

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>

Contents

Activities:

Be a Maths Detective	Pages 1 - 4
Practise	Pages 5 - 8
Investigate	Pages 9 - 13
Play	Pages 14 - 17
Outdoor Maths Challenges	Pages 18 - 19
Indoor Maths Challenges	Pages 20 - 21

Resources:

1 Digit Cards	Page 22
2 Place Value Templates	Page 23
3 Tangrams Resource	Page 24
4 Multiplication Tables Squares	Page 25
5 Playing Cards	Pages 26 - 29

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
 Position and Direction
 Money
 Measures

Here are some question frames which might help you:

How many are there altogether?
 How many more than are there?
 If each pair of flip-flops costs £....., how much would they cost altogether?
 What fraction of the flip-flops are?
 If this is $\frac{1}{5}$ of the flip-flops in a shop,?
 If Millie buys this many flip-flops every year, how many will she have after years?

My mathematical questions:

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
Shape
Measures

Here are some question frames which might help you:

How many are there altogether?

How many more than are there?

If the picture shows $\frac{1}{4}$ of the players in the club?

What fraction of the players are wearing

The 90 minute training session started at What time will it finish?

My mathematical questions:

[illegible]

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
Position and Direction
Shape (including angles)
Measures

Here are some question frames which might help you:

How many are there altogether?

How many different can you see?

How many more than are there?

If there is one pylon everym, how many would there be inm?

Can you use some of these words in your questions?

obtuse acute right angle horizontal vertical
diagonal parallel

My mathematical questions:

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
Position and Direction
Shape (including angles)
Measures

Here are some question frames which might help you:

How many are there altogether?
How many different can you see?
How many more?
If there are streets like this in a town,?
If the number of windows on each house is the same as the number of people living in it?
What fraction of the houses are ?

My mathematical questions:

PRACTISE

Name of Game: Place Value Victory

This helps with: Place value (Thousands, Hundreds, Tens and Ones)

You will need: Two sets of digit cards 0 to 9 (see page 22)

Two place value templates – Thousands, Hundreds, Tens and Ones (see page 23)

Someone to play with

How to play:

1. Use two sets of digit cards 0 to 9. Shuffle each set and place face down, keeping in two separate piles so that there is one set for each player.
2. Use one place value template for each player. Player one turns over their top digit card and decides whether to place this in the Thousands, Hundreds, Tens or Ones position on their place value template to make the highest value number overall. Player two does the same with their top digit card on their place value template.
3. Player one turns over their next top digit card and chooses where to place it in the remaining positions on their place value template. Player two does the same. Play continues placing the third and fourth digit cards into position.
4. The player who has made the highest value number scores one point.
5. Repeat, taking turns to start, with the each player's own reshuffled sets of digit cards.

The diagram shows two players, a boy and a girl, each with a place value template. The templates have four columns labeled 'Th' (Thousands), 'H' (Hundreds), 'T' (Tens), and 'O' (Ones). The boy's template has the digit '8' in the 'Th' column. The girl's template has the digit '2' in the 'O' column. Below each template is a stack of digit cards and a thought bubble explaining the player's choice.

Example

Th	H	T	O
8			

I'll put my 8 in the Thousands position because only a 9 can beat it as a higher value.

Th	H	T	O
			2

I'll put my 2 in the Ones position because only a 1 or 0 would be a lower value.

The winner is: The player with the most points at the end of 5 games!

Variations:

- Make the lowest value number to win.
- Make the number closest to a given number to win, e.g. 5000.

PRACTISE

Name of Game: Fastest First

This helps with: Addition and Subtraction (Thousands, Hundreds, Tens and Ones)

You will need: Two sets of digit cards 0 to 9 (see page 22)
Two place value templates – Thousands, Hundreds, Tens and Ones (see page 23)
Pencil and paper for jottings and recording
Someone to play with

How to play:

1. Use two sets of digit cards 0 to 9. Shuffle each pile separately and place face down, one for each player.
2. Each player takes their top four digit cards and places them on the place value template in the order they were taken, starting with the Thousands and finishing with the Ones.
3. Both players find the total of both numbers (add them together) and the difference between both numbers (subtract the smaller number from the larger number, or count on from the smallest to largest). They may use jottings to help.
4. Each player writes down the total and difference of both numbers. If these are not the same, one player explains to the other how they have calculated their answer, to agree the correct answer.
5. Place the cards back into the two sets, shuffle again and repeat play.

Example:

Th	H	T	O
6	5	3	1

Th	H	T	O
2	8	0	3



The total is 9334.
(6531+2803)

The difference is 3728.
(6531 – 2803)



The winner is: The player who calculates the correct total and difference first!

Variations:

- Change the size of number, e.g. use Hundreds, Tens and Ones only.
- Focus on addition or subtraction only.

PRACTISE

Name of Game: 4, 8, both or none?

This helps with: Multiples of 4 and 8

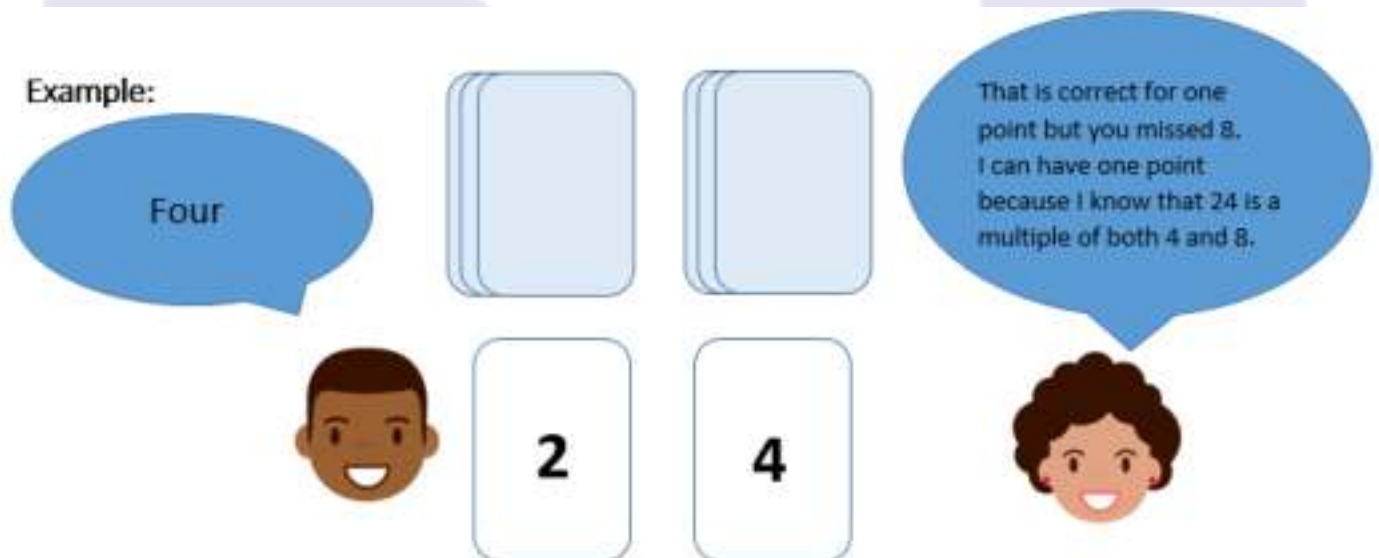
You will need: Two sets of digit cards 0 to 9 (see page 22)

Pencil and paper to keep score

Someone to play with

How to play:

1. Shuffle each set of digit cards 0 to 9 separately and place them face down in two piles, next to each other. Player one turns over the top card from both piles to create a two digit number.
2. Player two tells player one if this number is a multiple of 4, 8, both or none.
3. Player one checks and keeps a score for player two. Player one awards one point for each correct statement that player two gives (saying 'Four', 'Eight', 'Both' or 'None').
4. If player one gives a correct answer, that player two has missed, player two must award player one with one point. If player one corrects player two with an answer that was incorrect, player two must also award player one with one point.
5. Repeat, with roles reversed, until all of the cards have been turned over.



The winner is: The player who has the most points when all of the cards have been turned over!

Variations:

- Focus on one multiple only e.g. Is the number a multiple of 4?
- Players can give more information e.g. For the number '20', the statement might be '4 because 4 multiplied by 5 is 20' rather than simply '4'.

PRACTISE

Name of Game: Show what you know

This helps with: Number facts

You will need: Two sets of digit cards 0 to 9 (see page 22)

Pencil and paper to keep score

Someone to play with

How to play:

1. Shuffle each set of digit cards 0 to 9 separately and place them face down in two piles, next to each other.
2. Player one turns over the top card from both piles to create a two digit number.
3. Player two tells player one what they know about this number, but cannot repeat a similar statement. For example, only one addition fact to make the number.
4. Player one awards one point for each correct statement. Player two's turn ends when they cannot think of any more facts, give an incorrect statement, duplicate a similar statement or reach ten points.
5. Repeat, with roles reversed, until all of the cards have been turned over.

Example:

Even number

20 + 12

3 2

68 less than 100

Half of 64

Double 16

Multiple of 4

3 Tens and 2 Ones

They are all correct. You can have 7 points.

The winner is: The player who has the most points when all of the cards have been turned over!

Variations:

- Use one set of digit cards to generate a single digit number for each player.
- Each player has a time limit, e.g. one minute, to jot down as many facts as they can (without duplicating similar ideas).

Investigate

Super Shapes

(from: <https://nrich.maths.org/1056>)

Each of the following shapes has a value:

$$\triangle = 7 \quad \square = 17$$

If you add the values of the following three shapes together, the total is 34:



Can you work out the value of the red star using the values you know?

The value of the red shapes changes in each of the following problems.

Can you discover its value in each problem, if the values of the shapes are being added together?

a) $\triangle \quad \square \quad \square = 25$

b) $\square \quad \triangle \quad \triangle \quad \star = 51$

c) $\triangle \quad \triangle \quad \star \quad \star \quad \square \quad \square = 136$

d) $\triangle \quad \triangle \quad \triangle = 48$

e) $\triangle \quad \star \quad \triangle \quad \square \quad \triangle \quad \star \quad \triangle = 100$

Can you create some Super Shape problems of your own for a family member or friend to answer?

Investigate

Which Symbol?

(from: <https://nrich.maths.org/6777>)

Put in the missing symbols to make these number sentences correct.

Use +, -, ×, ÷ and =.

For example:

2 3 = 6 is 2 × 3 = 6 and 3 5 - 2 is 3 = 5 - 2

Try these:

16 18 = 34

47 28 = 19

18 2 = 9

30 10 × 3

All the number sentences below, except two of them, have two solutions.
Can you find the symbols to use?

51 36 15

27 36 63

7 5 35

45 5 9

70 14 56

50 5 10

Which two number sentences have only one answer? Can you see why this is so?

Investigate

The Pied Piper of Hamelin (from: <https://nrich.maths.org/8315>)



"The Pied Piper of Hamelin" is a story you may have heard or read.

When a man called the Pied Piper plays his pipe, the many rats who have been troubling the people, follow him out of the town of Hamelin. Because the townspeople do not pay the Pied Piper, he punishes them by playing his pipe again and the town's children follow him out of town as well.

The following investigation is based on this story:

Imagine that there were 100 children and 100 rats. Supposing that they all had the usual number of legs, there would be 600 legs in the town belonging to the children and rats (200 legs belonging to children and 400 legs belonging to rats).

But now, what if you were only told that there were 600 legs belonging to the children and rats but you did not know how many children or rats there were?

The challenge is to investigate how many children and rats there could be if the number of legs was 600.

To start you off, there could be:

100 children and 100 rats **or** 250 children and 25 rats

What other numbers you can come up with?

Remember that you have to have 600 legs altogether and rats have 4 legs each and children have 2 legs each.

When it's time to have a look at all the results that you have got and see what things you notice you might write something like this:

1. 100 Children and 100 Rats - the same number of both.
2. 250 Children and 25 Rats - ten times as many children as rats.

Investigate

Hundred Square

(from: <https://nrich.maths.org/2397>)

A hundred square has been printed on both sides of a piece of paper. One square is directly behind the other.

What is on the back of 90?
58? 23? 19?

Can you see a pattern?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

What would the answers be if the hundred square looked like this?

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49
50	51	52	53	54	55	56	57	58	59
60	61	62	63	64	65	66	67	68	69
70	71	72	73	74	75	76	77	78	79
80	81	82	83	84	85	86	87	88	89
90	91	92	93	94	95	96	97	98	99

Or this?

1	2	3	4	5	6	7	8	9	10
20	19	18	17	16	15	14	13	12	11
21	22	23	24	25	26	27	28	29	30
40	39	38	37	36	35	34	33	32	31
41	42	43	44	45	46	47	48	49	50
60	59	58	57	56	55	54	53	52	51
61	62	63	64	65	66	67	68	69	70
80	79	78	77	76	75	74	73	72	71
81	82	83	84	85	86	87	88	89	90
100	99	98	97	96	95	94	93	92	91

Or even this?

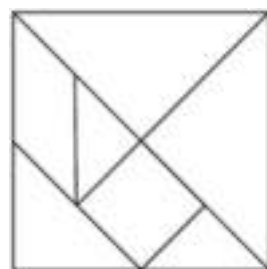
1	11	21	31	41	51	61	71	81	91
2	12	22	32	42	52	62	72	82	92
3	13	23	33	43	53	63	73	83	93
4	14	24	34	44	54	64	74	84	94
5	15	25	35	45	55	65	75	85	95
6	16	26	36	46	56	66	76	86	96
7	17	27	37	47	57	67	77	87	97
8	18	28	38	48	58	68	78	88	98
9	19	29	39	49	59	69	79	89	99
10	20	30	40	50	60	70	80	90	100

Investigate

Tangrams

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

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

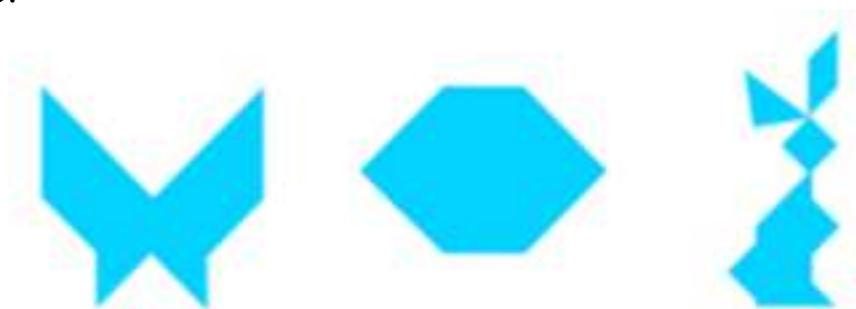


Make a set of tangram pieces by carefully cutting out the larger shapes on page 24.

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



QUICK DRAW ADDITION (for 2 players)

In this game, the picture cards (K, Q & J) = ten, and the Aces (A) = 1.

Shuffle the cards and deal out all of the cards to the two players.

One player calls, "Draw!" and both players turn over their top card and place it face up in the centre.

The players add the two numbers that are showing and the first player to say the total out loud wins the two cards.

After all cards have been used, the players count the number of cards that they have won. The winner is the person who has the most cards.



Variation:

Multiply the numbers on the two cards.





PLAY



TEN-TWENTY-THIRTY

(for 1 player)

All picture cards (K, Q & J) = 10. Aces (A) = 1.

Shuffle the deck. Create a row of seven cards, face up. Place two cards on top of each of the seven so you have seven piles, each made up of 3 cards. Arrange the cards so you can see the value of every card. Place the rest of the deck to the side, to be used later.

The object of the game is to remove a pile when the sum of all of its cards is 10, 20, or 30. For example, if a pile has an Ace, 9, and Jack in it, it could be removed because its sum is 20 ($1 + 9 + 10$).

Remove all of the piles that equal 10, 20 or 30 to start.

Deal a fourth card on top of every pile that remains. Remove any stacks that now equal a multiple of 10. Then deal a fifth card on top of every pile that remains. Remove any stacks possible.

Continue adding cards and removing stacks until you run out of spare cards or the stacks have all been removed. If you remove all the stacks first, you have won!

If your deck is emptied first, try again.



Variation:

Look for different totals, e.g. 9, 19, and 29.





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 an odd number? (No)

Is the value of the card greater than 6? (No)

Is the card greater than 3? (Yes)

Is the card a six? (No)

Is the card a heart? (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



I SPY SUMS

(For 2 or more players)

Ace (A) = 1.

Remove the picture cards (K, Q & J), shuffle the deck and arrange twenty of the cards face up into 5 rows of 4. Put the remaining cards to one side.

One player challenges the other player (or player to his/her right) to find two cards next to each other, either vertically, horizontally or diagonally, that add to make a number. For example, you might say, "I spy two cards that total 7."

The challenged player then looks for pairs of cards that add to that number and picks them up. If this player misses any pairs that add to the chosen total, the first player may claim them. Players take turns and continue until the table is cleared.

The winner is the player with the most cards at the end of the game. Fill gaps as they appear.



Variations:

- Multiply 2 cards instead of adding, e.g. - by saying, "I spy two cards with a product of 40."
- Include the picture cards: Jack (J) = 11, Queen (Q) = 12, King (K) = 13.



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.

Go with an adult on a maths walk around your local area.

Can you find all of the numbers in the 6x table from 6 to 72?

2.

Make a target game by creating a target on the ground with 3 sections. Give each section a score using two-digit and three-digit numbers, e.g. 25, 75 and 150 points. What's the highest score you can get with 5 throws?

3.

Make a treasure map of your garden or your local park using co-ordinates. Record your symbols in a key.

Where would you hide buried treasure?

4.

Design an outdoor game involving maths skills (counting, times tables, measuring etc.).

Try out your game with a family member and send it to a friend to play.

5.

Go on a bug hunt. Record your findings with a tally chart.

Where do you find the most bugs? Why do you think this is? Can you draw a bar chart to show your findings?

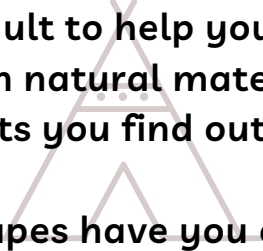




6.

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

What shapes have you created?



7.

Set up your own obstacle course using things in your home, garden or your local park. How fast can you move around the course?

Make an estimate and then test it out. Can you improve your time?

8.

Play a maths version of 'I Spy', looking for examples of maths words in the world around you.

Try using words relating to fractions, decimals and measurements.

9.

How many times can you hop or skip in 90 seconds? Estimate how many you think you'll be able to do, before you try.

How accurate was your estimate? Challenge someone else to try.

10.

Make up an outdoor exercise programme with five different activities. Make it clear how long each activity lasts. Try out your routine and send it to a friend or ask someone you live with to try it.



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 shapes with parallel lines? Draw a picture of the shapes that you make.

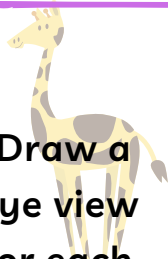
2.

Make your own board game to play with your family.

You could make the board with part of a cardboard box or cereal packet.

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 or shapes in the text or illustrations.

5.

Go on a maths hunt around your kitchen. What shapes and numbers can you find? Record your results.

Now compare this to your bedroom. Which room will have more numbers and shapes?



6.

Design a healthy café menu, with a price list using pounds and pence. Calculate the most expensive and the least expensive meals. How much change would you get from £20?

7.

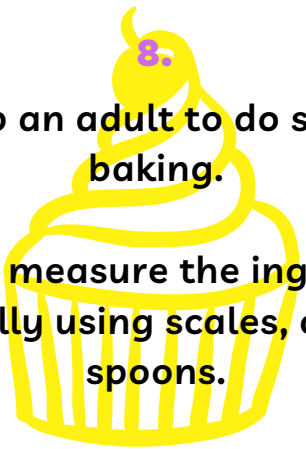
Keep a weather diary. Design a key and use symbols to record the weather each morning and afternoon.

Find the temperature from the TV or the internet.

8.

Help an adult to do some baking.

You can measure the ingredients carefully using scales, cups or spoons.

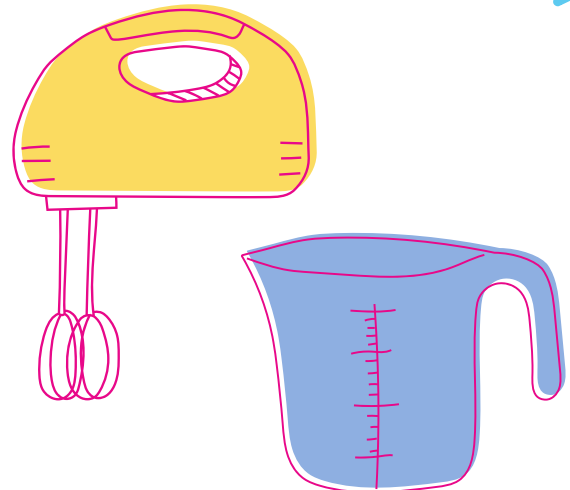


9.

Ask an adult to help you to measure the length and width of your bedroom with a tape measure. Can you calculate the perimeter of your bedroom? Investigate other rooms. What have you found out?

10.

Create a 'One Minute Olympics' with sixty-second events such as star jumps, hopping and counting in 2s, 5s or 10s. Challenge yourself and others to see who can set a new One Minute Olympics record.



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

Share your learning together and have fun!



Digit Cards

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

0	1	2	3	4
5	<u>6</u>	7	8	<u>9</u>

0	1	2	3	4
5	<u>6</u>	7	8	<u>9</u>



Place Value Templates: Thousands, Hundreds, Tens and Ones

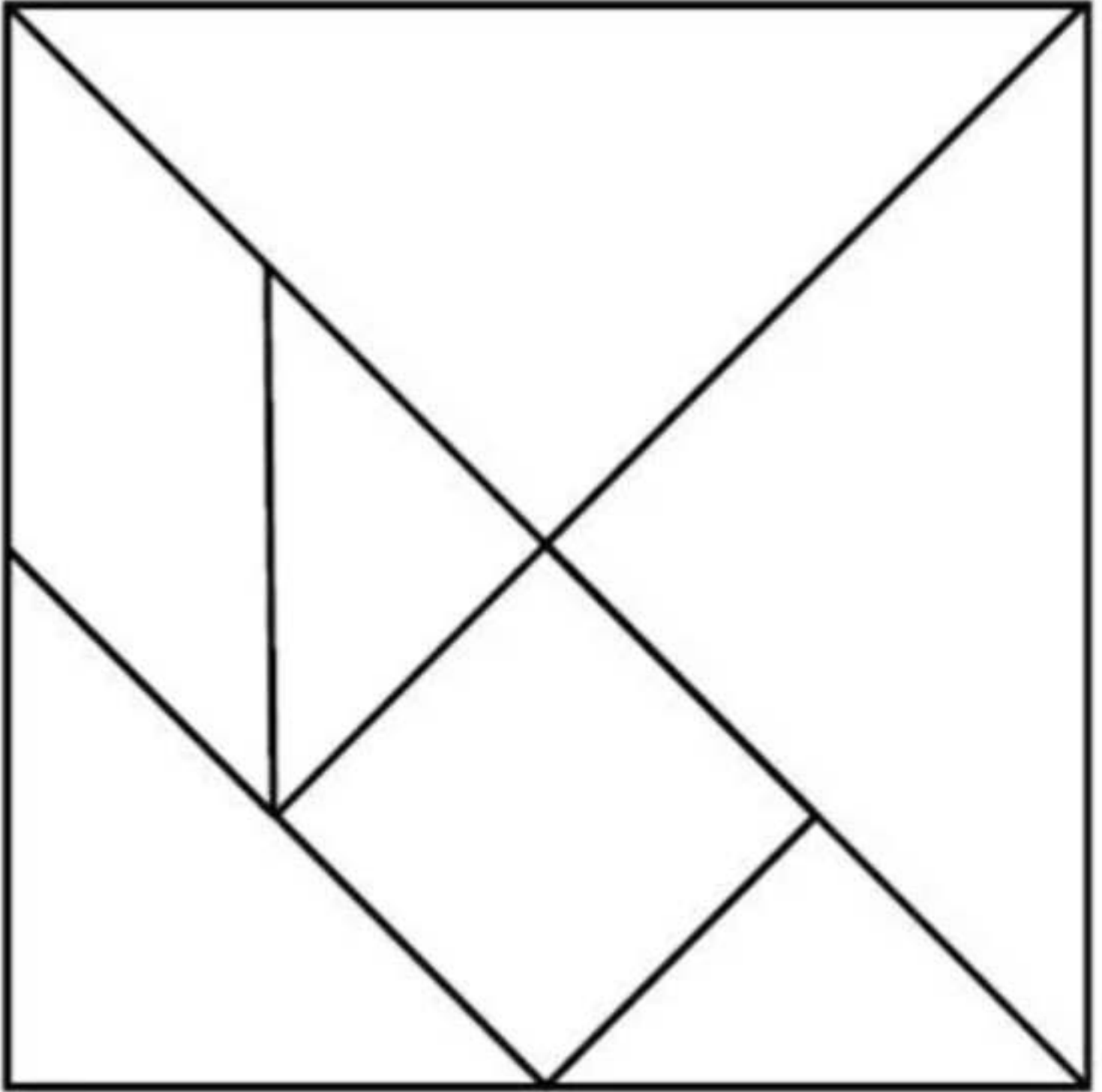
	Thousands
	Hundreds
	Tens
	Ones

	Thousands
	Hundreds
	Tens
	Ones



Tangrams

Carefully cut out the seven shapes below.





Multiplication Tables

Squares

Use these tables squares for checking or practising multiplication facts.

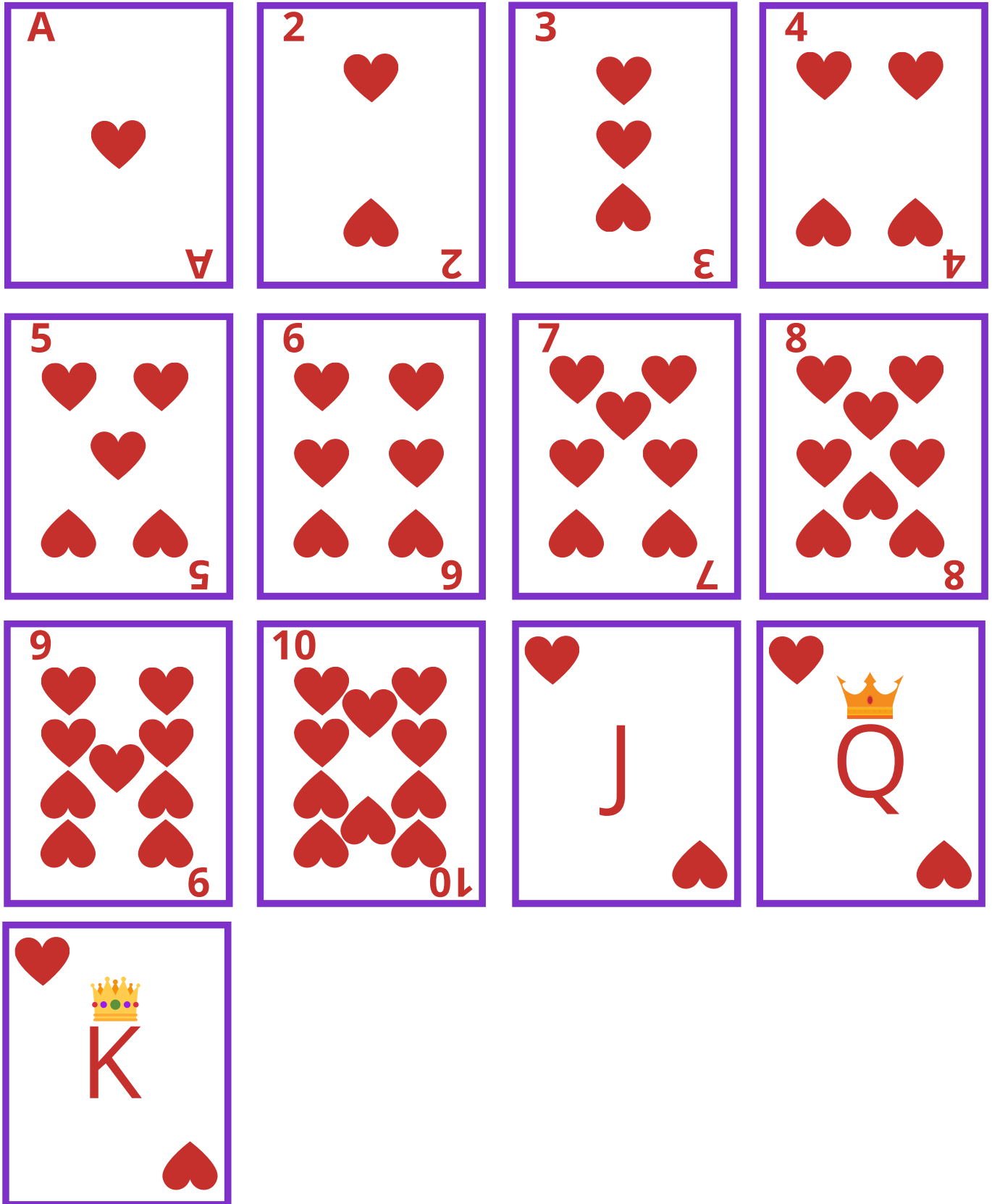
X	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	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
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



Playing Cards 1

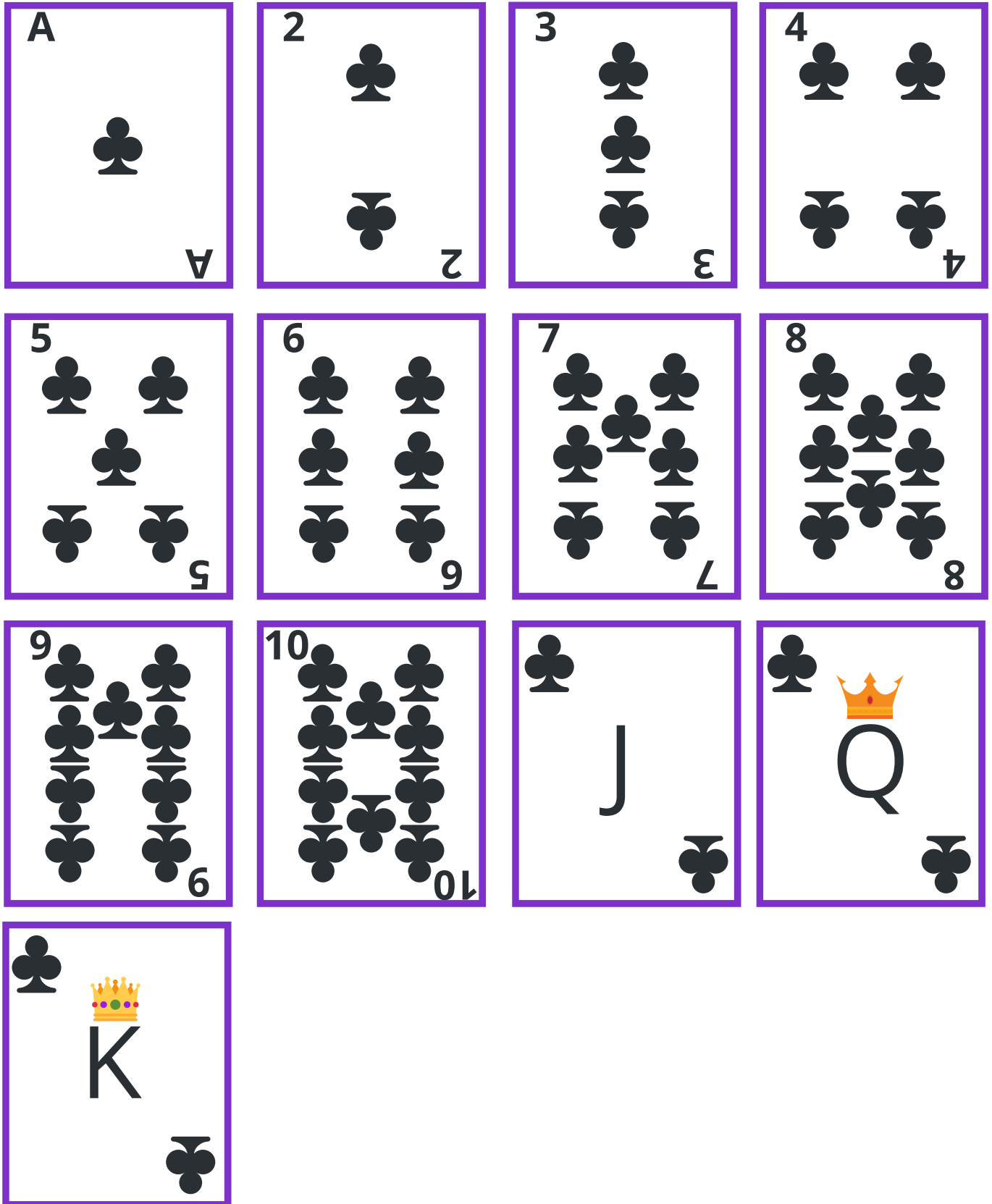
Cut these cards out and use them for activities and games.





Playing Cards 2

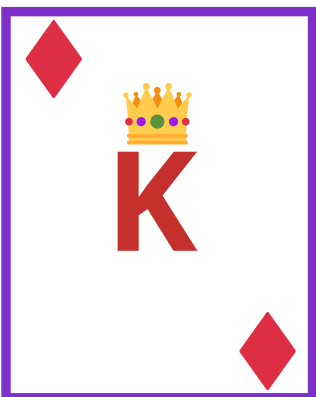
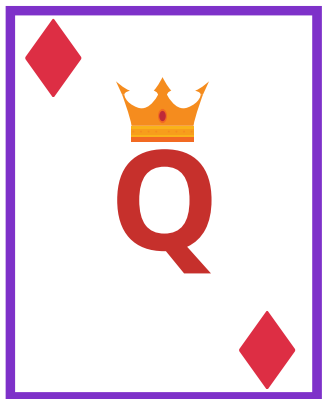
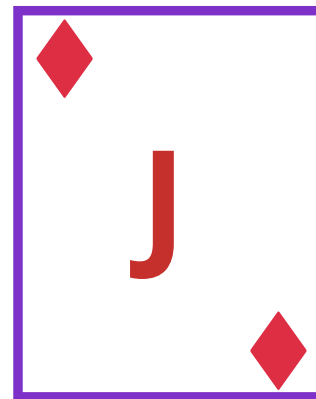
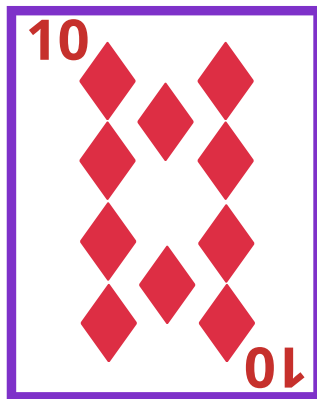
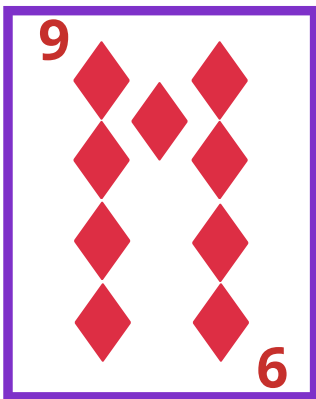
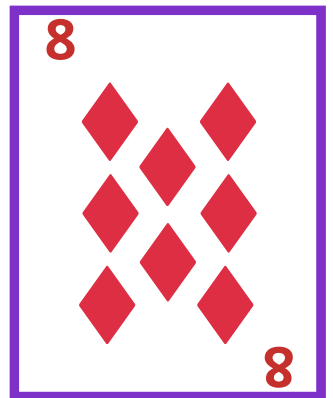
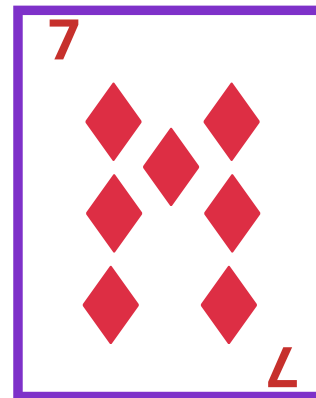
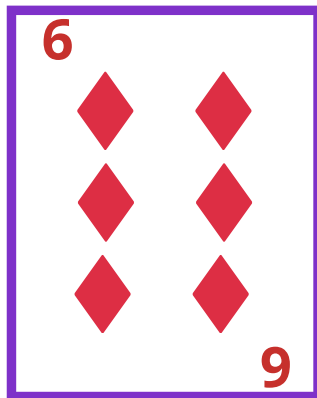
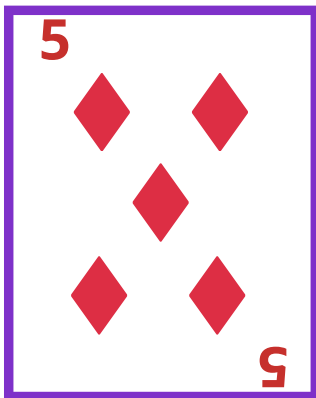
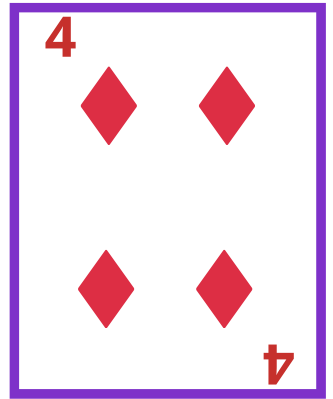
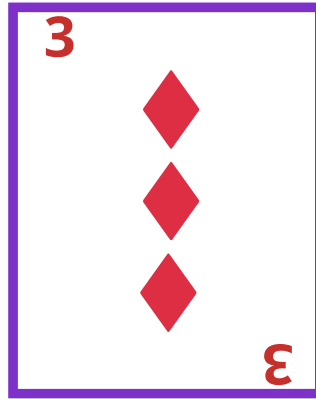
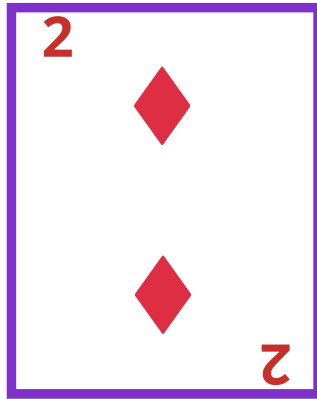
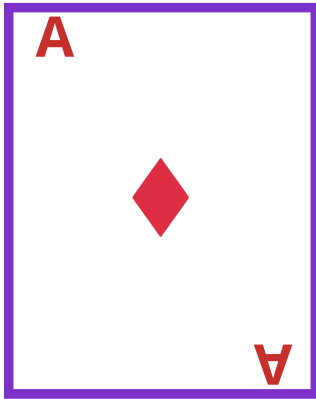
Cut these cards out and use them for activities and games.





Playing Cards 3

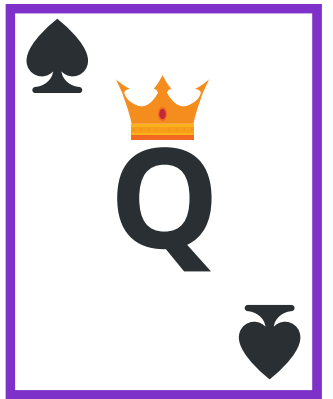
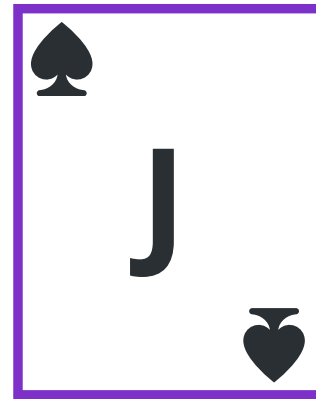
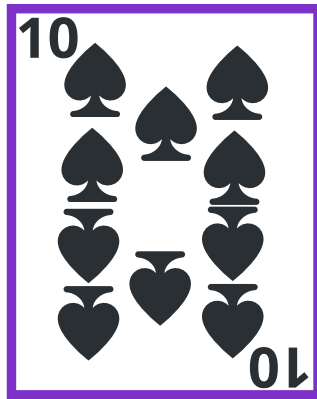
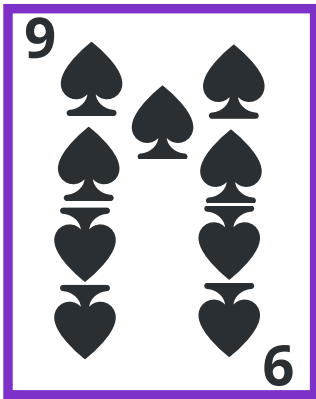
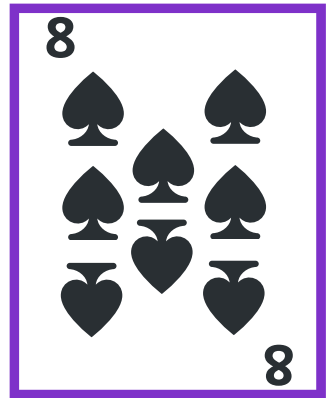
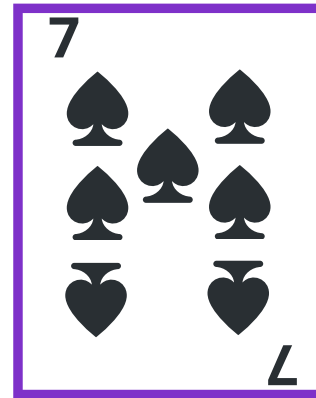
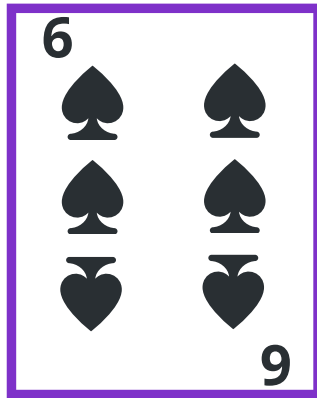
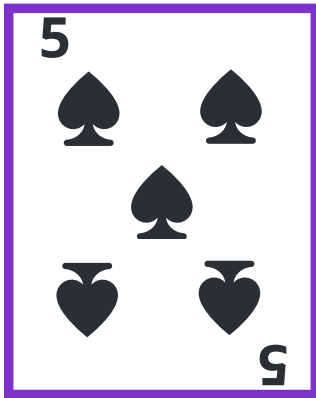
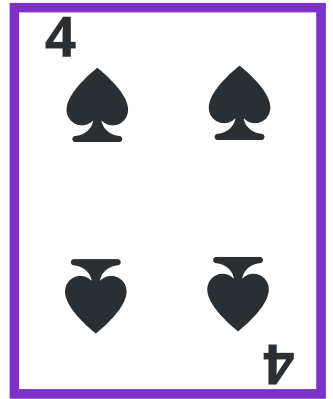
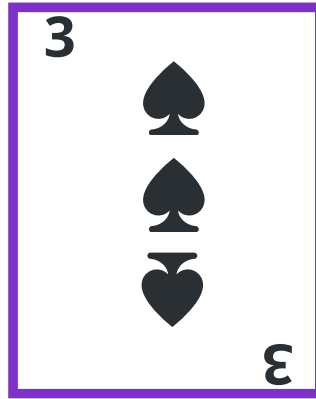
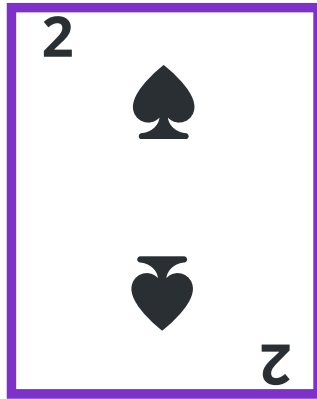
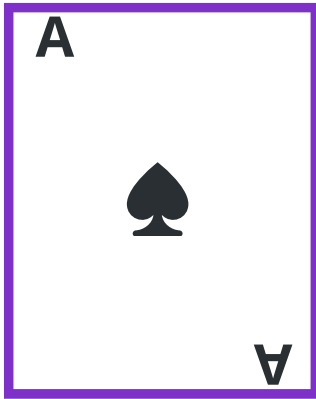
Cut these cards out and use them for activities and games.





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>