition, subtraction and making strategy decisions.

You will need the number spinner from page 23, a pen/pencil and paper.

Before each turn, decide whether you are going to add or subtract.

Use the spinner to make three three-digit numbers (e.g. – if you spin 4, 7, 9, 3, 8, 9, you make the numbers 479 and 389).

Look at your numbers carefully. Can you use a mental method to add/subtract them or do you need to use a written method?

Add your three numbers or subtract one from the total of the other two.

Repeat with other numbers.

If there is more than one person playing, take turns and check your partner's answers.

Next, try 4, 5 and 6 digit numbers and/or decimal numbers (e.g.: if you spin 4,7,9,3,8,9, you could make the numbers 4.79 and 3.89).

PRACTISE

Divide Me!

(For 1 or more players)

In this game, you will practise performing division calculations and making strategy decisions.

You will need the spinner (from page 23) or the 0 - 9 number cards (from page 22), a pen/pencil and paper.

Use the spinner or 0 - 9 cards to make a four digit number (e.g. 2608) and a one-digit number (e.g. 4).

Look at you numbers carefully. Can you divide the larger number by the smaller number with a mental method or do you need to use a written method?

Use your chosen method to calculate the answer.

Repeat.

If there is more than one player, take turns and check your partner's answers.

You could also try using three or five-digit numbers and dividing them by two-digit numbers.

Investigate

Number Detective

(from: <https://nrich.maths.org/204>)

Calling all detectives! You will need to think creatively.

Use your reasoning skills and your problem solving strategies to find the mystery number from the list below:

- The number has two digits.
- Both of the digits are even.
- The digit in the tens place is greater than the digit in the ones place.
- The ones digit is not in the three times table.
- The tens digit is not double the ones digit.
- The sum of the two digits is a multiple of five.

18	86
120	42
46	64
80	8
22	83

What is the mystery number?

Now try writing your own clues about one of the other numbers for a family member or friend to follow.

You could also try using your own set of numbers.

Challenge yourself to use large numbers, negative numbers, decimals and fractions. Can you include any of the following mathematical language in your clues?

prime number

square number

square root of

multiple of

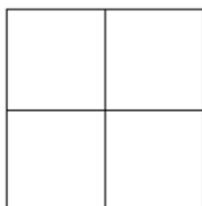
factor of and

Investigate

Reach 100

(From: <https://nrich.maths.org/1130>)

Here is a grid of four 'boxes':



You must choose four different digits from 1-9 and put one in each box.

For example:

5	2
1	9

This gives four two-digit numbers:

- 52 (reading along the 1st row)
- 19 (reading along the 2nd row)
- 51 (reading down the left hand column)
- 29 (reading down the right hand column)

The total of these four numbers is 151.

Try a few examples of your own, using the digits 1 - 9 like the example above. Is there a quick way to tell if the total is going to be even or odd?

Your challenge is to find four different digits that give four two-digit numbers which add to a total of 100.

How many ways can you find of doing it?

Investigate

Mystery Matrix

(From: <https://nrich.maths.org/1070>)

Have a look at this table square or matrix:

x	2	3	4	5
2	4	6	8	10
6	12	18	24	30
7	14	21	28	35
9	18	27	36	45

Can you see how it has been constructed?

Why are some numbers in black and some in red?

Can you explain why the red 6 is in that particular square?

Why is there a 45 in the bottom right-hand corner?

You will notice that the numbers 2 to 9 are used to generate the matrix and only one of these numbers is used twice (the 2).

Can you fill in the matrix (table square) below?

The numbers **2 to 12** were used to generate it, **with just one number used twice.**

x					
	32			40	
				49	
		22			
	15				27
		24			
				42	

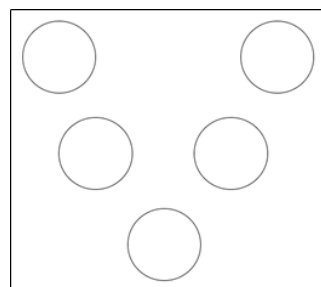
Can you make a similar matrix for a family member or friend to solve?

Investigate

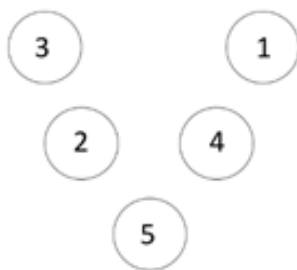
Magic Vs

(from: <https://nrich.maths.org/6274>)

Place each of the numbers 1 to 5 in the V shape so that the two arms of the V have the same total.



Here is an example:



This works because both arms have a total of 10 ($3 + 2 + 5 = 10$ and $1 + 4 + 5 = 10$).

Can you find some other examples?

You can use the Magic V sheets (on pages 28 & 29) if you would like to and you may like to cut out and use number cards (from page 22) to move around before you record your solutions.

How many different possibilities are there?

What do you notice about all the solutions you find?

Can you explain what you see?

Can you convince someone that you have all the solutions?

What happens if we use the numbers from 2 to 6? From 12 to 16? From 37 to 41? From 103 to 107?

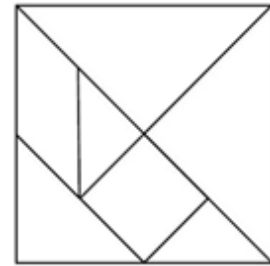
What can you discover about a V that has arms made up of 4 digits, using the numbers 1 - 7?

Investigate

Tangrams

(from: <https://nrich.maths.org/6715>)

A tangram is an ancient Chinese puzzle where you make pictures using these mathematical shapes:



Make a set of tangram pieces by carefully cutting out the larger shapes on page 26.

Can you make each of these pictures using your seven pieces? They must not overlap and you must use all seven pieces each time.



Now try these:



Now try making some tangram pictures of your own.



PLAY



CLOSE CALL

(for 2 to 4 players)

You will need:

- A deck of cards (or the playing cards from pages 28 - 31)
- Paper and a pen or pencil

Use only the Ace - 9 cards for this game. The Ace (A) card is worth 1.

Shuffle the deck and deal each player 6 cards.

Each player selects four of their cards and creates two 2-digit numbers from them. The goal is to create two numbers that have a sum (total) as close to 100 as possible, without going over. (For example, a player may choose to use the cards 3, 6, 7, and 2, creating the calculation: $32 + 67 = 99$.)

After players have made their selections, they place their cards face up in front of them, arranging them so other players can see which two numbers they have created.

The player who has the numbers with a total closest to 100, without going over, wins a point.

In the case of a tie, a point is awarded to each player.

Use your paper to record the scores.

Shuffle the cards before dealing another round.

Play continues for 5 rounds. The player with the most points after the last round wins the game.





PLAY



CLOSEST TO ... (for 2 - 4 players)

Use only cards Ace - 9 for this game. The Ace (A) card is worth 1.

Select the number of digits you would like to use for this game, e.g. 2 digit numbers, 3 digit numbers, 4 or 5 digit numbers.

Each player is dealt that number of cards.

The aim of the game is to make a number as close as possible to:

50 (if you are making 2 digit numbers)

500 (for 3 digit numbers)

5000 (for 4 digit numbers)

50,000 (for 5 digit numbers)

The players arrange their cards to make a number as close as possible to 50 (or 500, 5000, or 50,000).

The player with the closest number wins the round and scores one point.

Repeat with new cards.

The winner is the player who scores the most points.





PLAY



YES, NO, YOU'VE GOT IT (for 2 or more players or teams)

Use only the Ace - 10 cards for this game. The Ace (A) card is worth 1.

One player draws (takes) a card from the deck at random and keeps it secret.

Other players take turns asking mathematical questions to find out which card was drawn.

The person with the card responds to each question with one of these choices: "Yes," "No," or "You've got it!"

For example, if a player chooses a 4 of diamonds, questions might go like this:

Is the card black? (No)

Is the value of the card a prime number? (No)

Is the card greater than 5? (No)

Is the card a four? (Yes)

Is the card a four of hearts? (No)

Is the card a four of diamonds? (You've got it!)

The player who correctly guesses a card keeps that card and takes the next turn.

Play until one player has 10 cards.





PLAY



MAKE 25 WITH 5 (for 2 to 4 players)

Use a pack of playing cards or the cards on pages 28 - 31. The picture (K,Q and J) cards are worth 10.

Each player is dealt 5 cards to hold in their hand.

The remaining cards are placed face down in a pile in the centre.

The top card is turned over and placed beside the pile (this becomes the 'discard' pile).

The aim of each round is to create a hand of 5 cards that have a total of 25.

Players take it in turns to pick up the top card of the pile or the top card of the discard pile.

Each player finishes their turn by discarding a card onto the top of the discard pile.

The first player to have a set of 5 cards that total 25, calls out, "Twenty-five!" and is the winner of that round.

Keep score of how many rounds each player wins.

The winner is the player who wins the most rounds.



Outdoor Maths Challenges

Maths activities you can do outside, in your garden, at your local park or when you are out on a walk.



1.

Write directions from your home to the nearest shop. Use estimated distances and compass directions if you can. Then follow your own instructions when you next go for a walk with an adult.

2.

Use natural materials to make a shape which has a perimeter between 8m and 12m and an area between 5 and 10 metres squared. Think about how you will measure or estimate the length of each side of your shape.

3.

When you next take a walk around your local area or the next time you go to the shops, try to find an example of these things:
a) a fraction; b) a decimal number;
c) a prime number; and
d) a negative number.

4.

Use recycled materials to create something for your garden. It could be something to help wildlife, like a bird feeder; or something decorative like a wind chime.

Which maths skills did you use?

5.

Use your maths detective skills when you are outside.
What maths can you see?
What mathematical questions could you ask? Can you think of some questions that you think no-one else would think of?

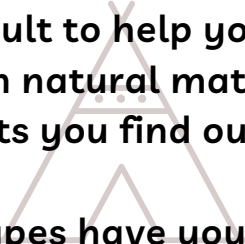




6.

Ask an adult to help you to build a den with natural materials and objects you find outside.

What shapes have you created?



7.

Make a boat or raft using natural materials, including sticks and leaves.

How many small pebbles can your boat or raft hold before it sinks?

8.

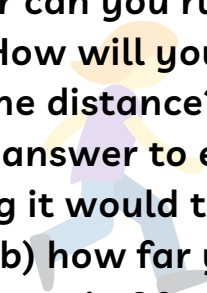
Can you use natural materials to make a bridge that is strong enough for a ball, or toy car to roll across?

Which shapes did you use in your design to make the bridge strong?

9.

How far can you run in 30 seconds? How will you measure the distance?

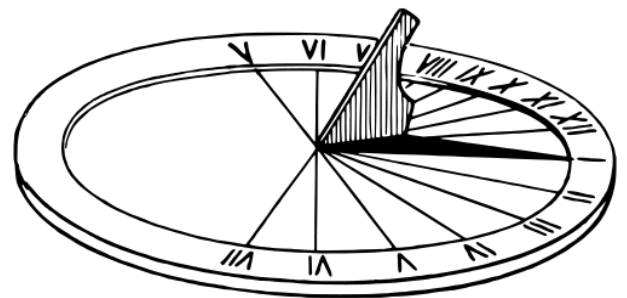
Use your answer to estimate:
a) how long it would take you to run 50m; b) how far you think you can run in 90 seconds.



10.

Make a sundial with a paper plate and a pencil or a stick.

On a sunny day, mark the position of the shadow every hour throughout the day.



Always take care when learning outside. Some of these activities are easier and safer to do with an adult to help you. Share your learning together and have fun!

Indoor Maths Challenges

Maths activities you can do at home when the weather isn't very nice outside.

1.

Use a piece of rope, string or ribbon to make 2D shapes on the floor. Can you make different quadrilaterals? Draw a picture of the shapes that you make and label any right angles and parallel lines.

2.

Create a music playlist of 5 of your favourite songs. Find out the duration of each song in minutes and seconds and calculate the total amount of time for all five songs to be played in a row.

3.

Design your own zoo. Draw a map showing a bird's eye view and include a symbol for each feature. Think about how big each enclosure will be and mark the measurements on your map.



4.

Read a non-fiction book, leaflet, magazine or newspaper with an adult. See if you can find any numbers, measurements, statistics or shapes in the text or illustrations.

5.

Go on a maths hunt around your home. Can you find any decimal numbers or fractions? Write a list of the numbers you find and order them from smallest to largest.



6.

Help an adult to write the food shopping list for the meals you are going to eat this week. Estimate the cost of each item on your list and calculate the total cost in pounds and pence.

7.

Keep a weather diary. Design a key and use symbols to record the weather each morning and afternoon.

Find the temperature from the TV or the internet.

8.

Ask an adult to help you to cook or bake something tasty. You can measure the ingredients carefully using weighing scales. Ask the adult to help you with any chopping and when using the oven.

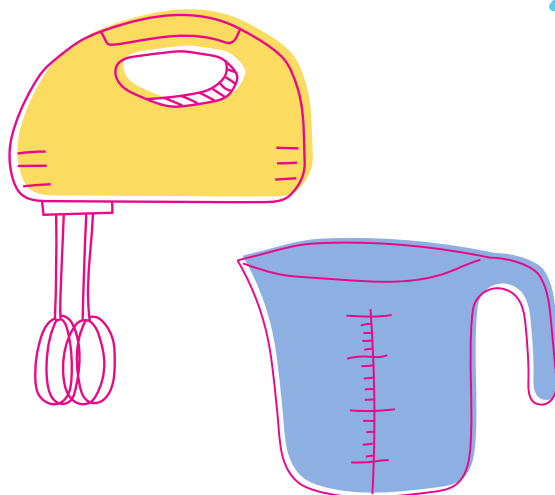
9.

Using one piece of A4 paper, make the longest possible paper chain. When it is finished, lay it out and measure it with a tape measure or ruler.

If you did it again, would you change your method? How?

10.

Make up a secret code with a key (e.g. A = 1, B = 2 etc. or draw a symbol for each letter). Write a message for a family member or to send to a friend. Give them a copy of the key so they can read your message and reply!



Some of these activities are easier and safer to do with an adult to help you.

Share your learning together and have fun!



Number Cards

Cut these cards out and use them for activities and games.

1	2	3	4
5	6	7	8
9	10	11	12
0	.		



Number Spinner

There are two ways this spinner can be used:

1. Carefully cut around the spinner. If you have a piece of card or cardboard, stick the spinner onto it to make it sturdier.

Carefully push a pencil through the middle of the spinner, pointed end first.

Hold the spinner by the pencil in the middle. Spin it.

Use the number it rests on when it stops for your activity or game.

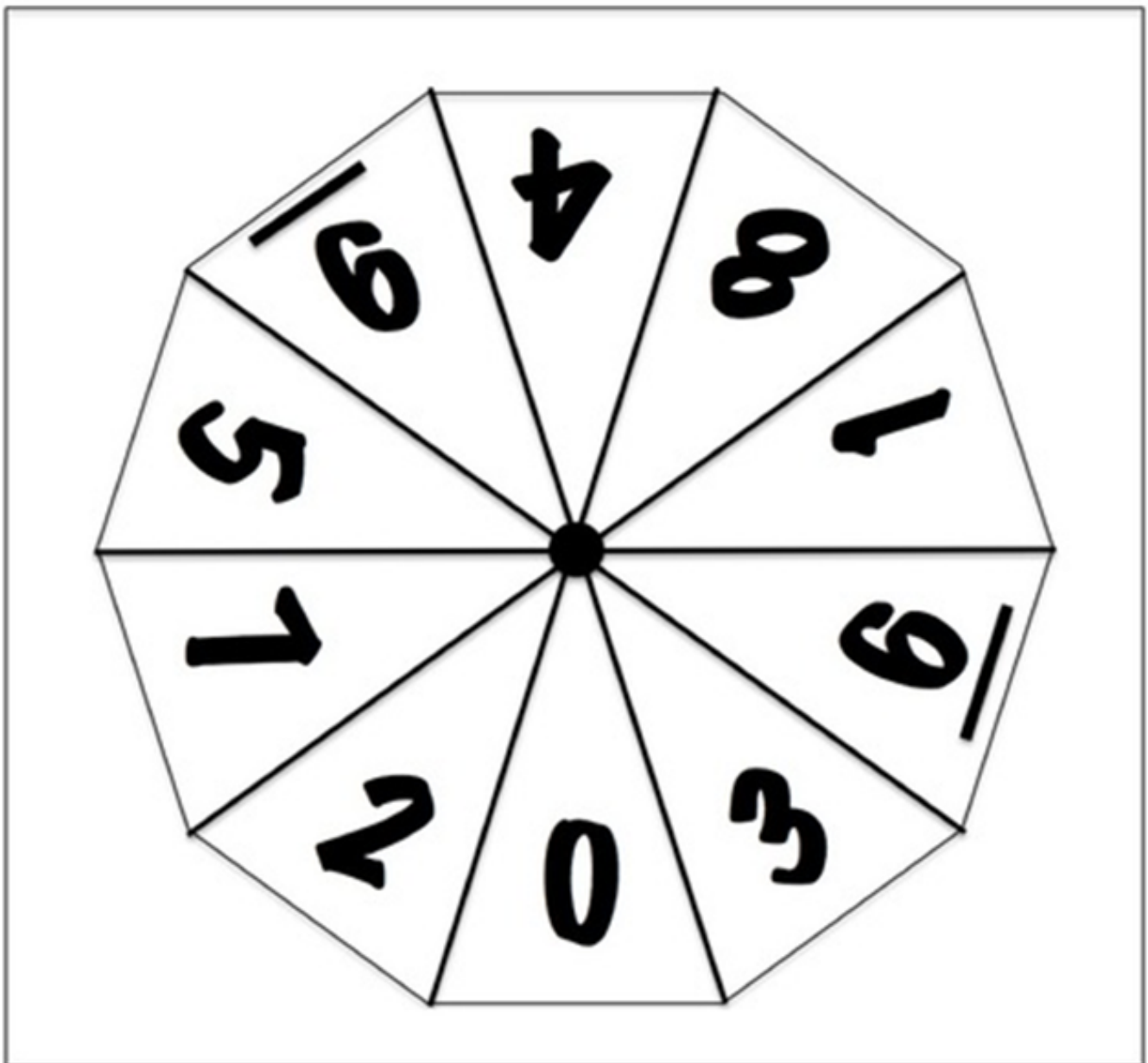
2. Place a paperclip in the centre of the spinner.

Hold your pencil with the point inside the paper clip, at the centre of the spinner.

Flick the paper clip to spin around the pencil.

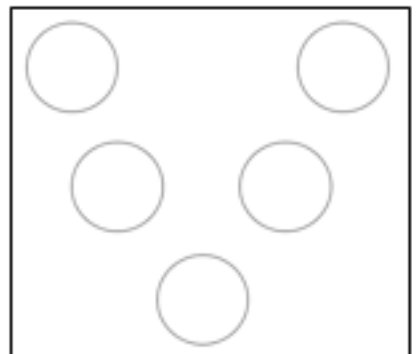
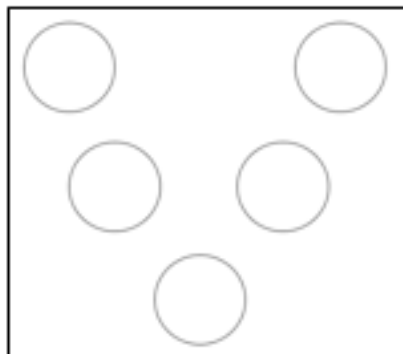
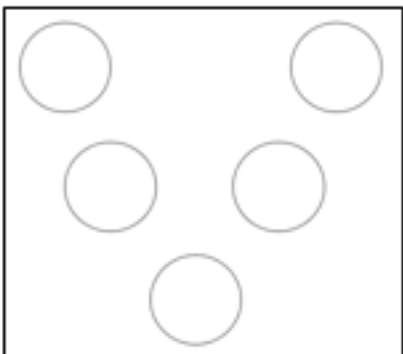
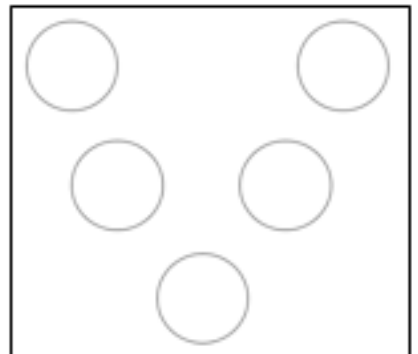
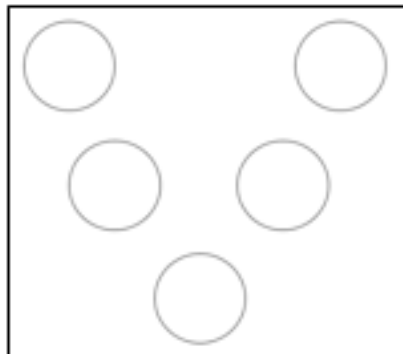
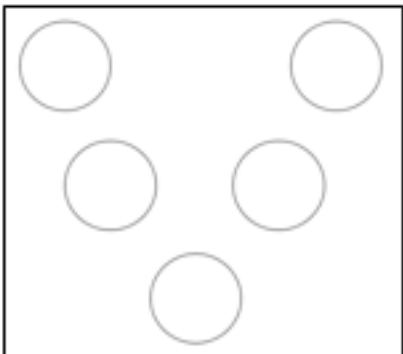
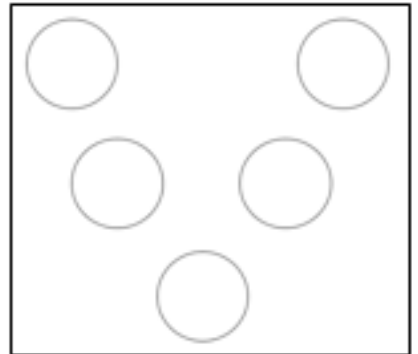
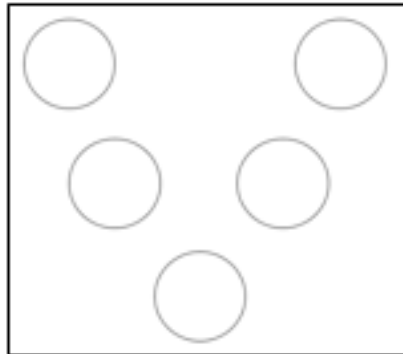
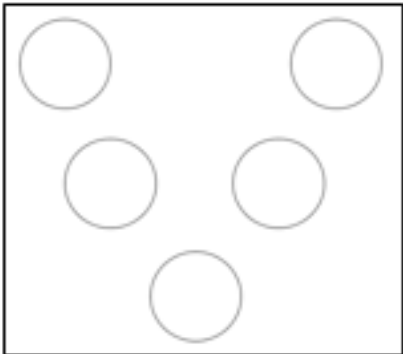
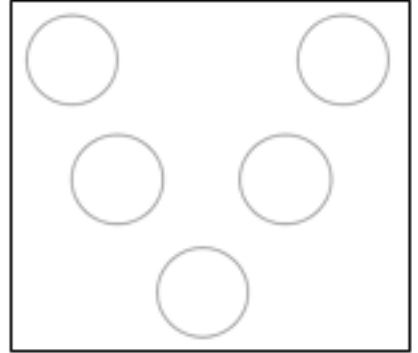
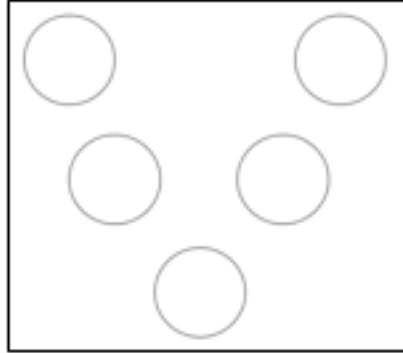
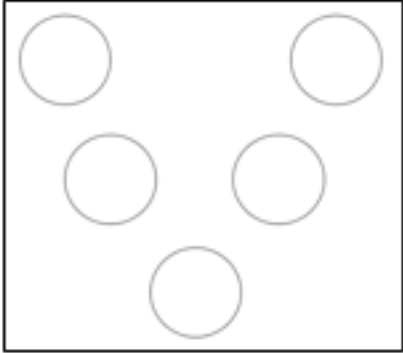
Wait for the paper clip to come to rest and see which section it is in.

If the paper clip rests on a line, spin again.



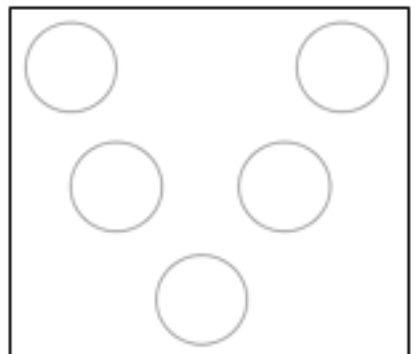
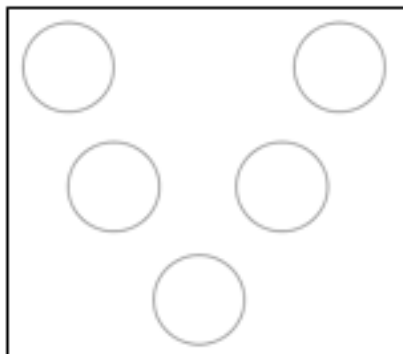
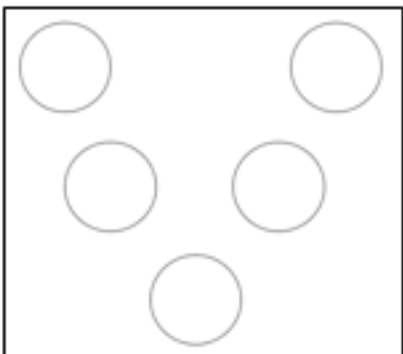
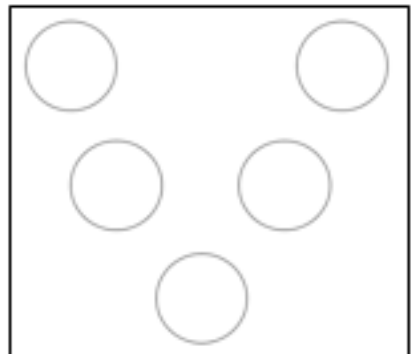
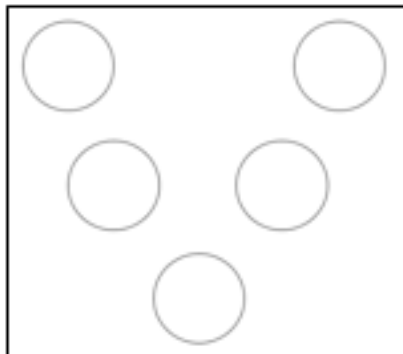
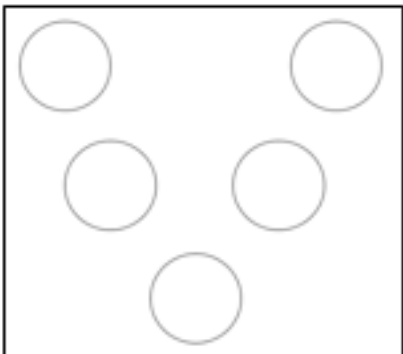
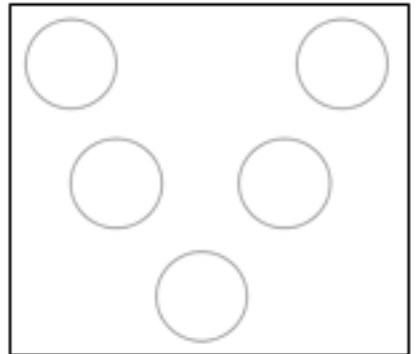
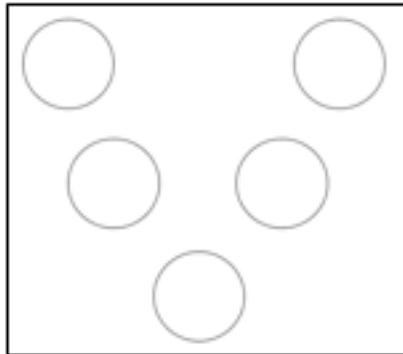
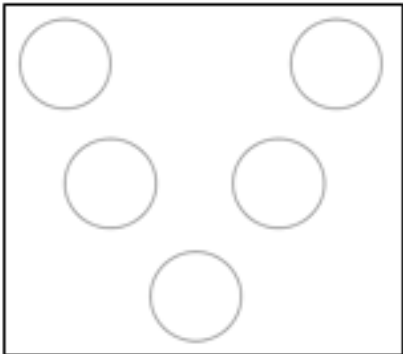
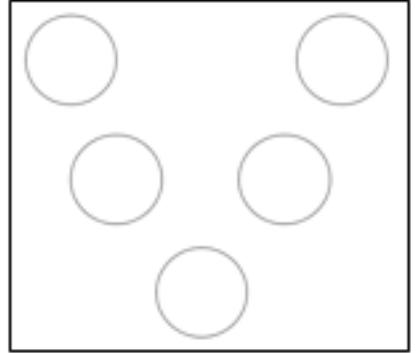
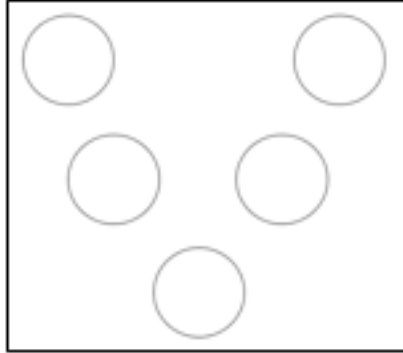
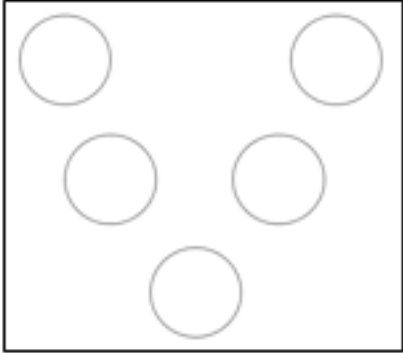


Magic Vs 1





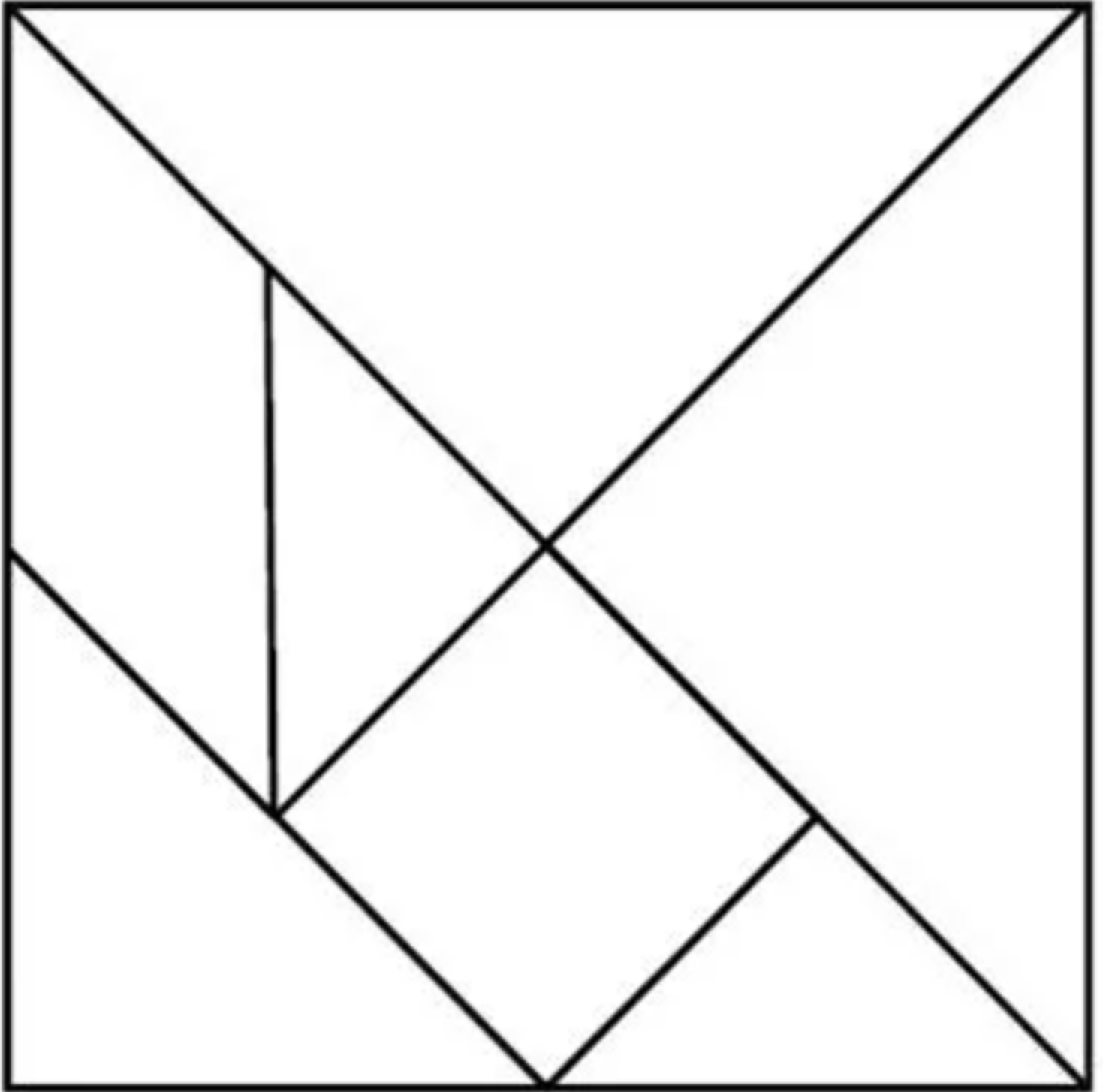
Magic Vs 2





Tangrams

Carefully cut out the seven shapes below.





Multiplication Tables Square

Use these tables squares for checking or practising multiplication facts.

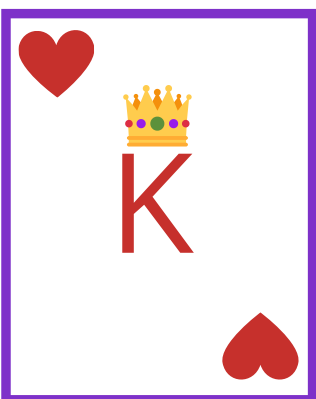
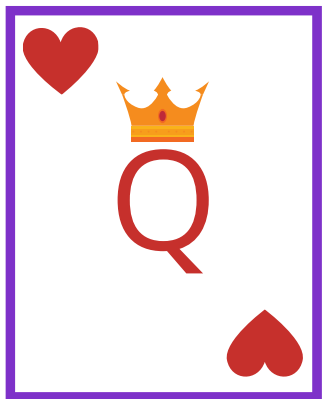
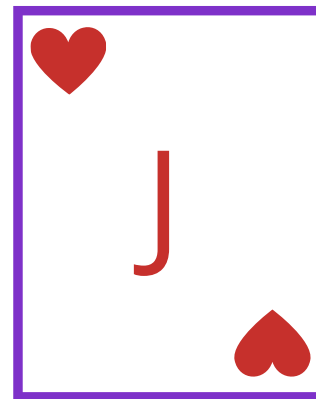
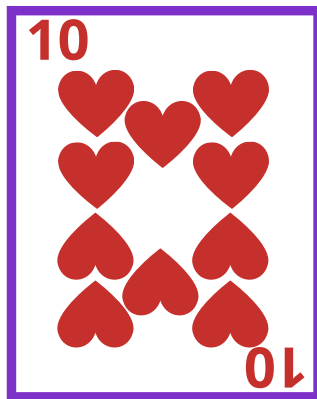
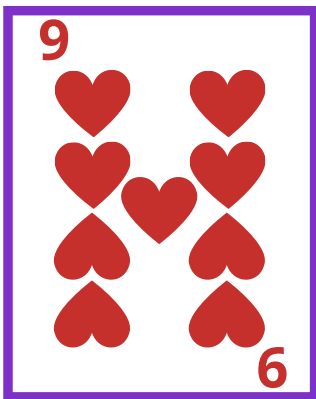
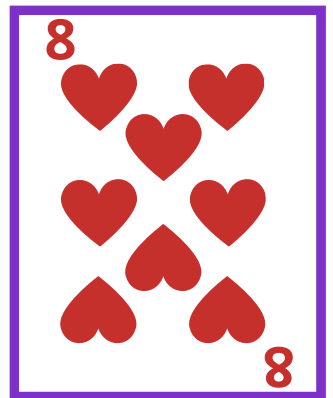
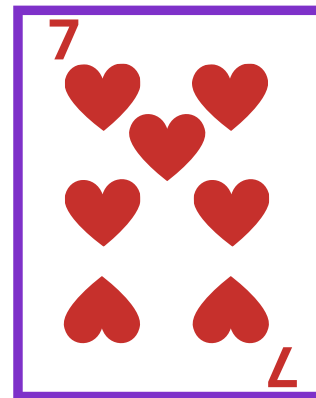
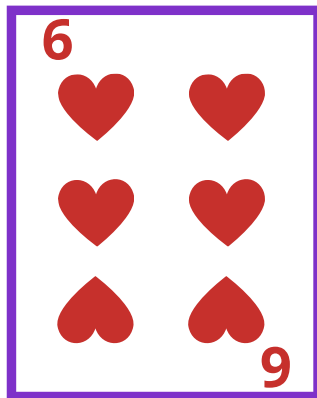
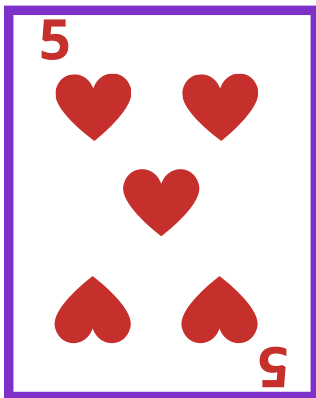
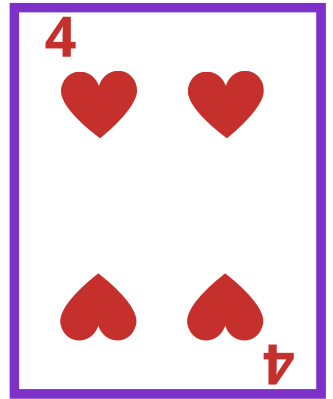
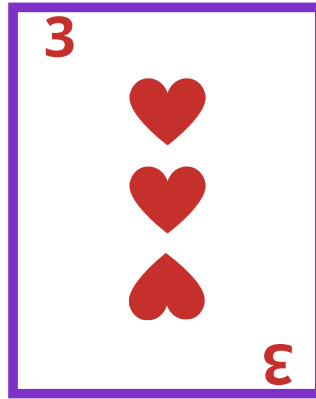
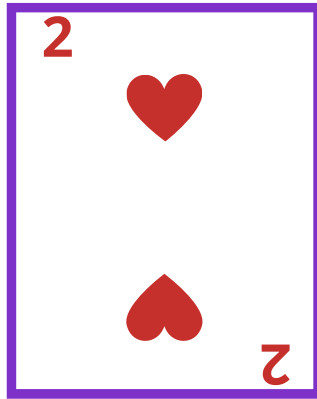
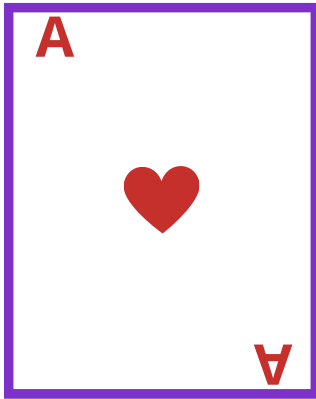
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3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

X	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
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9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144



Playing Cards 1

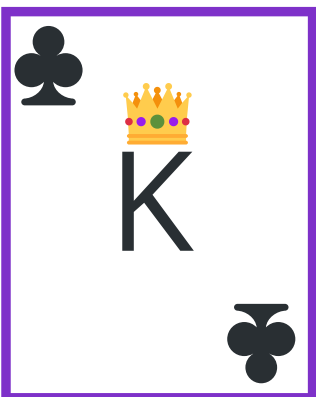
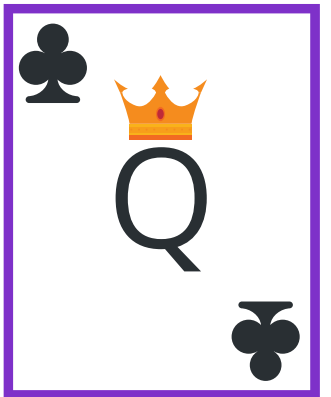
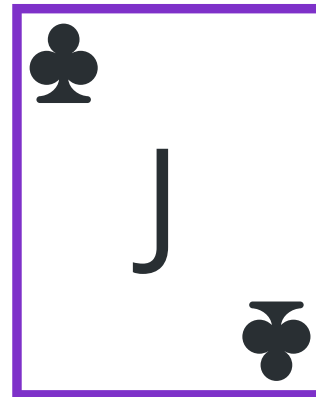
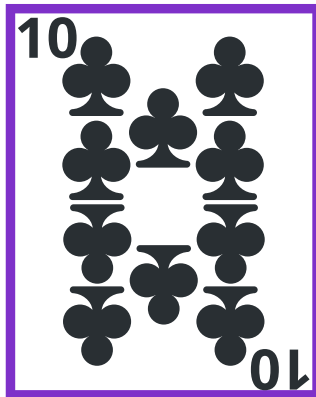
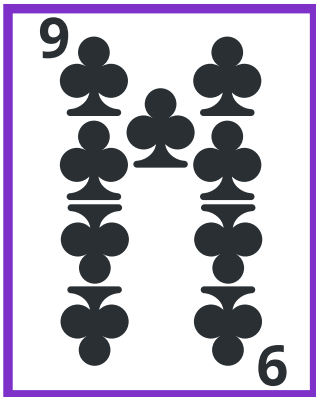
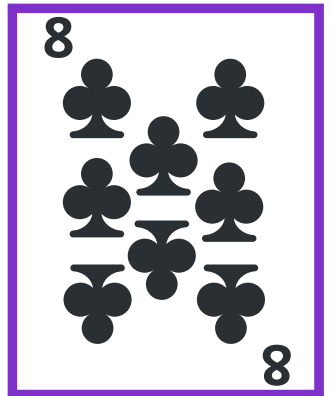
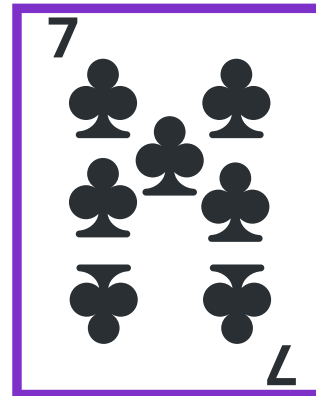
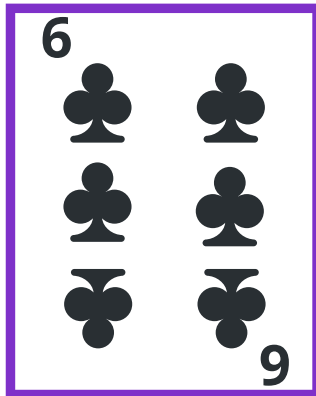
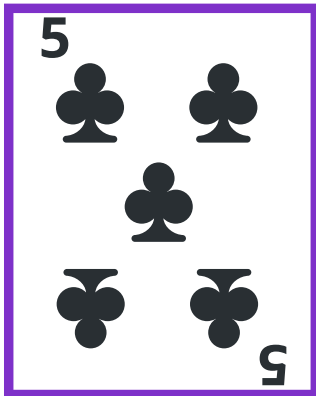
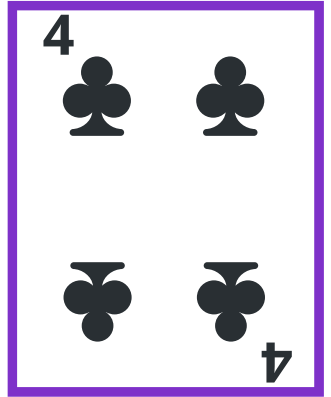
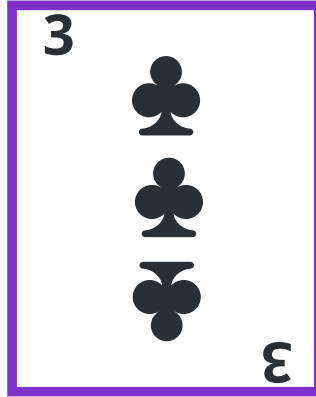
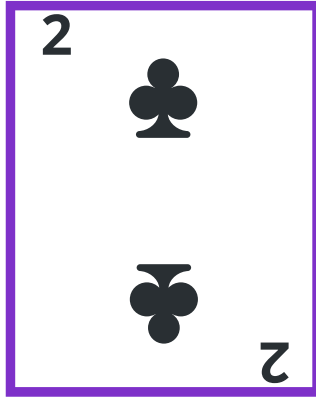
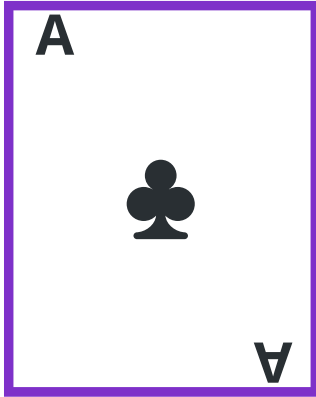
Cut these cards out and use them for activities and games.





Playing Cards 2

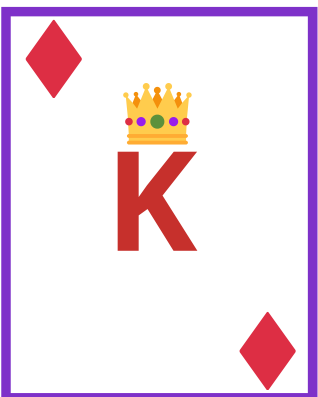
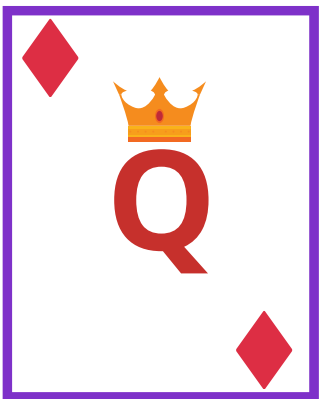
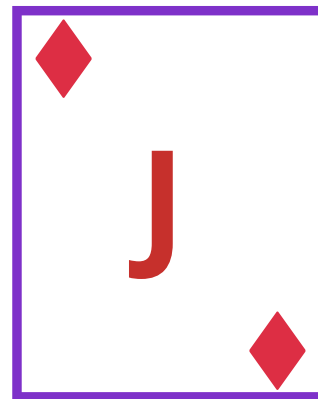
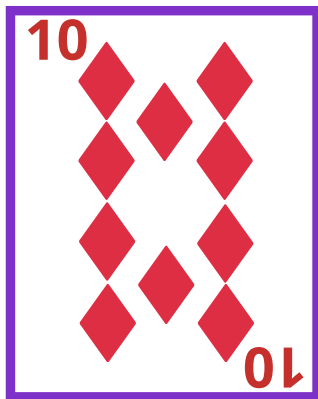
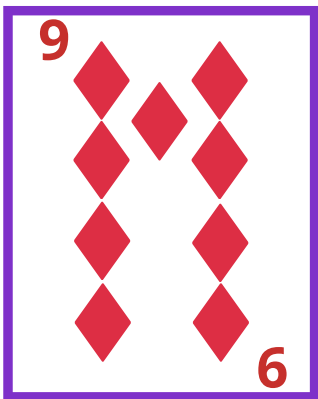
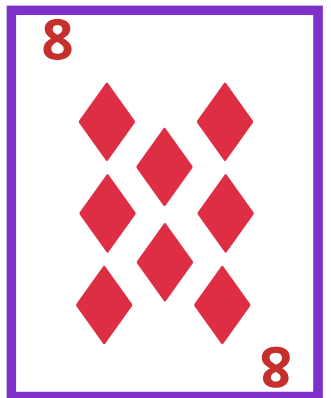
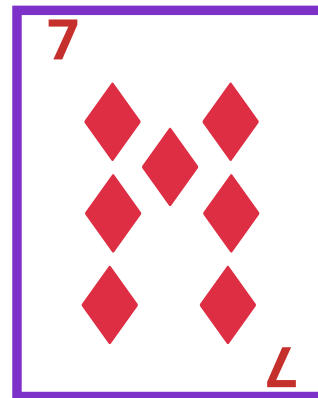
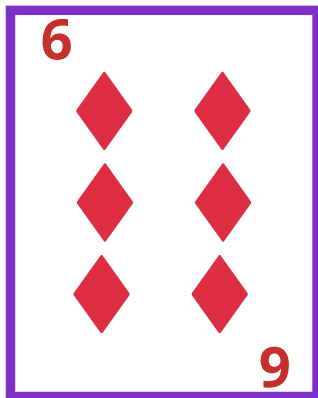
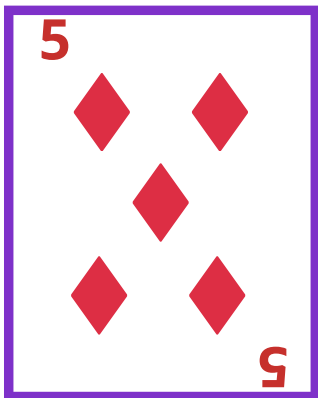
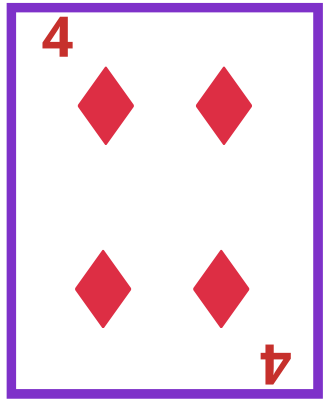
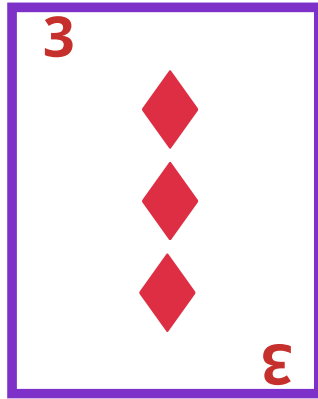
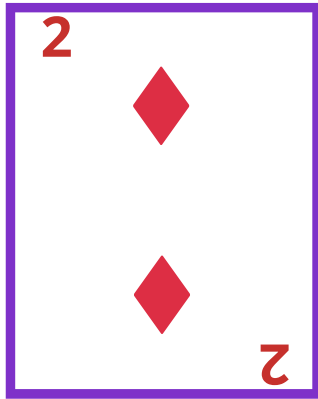
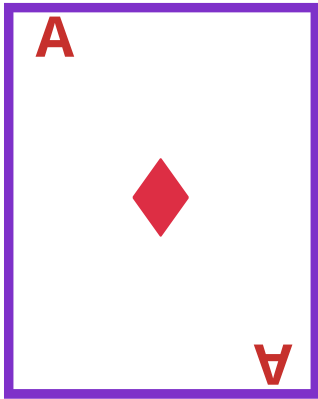
Cut these cards out and use them for activities and games.





Playing Cards 3

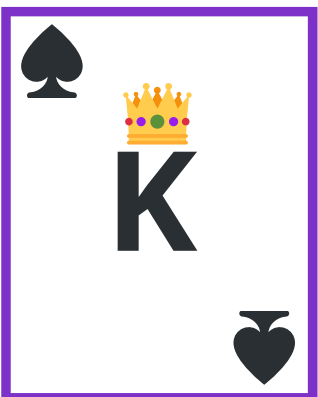
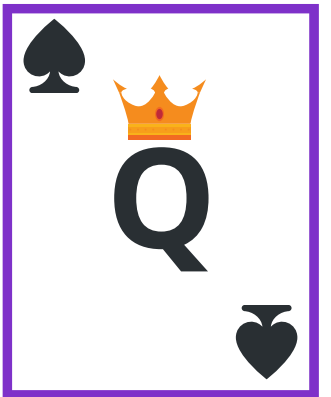
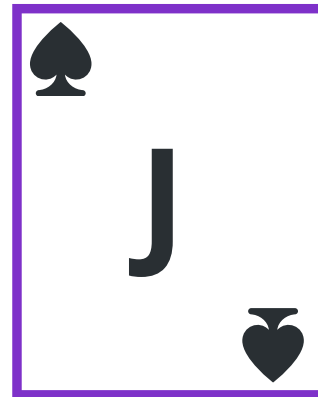
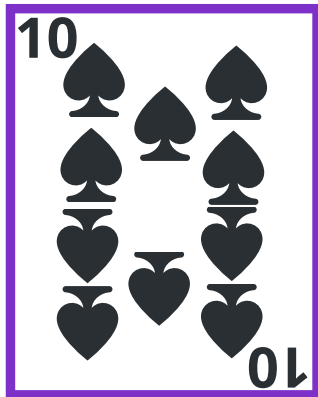
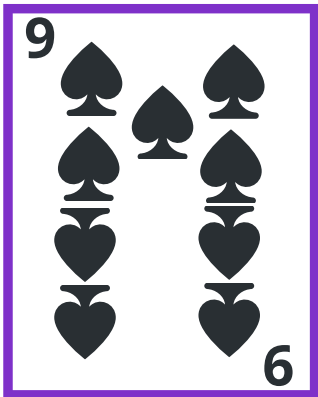
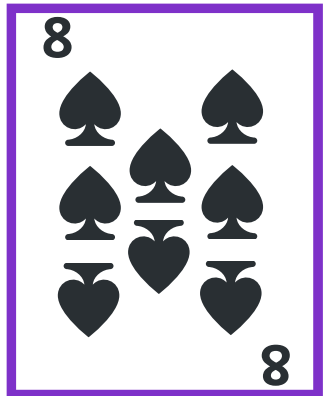
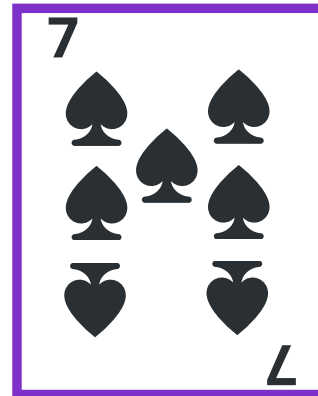
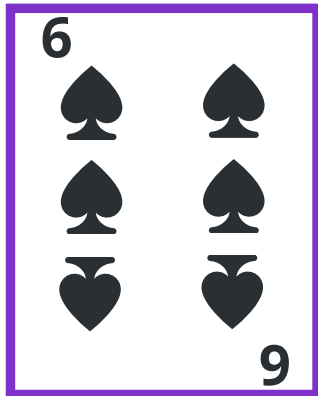
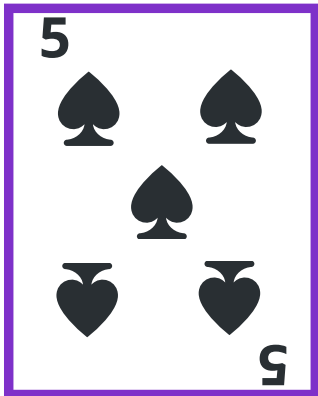
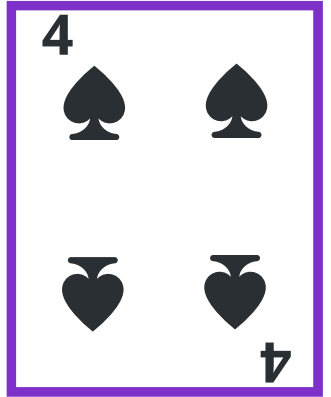
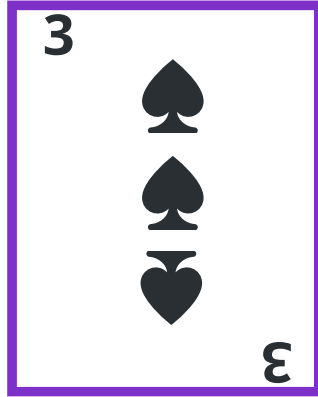
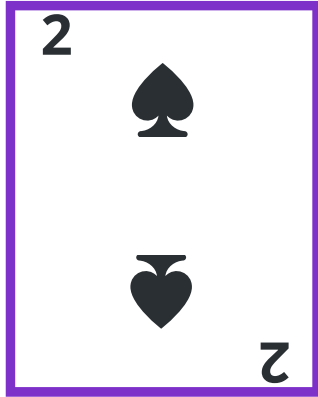
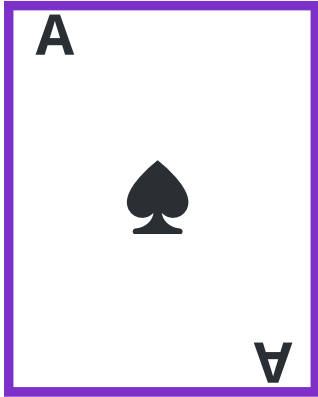
Cut these cards out and use them for activities and games.





Playing Cards 4

Cut these cards out and use them for activities and games.



This booklet was produced by the Cambridgeshire
County Council Maths Team.



If you would like more activities and ideas to try this summer, visit:
<https://www.cambslearntogether.co.uk/home-learning/summer>