# Leader of the Pack

52 activities with playing cards to support the learning of Mathematics

**Andrew Jeffrey** 



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# Leader of the Pack

## 52 Card Games for the Mathematics Classroom

**Andrew Jeffrey** 

Welcome to "Leader of the Pack". This book was written to celebrate my 52nd birthday, but also to support an amazing Charity, SAMI. I have decided to charge just £5 for it and give the profits to SAMI. Thank you so much if you have done so already and got the book free- you are helping to improve the lives of children.

The activities themselves are divided into four sections - clubs, hearts, spades and diamonds.

Broadly, these four suits represent categories as follows:

Clubs - 4 to 7 year olds Hearts - 7 to 11 year olds Spades - 10 to 15 year olds Diamonds - MAGIC TRICKS FOR ALL AGES!

Note that some activities appear in more than one category, but this will be at a harder level. It is worth reading through other levels in case you find something you can adapt for older or younger children. Do not be bound by the age ranges given - they are only meant as a guide.

So - why use playing cards? At their simplest, playing cards can act as a proxy for numbers. Throughout the book, you can assume that Jacks are 11, Queens are 12 and Kings are 13 unless otherwise stated. Also we have used standard nomenclature, so 3S means the three of spades, QD means the queen of diamonds, and so on.

Written numbers cannot easily be moved around as easily as playing cards, thus making cards a versatile way to demonstrate key concepts, for example the commutativity of addition. There is also a psychological advantage in not requiring children to write things down too early in their mathematics. As Dienes told us, sometimes it helps to 'play', however serious that play might be before committing to paper, and cards are ideal for that.

Sourcing playing cards is easy - most 'pound' type shops sell them, and at the time of writing it was possible to get two packs for £1. Wilko currently sell slightly better quality packs at £1 each (obviously this may change) and the usual online marketplaces such as eBay are also a good source if you are looking for multiple packs.

So, enjoy the activities, let me know of any you really enjoy, and perhaps even send me your favourites!

Finally, and most importantly I must thank the following people for their generous contributions to this book - without them it would still be only half finished! So Liz Gibbs, Rob Eastaway, Grant Whitaker, Liz Woodham, Steve Robert, Stephen Froggatt, Lynwen Barnsley, and Becky Clifford, you are all legends for kindly contributing your ideas to this book. It really is a collaborative effort, and I am grateful to you all.

Cheers, Andrew info@andrewjeffrey.co.uk



*These activities are suitable for ages 4-7* 

#	Name	Mathematical Ideas
1	Bonds Snap	Number recognition, bonds to 10
2	Pelmanism	Number recognition, spatial awareness
3	Twenty Five up	addition, crossing tens boundaries, partitioning
4	Twenty Five down	Subtraction, crossing tens boundaries, partitioning
5	War	Relative size, <, >
6	Cuckoo	Probability, memory, ordering
7	Quick Sort	<i>Reasoning, inverse operations (+/-)</i>
8	I Spy Totals	Visualisation, mental +/-
9	Target Ten	Calculations, asking 'what if'?
10	Play Your Cards Right	Probability, memory, sequencing
11	Spot the Difference	Subtraction, subitising
12	Largest Number	Place Value, Reasoning, <, >
13	Speedy Doubles	Doubling, mental recall

# **Bonds Snap**

Cards Required: PACK OF ACES TO NINES		Players: any number but this works best in groups of three or four.	
Mathematical Concepts:	Number recognition, bo	nds to 10	
How it works:	Deal the cards fa players.Working clock play a card face up in must create their own any two piles add up 'SNAP' wins both piles The winner should pla cards in their hand ar new card on top of the If their own pile was o	the cards face down evenly between the s.Working clockwise each player takes it in turn to card face up in a pile in front of them.Each player reate their own pile. If at any time the top cards of ro piles add up to ten, the first player to call out 'wins both piles. nner should place their 'won' cards underneath the in their hand and continue the game by dealing a ard on top of their own pile.	
	simply start a new pile.		
To pick a winner, simply have a tim off the player holding the most c winner. If a player runs out of cards 'SNAP' when they see a suitable pa actually 'out'.		ply have a timer and when it goes g the most cards is declared the s out of cards they can still call out e a suitable pair, so they are never	



## Pelmanism

Cards Required: Full Pack		Players: Any number
Mathematical Concepts:	Number recognition, spatial awareness	
How it works:	Old but gold. Often known tests and strengthens me pack face down on a tain turns to turn any two If they are the same we puts both in his treasure the player turns both fact the left. Eventually, there will be Each player counts up most is declared the wir Variations: You could de them; the fastest player could insist that pairs colour; so 6H and 6D we	win by many other names, this game hemory. Shuffle and deal out a regular ble in four rows of 13. Players take it cards face up. alue, that player wins the cards and pile. If they are NOT the same value, ace-down again. Play then passes to a no cards left and the game is over. their treasure and the player with the iner. o this one player at a time and time to clear the whole pack wins. Or you only counted if they were the same build be fine but 6S and 6D would not.

# **Twenty Five Up**



Cards Required: Any ace, 2, 3, 4, 5 and 10.		Players: Any number
Mathematical <i>Me</i> Concepts:	Mental addition, partitioning, crossing tens boundary, time	
How it Mix Dealers of the second run it works: Regbe is a second run it with the second ru	x the six cards face deal the first card face cond card on top of if mbers dealt so far. epeat this until you had 25. or example, if these we VELVE, FIFTEEN, SIN VELVE, FIFTEEN, SIN e lovely thing is that ildren will know if the loulation. If another opwatch. The aim of the t to beat your own press	own so that their values are unknown. e up and cal out it's value. Deal the but this time, call out the total of the ave dealt all 6 cards - the total should ere the cards, you would say: "TEN, (TEEN, TWENTY, TWENTY-FIVE."

# **Twenty Five Down**

Cards Required: Any ace, 2, 3, 4, 5 and 10.		Players Any number.
Mathematical Concepts:	Mental subtraction, partitioning, crossing tens boundary, time	
How it works:	This game is almost ex- time you start with a downwards. So before you deal any deal the cards one at a one of the cards you St running total until you you know you have go useful!) Again, the important th best score, rather than collaboration is the nam With both this game and by looking at the sp example, if you were of could see that two of the to the other 3, meanin then 10-3=7 (also eas easier to recall than try times. This may need to have played a few times	cards you say "TWENTY-FIVE". Then a time into a pile. Each time you deal JBTRACT that card's value keeping a reach zero. (If you don't reach zero, one wrong somewhere, which is very hing is to try and beat your previous n simply trying to beat each other - e of the game before, help can be found ots on the cards themselves. For n 12 and turned over the 5 card, you e spots could be thought of separately g you could do 12-2=10 (easy) and sy). Both calculations are probably ving to count backwards from 12 five o be pointed out to children after they s.

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# War

Cards Requi	red: Full Pack	Players: Two players
Mathematical Concepts:	Relative number sizes, greater than, less than	
How it works:	Shuffle and give each player half the pack, face down. Jacks count as 11, Queens count as 12, and Kings count as 13. Suits are irrelevant in this game.	
	Both players turn over the higher of the two c cards and places them i	their top card. The player who deals ards is the winner, and tales BOTH nto a 'winnings' pile.
	If the cards are of equal value, another pair is dealt on to and the winner takes all four cards. If they are STILL equa continue to deal until one card is higher than the other ar then the winner takes both piles.	
	After all cards have bee cards in their winnings cards is declared the win	n played, players count the number of pile, and the player with the most nner.
	Variation: to make War must first say how much their opponent's before player's QD (12) beat th to say " <i>I won by 4</i> " to cl their opponent wins the	slightly more challenging the winner greater the value of their card is than they can take the cards. So if one ne other player's 8H they would need aim the cards. If they make a mistake cards instead.

# Cuckoo

Cards Required: Full Deck		Players: Between 5 and 20 people
Mathematical Concepts:	Probability, memory, ordering	
How it works:	Give each player thre shuffled pack. Explai player with the lowes their counters. Player wish to switch cards w that player MUST swi case they hold a King not have to switch. Pla has had the chance to wishes to switch, she a card from the middle Finally, everyone turn the lowest card loses left in is the winner. For the purposes of th lowest card), Jacks unbeatable on 13.) If two players both ha counter.	e counters and a single card from the n that at the end of the round, the t card loses a life and forfeits one of to dealer's left decides whether they with the person on their left. If they do, tch unless they have a king in which in which case they say "KING' and do ay continues clockwise until everyone o switch. If the dealer (who goes last) can cut the pack at random and take a. s over their cards and the player with a life (and a counter). The last player his game, Aces are worth one (so the a 11, Queens 12 and Kings are ave the lowest number, BOTH lose a

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# **Quick Sort**



Cards Required: Ace to Ten pack		Players: Any (up to four)
Mathematical Concepts:	Ordering, number recognition	
How it works:	Shuffle the pack and de Make sure that each pla game. Say "1,2,3 go", and e correctly arrange their t to right) in a row in fro equal value they should Here is an example of h Image: Image: I	al ten cards face down to each player. ayer has plenty of table space for this each player must look at and then en cards in ascending order (from left nt of them. If they have two cards of place them in a staggered pile. ow a completed hand might look:

# 8

# I Spy Dice Totals

Cards Required: Twos to Queens, also two 1-6 dice		Players:	Any number
Mathematical Concepts:	Visualisation, mental ad	ldition and r	ecall
How it works:	Shuffle the cards and array. Each player rolls the did find a card that are mate game, Jacks are 11s and So, if the dice rolled are to find that the total is for Jack). Play continues in this we for example if all the e total is 8. They are the last player to be eliminal <b>Variations:</b> This can be turns to roll the dice, but person to put their hand Alternatively, play as pe eliminate anyone who do the end, the winner is cards once they are all g	lay them ou ce and finds ches the tota d queens and a 5 and a 6 11, then find ay until a pla eights have en eliminate ted is the wi e done as a t anyone can l on a card of er the origin can't move the person gone.	<ul> <li>at, face up, in an 11 by 4</li> <li>a the total. They must then al. For the purposes of the re 12s.</li> <li>b, the player must first add and pick up an 11 (i.e. a</li> <li>ayer cannot make a move, been taken and the dice d from the game and the dice d from the game and the inner.</li> <li>a race - players take it in n try to win a card; the first of the correct value wins it.</li> <li>hal instructions but do not - they just miss a turn. At who has taken the most</li> </ul>

# **Target Ten**

Cards Requi	red: Aces to 9s.	Players: Any
Mathematical Concepts:	Calculations, 'what if?' strategy	
How it works:	This is a collaborative thoroughly shuffled. Ne in a straight line. The a line that add up to 10. occasionally even 4 card of the se made, and deal new cards from spaces. The aim of the game is Sometimes this involves cards are, AC, 2D, 7H, of these ways:	activity. First, the pack should be xt, four cards are dealt out randomly im of the game is to find cards in the Sometimes it might be 2,3, or very ds. (A,2,3,4 or 2,2,3,3 for example). pick up those cards, set them aside, m the top of the pack into any empty a to make as many tens as possible. a making choices - for example, if the and 3S you could make ten in either



# **Play Your Cards Right**

Cards Required: Any complete suit. Ace =1, etc.		Players:2
Mathematical Concepts:	Probability*, memory, se	equencing
	*Although probability is not forma introduce the idea of 'likelihood' a	lly tested at primary level, it is a good idea to s in this case.
How it works:	This game is much bel even had its own televis but here is the most bas Mix the 13 cards face do Say whether you think (King is the highest, Ace correct, repeat the pro- card will be higher or low Keep going as long a wrong, mix the cards to The winner is the first times in a row (i.e. cor play for a set amount of who has the longest 'rur	oved as a fairground game, and has sion show! There are several versions, sic one: own. Turn the top card face up. the next card will be higher or lower e is the lowest). Turn it over. If you are cess and guess whether the second wer than the second card. s you guess correctly; one you are gether and another player has a turn. person who guesses correctly twelve mpletes the whole suit). Alternatively, of time and the winner is the person n' of successful guesses.

# Spot the Difference



Cards Requi dice.	red: Full deck, 1-6	Players: Any
Mathematical Concepts:	Subtraction, subtilising	
How it works:	<ul> <li>Shuffle the cards thoroughly, and lay them out, face-up, in a 4 by 13 array.</li> <li>One player rolls the dice. The object is to find and remove a pair of cards that DIFFER by that number. For example, if a 3 is rolled, a child might find 3S and 6D, or JH and 8S. This is not a race; the aim is to be collaborative.</li> <li>To encourage mathematical discussion, children must say the number sentence that relates to their selection.</li> <li>For the above example, they might say "Eleven minus eight is three." Suits are irrelevant here. They could also say 'The difference between eleven and eight is three", and so on.</li> <li>Once ever player has found a pair, roll again. The game can be played similarly to solitaire - is it possible to remove every card?</li> </ul>	



# Largest Number

Cards Requi	red: Aces to Nines	Players: two
Mathematical Concepts:	Place value, reasoning	
How it works:	Shuffle the pack and deal over their top two cards. They have to make a two card representing TENS player decided which way The player with the highes What we hope they will r prioritising the tens is th element of luck involved of As a variation, players r number wins the point. The winner is the first play	I half the cards to each player. Both turn digit number using their cards, with one and the other representing ONES. Each round to place their cards. st number wins a point. ealise is the importance of place value - e best strategy, though there is still an fue to the random distribution of cards. night decided that the LOWEST 2-digit yer to get to ten points.

# Speedy Doubles



Cards Required: Full pack with Kings removed		Players: any
Mathematical Concepts:	Doubles, mental recall.	
How it works:	Shuffle the cards and de Players must quickly we value of the card and c wins that card for their 'f Once all the cards are of their treasure pile is dec It is possible to play thi players can take it in tur penalty shootout. This a game. To take the speed ele could simply write down whiteboard, and a point correct answer.	eal the top card face-up on the table. ork out the number that is double the eall it out. The first player to call it out treasure' pile. dealt, the player with the most cards in clared the winner. Is game in two or even three teams - rns to represent their team, a bit like a avoids any one player dominating the ement away altogether, each player is awarded to everyone who gets the



*These activities are suitable for ages 7-11* 

#	Name	Mathematical Ideas
14	Flip Three	Memory, calculation
15	Five by Five	Number recognition, spatial awareness
16	Big Score	addition, crossing tens boundaries, partitioning
17	Ton Totals	Subtraction, crossing tens boundaries, partitioning
18	Break the Bank at 27	Addition, mental arithmetic
19	Tables Shootout	Multiplication, tables recall
20	Magic Squares	Calculation, trial and improvement
21	A Thousand and Six	Addition, reasoning, trial and improvement
22	100 or bust	Place value, probability, reasoning, addition
23	Wild Boar	Memory, addition, reasoning, probability
24	I Spy Products	Multiplication, tables recall, factors
25	Twenty Five from Five	Mental addition and subtraction, inverse operations
26	Cinquante Cinq	Addition, Partitioning, Tables

# **Flip Three**



Cards Requi ACES TO TE	red: INS PLUS QUEENS	Players: 2-4 players
Mathematical Concepts:	Memory, calculation.	
How it works:	This game is similar to by introducing calculation Shuffle the pack and do array. Players take it in the If they are able to say cards, they are allowed cards back face down. one of the four operation below, the player could or 'four times two equals Play then passes to the thing. Their three cards previously turned face agree that no further mo- face up and see if ther the deck, deal another winner is the person	Pelmanism, but takes it a step further ons. eal 12 cards face down in a 3 by 4 turns to turn any three cards face up. a number sentence using all three d to keep them. If not, they turn the The number sentence must involve ions and an equals. In the example say 'eight divided by four equals two' s eight' etc. e next player, who must do the same can, but do not have to, include cards up. Continue playing until all players oves seem possible. Turn all the cards e are any further moves; if not, clear 12 cards and start a new round. The who holds the most cards after an
	agreed number of round	IS.



# **Five by Five**

Cards Requi Also one squ player	red: Aces to tens uare 5 by 5 grid per	Players: Multiple players
Mathematical Concepts:	Reasoning, multiplication as repeated addition, mental arithmetic	
How it works:	<ul> <li>One person shuffles the pack and deals 25 cards, unseen, into a face down packet. They then turn over cards singly from the packet, calling out the value (not the suit) of each card, at approximately 3-second intervals.</li> <li>All other players write the number called into one of the squares in their grid. They do this for all 25 cards and fill their grid, one number per square.</li> <li>Next they add up the points scored as follows: only numbers written adjacent to the same number actually score. For example, if the top row read 3 4 4 2 4, the score for that row would be 8, as there are two fours next to each other.</li> <li>If the next row was, for example, 5 5 1 1 5, the score would be 12, since the first two fives count, as do the two 1s, but the</li> </ul>	
	final 5 is <i>not</i> next to ano Once players have add should do the same thi rules. Most players tend columns initially, until h adjust their strategy. T arithmetic practice!	ther five so does not count. ed up their points for their rows, they ng for their columns, using the same d to do better on their rows than their opefully they realise this and start to his is really good fun and excellent

# **Big Score**

Cards Required: ACES to NINES		Players: Multiple players; the more the merrier
Mathematical Concepts:	<, >, place value, probability	
How it works:	Players each draw two h two boxes. The dealer turns one ca players must each write four boxes. Once writter mind. This is repeated anothe written a second of anothe written, players check sentence. If they have ( a number of points each writue sentence (e.g. '9) Continue for an agreed person with the greatest	boxes, then a '<' sign, then another and face up and calls out its value. The this number in any one of their own h, they are not allowed to change their three times until the players have the such $-2^{*}$



#### **Ton Totals**

Cards Requi ACES to NIN	red: IES	Players: ANY	,
Mathematical Concepts:	Column addition, place	value trial and	improvement
How it works:	Shuffle the pack and deal six cards to each player. Players must arrange their six cards into a 3 by 2 array thus forming 3 2-digit numbers, then find the total of these three numbers. For example, if the cards drawn were 2C, 3D, 7H, 8H, 3S 6D, they might arrange them like this:		
	The object of the game a total as close to 100 a	is to reach s possible.	
	There are many possible variations.		5 <b>*</b>
For example, how should you arrange the cards to give as large a total as possible?			
	Or the smallest? Or the closest to 80? etc.		etc.
	There is no need to designed to be investigation	award points ative in nature.	for this task, as it is

#### **Break The Bank at 27**

Cards Requi ACES TO TE	red: NS	Players: Two players
Mathematical Concepts:	Addition, mental arithmetic	
How it works:	Shuffle the pack and g places their half in a pile Players take it in turn to into the centre, face up, the centre pile, the pla running total of the card The game continues ur who played the last card table, and shuffles them The winner starts the n player captures all the amount of time, when th cards wins.	<ul> <li>ive half to each player. Each player</li> <li>in front of them, face down.</li> <li>deal a card from the top of their pile Each time a new card is played onto ayer who dealt it must call out the s in the pile.</li> <li>ntil the total is 27 or over. The player d wins all the cards in the centre of the into their own pack.</li> <li>ext round. The game ends when one cards and wins, or after an agreed he player with the greatest number of</li> </ul>



# **Tables Shootout**

Cards Required: ACES TO QUEENS		Players: Two
Mathematical Concepts:	Multiplication, tables recall	
How it works:	Shuffle the cards, and g in a face down pile in fro Both players simultaned player to correctly call (Jacks are 11, Queens into a treasure pile. After 24 rounds all the winner is the player with In the event of a disput it. If both players call of cards are left face up a first person to call out th For children who are s game can be modified eights, sevens, etc. as r	tive half to each player. They put them bott of them. Dusly turn over their top card. The first out the product of the two values are 12) wins the cards and puts them the cards will have been played. The the most cards in their treasure pile. The a calculator can be used to resolve but the product at the same time, the and another two cards are dealt. The the product wins all four face-up cards still learning some of their tables, the by removing Jacks, Queens, nines, equired.

# Magic Square



Cards Required: Ace to 9 for each player		Players: ANY
Mathematical Concepts:	Calculation, trial and improvement	
How it works:	Give each player nine of to lay out the cards in the every row adds up to the Do not tell them that the children who work out a cards is 45, and each row Once they have got all the next challenge is to well, without changing the One possible solution is is particularly nice beca	cards (an ace to a 9). Challenge them nree rows of three cards each, so that e same number. his must be 15, but watch for those that it must be, as the total of all the ow is one third of the total. three rows totalling 15, tell them that o make all three columns total 15 as he total of each row. below, but there are others. This one use the diagonals also make 15:



#### A Thousand and Six

Cards Required:		Players:
ACES TO NINESs.		Any number
Mathematical Concepts:	Addition, reasoning, trial and improvement	
How it works:	Shuffle the cards and has to arrange their card They must then add th order to get a total as cl The closest player to 1 reshuffled and each pla finishes after an agreed highest points being de gets to an agreed nut winner. A really interesting varia cards rather than six ini will get them closest to This brings in deeper re	<ul> <li>deal six to each player. Each player ds to form two 3-digit numbers (HT1).</li> <li>nese two 3-digit numbers together in ose to 1000 as possible.</li> <li>1000 wins a point and the cards are ayer is dealt a new hand. The game number of rounds, the player with the eclared the winner, or when a player mber of points and is declared the</li> <li>ation is for each player to receive nine tially, and to choose the six cards that 1000.</li> <li>asoning skills.</li> </ul>

#### 100 or bust



Cards Required:		Players:
ACES TO NINES		AS MANY AS YOU LIKE
Mathematical Concepts:	Place value, probability, reasoning, addition	
How it works:	In this game, players try to be the first to score exactly 100 points without going over (hence 'bust').	
	The dealer shuffles the pack, turns over the top card, and calls out its value Suits are ignored.	
	<ul> <li>Every player has to write down either the number itself, or tert times the number.</li> <li>The dealer deals a second card. The players again have to write down either the number or ten times the number, but this time they must add it to their original number. If they go over 100, they must declare themselves 'bust' and are out of the game.</li> <li>Play continues in this way, the dealer calling out the value of the next card, and players choosing whether to write it as is or ten times it, and add it on to their running total.</li> </ul>	
	Tactically, players are of this does not always tu way, this is a fantastic value and calculation.	often tempted to 'go high' initially but irn out to be the best strategy. Either c opportunity to practise both place



#### Wild Boar

Cards Required:		Players: ANY, but works best with players in teams
Mathematical Concepts:	Memory, addition, reasoning, probability	
How it works:	Place the deck face dow to deal a card from the They score the value of all card values shown of continue turning over a score, or stop at any tir cards are dealt. This sco halt, and play passes to But beware! If a player score for that particular lose their score for the banked in previous round Play continues from p scored 200 or more poi when played with up to have memorised the 'ba pack gets revealed in th It is a very interesting with to see if they mathematically, an opti For example, do they st after they reach a specifi	vn in the middle. Players take it in turn top, creating a face-up pile next to it. If the card and keep a running total of during their turn. They may choose to another card to try to increase their me. The score is accumulated as the ore is 'banked' when the player calls a the next player. deals ANY king they lose their entire turn. If they deal a BLACK ace they ne whole game, including all points nds. adver to player until one team has nts. A very exciting game, particularly o 4 teams and you have players who ad' cards which are coming up as the e same order. problem to challenge older students can come up with, and justify imum strategy for playing the game. op after a specific number of cards, or fic total?

# I Spy Products

<b>9</b> /	
24	

Cards Required:		Players:
ACES TO QUE	EENS	2 to 4 players works best
Mathematical / Concepts:	Multiplication, tables rec	call, factors
How it works:	Shuffle the cards and array. Player 1 looks for a pair vertically adjacent, mult says "I spy a product of The other players hav adjacent cards that pro- and QD, or perhaps 61 adjacent pair that fits, t cards and say "I spy fac wins the cards for their t Bear in mind that there correct pairs, particular have many factors. For queens are worth 12. Play then passes to th then announces a diffe group so that everyone no more possible pairs of treasure is the winner.	deal them out face up in an 8 by 6 of cards that are either horizontally or iplies them together in her head and 24". We to race each other to spot two oduce that product, for example 2S H and 4H. As soon as they spot an hey must put their hands on the two ctors of 24." The first person to do so reasure pile. We may well be two or more possible rly with numbers such as 24 which this game, Jacks are worth 11 and e next player who mentally chooses erent product, and so on round the gets a turn. Continue until there are on the table. The player with the most

# 25

#### **Twenty Five from Five**

Cards Required:		Players:
FULL PACK,	J=11, Q=12, K=13	<b>BETWEEN 2 AND 5 PLAYERS</b>
Mathematical Concepts:	Mental addition and sub	otraction, inverse operations
How it works:	Shuffle the cards and gi the cards face down as the bank. Players have to try and cards in their hand. The and discards one card of pile. The new top card of the Play continues which ea card of the bank or b) th then discarding one of the winner of the round is th that their 5 cards total ea round is ended. Play continues for a set of rounds.	ve 5 to each player. Place the rest of a 'bank.' Turn over the top card of make the number 25 by adding all the first player picks up the face up card, of their choice face up onto a discount bank is also turned face up. ach player picking up either a) the top he top card of the discard pile, and heir own onto the discard pile. The first player to say "25" and show xactly 25. They get a point, and the amount of time or an agreed number

# **Cinquante Cinq**



Cards Requi	red:	Players: ANY NUMBER
A SET OF AC	E TO TEN, ANY SUIT	
Mathematical Concepts:	Addition, Partitioning str	rategies, subtraction, times tables
How it works:	Shuffle the ten cards. T its value. Turn over the time call out the running the finishing total will be There are lots of variat not start at 55 and try without any mistakes? Another popular alterna wish to practise. If you of you turn over each card the number shown. Rep Tiing yourself is a very to beat their own previou near them. ' <i>Yesterday's you</i> ' is the	Furn the first one face up and call out remaining cards one by one but this g total. If you do not make any errors 55. ions with this one. For example, why r to get to zero as fast as possible ative is to choose a times table you choose for example the sevens, when d, say out loud the multiple of 7 and reat for the whole set. good idea. Encourage children to try bus best score rather than the people e only person to beat!



These activities are suitable for ages 11-16

#	Name	Mathematical Ideas
27	Product Partners	Calculations, multiplicative reasoning
28	Averages	Mean, Mode, Median, Range
29	Make it Fair	Odd and even, probability
30	Fraction addition	Err- fraction addition
31	Fractions to 1	Four rules of fractions
32	Bigger Than Yours	<., >, equivalent fractions
33	Exponent Battle	Indices
34	4,3,2	Place Value, reasoning
35	The Snake	Number bonds, multiplication as repeated addition
36	Twenty Four	Four operations, reasoning
37	Factor Snap!	Factors, multiples
38	Countdown	Four operations, reasoning, trial and improvement
39	Closest to 50	Multiplication, addition, reasoning

#### **Product Partners**

Mathematical

Concepts:

How it works:





#### **Averages**

Cards Required:		Players:
FULL FACK (J=TT elc)		Any
Mathematical Concepts:	Mean, mode, median, range	
How it works:	A great way to cement kinds of average. Shu Calculate the mean by a mode if there is one, th and the range by subtra Once this is checked, t four cards, and repeat. the average of the tw processes are the sam then 6, then 7, and so c of average and the rang If you wish to make this calculations correctly Alternatively, the teacher could work on them sim	pupils' understanding of the different ffle the cards and deal e in a row. adding them and dividing by three, the he median by finding the middle card, acting the smaller from the larger. They should deal a new row but with This time of course the median will be wo centre cards, but all the other he. Next they deal a row of 5 cards, on, each time finding the various types ge. Is a race, the first team to do all their up to 10 cards wins the game. For could deal the cards and all groups ultaneously.

# Make it Fair



Cards Requi 2 SETS OF A	red: .CE TO SIX, ANY SUIT	Players: TWO
Mathematical Concepts:	Odd and even, probabil	ity
How it works:	Each player has an ace 'ODD', the other is "EVI face down, then turn o they are a match, the reshuffled. If the two o player who is 'ODD' wi then the player who is 'I five points wins the gam After a few games, ask fair or not (it isn't!) and rule can they think of to This game 'feels' fair bu of the 'ODD' player. It is this is the case.	e to a six. One player chooses to be EN'. Both players mix their own cards ver their top cards simultaneously. If cards are replaced and the packs cards differ by an odd number, the ins a point; if the difference is even, EVEN' wins a point. The first player to le. the players if they think the game is ask them to explain why. What new make it fair? t is actually weighted slightly in favour interesting for pupils to work out why



# **Fraction Addition**

Cards Requi FULL PACK	red:	Players: Any
Mathematical Concepts:	Fraction addition	
How it works:	Shuffle the pack and de They have to rearrang (make numerator < den Finally, they have to provides plenty of self many obvious variations For example, once they numerators around and Does it change? Which Repeat with another se also choose to subtract,	al four at random to each person. the their cards to make two fractions ominator). add their fractions together. This f-generated practice, and allows for s. y have finished they could switch the investigate what happens to the total. way? Why? Can you predict? At of four cards. This time they might for example.

#### Fractions to 1



Cards Requi FULL PACK	red:	Players: ANY
Mathematical Concepts:	Fractions, four operation	าร
How it works:	This is an ideal follow-up As before, take a rando to arrange them into two Easier said than done, not be possible to get e about which fractions possible. For an added twist, yo make it easier? What at It is a good idea for this fraction may not be impli- then is fine	p to the previous activity. om selection of four cards. The aim is o fractions, whose total is 1. and of course most of the time it will exactly one, so the real aim is to think would yield a total as near to 1 as u could allow subtraction - does this bout multiplication or division? task to remove the restriction that the roper; a bit of improper every now and



# **Bigger Than Yours**

Cards Requi FULL DECK	red:	Players: Pairs
Mathematical Concepts:	<., >, equivalent fractions	
How it works:	Each player draws two and arranges them into the numerator, and the l They must then decide cannot agree, a calcul dividing). The player wh and the game continues The winner is the play terms of who wins, this there is still value in the relative size of each frac	random cards from a shuffled pack a fraction, so that the smaller card is arger is the denominator. • who has the larger fraction. If they ator can be used to adjudicate (by to has the larger fraction wins a point, o until the pack runs out. • until the pack runs out. • er with the most wins. Of course, in is a game of luck rather than skill, but e discussion as they reason about the ction. • = ?

# **Exponent Battle**



Cards Required:		Players:
ACES TO FIVES		Any
Mathematical Concepts:	Indices	
How it works:	Each player takes two cards at random from the shuffled pack. They arrange them in one of two ways:	
	Each player does the se expression, treating the in the example above, the right hand pairing LOWEST value wins. T exponents and the effe example, the player wit less; 3 to the power of 5	ame, then they have to evaluate their card on the right as an exponent (so the left hand pairing is worth 3 <sup>2</sup> , and is worth 2 <sup>3</sup> . The player with the This will really make them think about ect that they have on numbers. For th 3D and 5H has to decide which is o, or 5 to the power of 3.
	3	





Cards Requi ACES TO NI	red: NES	Players: 2 - 4
Mathematic al Concepts:	Place Value, reasoning	
How it works:	Shuffle and deal nine c hold the cards in their order. The players then have cards - a two-digit num digit number but trying time. The cards are the two-digit, three-digit and Players then reveal the has won that particular receives 2 points, the four-digit 4 points. If the games works well who Shuffle the cards after e Some nice tactics here the 1's in the first roun rounds.	ards to all players. Get the players to hands and fan them out in numerical to make three numbers using their ber, a three-digit number and a four- to make the BIGGEST number each en put down on the table face down - four-digit. ir numbers one at a time to see who round. The highest two-digit number three-digit number 3 points and the ere is a tie the points are shared. This en played for three or four rounds. each round. if a player has small numbers - ditch d and save the bigger ones for later

# The Snake

T



Cards Requi FULL PACK	red:	Players: Any	
Mathematical Concepts:	Number bonds, multiplication as repeated addition		
How it works:	From a shuffled pack de The aim of the activity is etc) without writing any simply work from left to if the cards are not in a there are two other bend The first is to look for r are 3 sevens, they could fair amount of work. The second is to look for For example, if you spot as '10', or if you spot Q a '20'. The object of the activit the cards as possible. If methods so that they ha as some methods are may not occur to all ch talk about their ideas. cards is that they can their thinking and explar	eal ten cards face up on the table. Is to find the total of all the cards (J=11 thing down. One way to do this is to right (or along a line of your choosing a straight line, hence 'the snake'), but eficial strategies to be encouraged. The peated cards. For example, if there d be thought of as 3x7, or 21, saving a for number bonds to either 10 or 20. It 3C and 7S, they could be thought of H and 8D they could be thought of as ty is to find as efficient a way to total Encourage pupils to explain their own ave a chance to learn from each other, more useful in certain situations, but hildren unless they have a chance to The huge benefit of doing this with move the cards around to help with hations.	



# **Twenty Four**

Cards Requi	red:	Players:	
ACES TO NINES		Any	
Mathematical Concepts:	Four operations, reasoning		
How it works:	There is a popular commercially-available card game called '24'. Each card has four single-digit numbers around the outside, and the aim is to combine them using calculations in order to get an answer of exactly 24. However it is perfectly possible to play even if you don't have access to the cards. Use a shuffled pack of cards, and deal the top four onto the table. Now try to combine them using, addition, subtraction, multiplication and division to arrive at 24. The only rule is that each number must be used exactly once. This can be done as a collaborative activity or as a race (as in the original version of the game). If the latter, the first person to say a calculation that is agreed by the other players wins the four cards for their treasure pile. You will be able to play nine rounds if using the whole pack once.		

#### **Factor Snap**

37

Cards Requi	red:	Players:	
FULL PACK		тwo	
Mathematical Concepts:	Factors, multiples		
How it works:	It might feel a bit odd children, but this versio the cards and give half t	I to play SNAP with secondary-age n will really make them think. Shuffle to each player.	
	Both players turn over their top card simultaneously. They can say SNAP if and only if one card is a factor of the other, or if the cards share a common factor.		
	For example, if these two cards are turned over it is possible to correctly call 'snap', as they share a common factor of 3.		
	9		
	The player who correct the cards do not share each player dealing a r the player with the most	ly calls SNAP first wins the cards. If a common factor, play continues with new card. After a set amount of time, cards is declared the winner.	



# Countdown

Cards Requi	red: NS	Players: ANY, IN SMALL GROUPS OR WHOLE CLASS	
Mathematical Concepts:	Four operations, reason	ing, trial and improvement	
How it works:	Similar to the popular TV Shuffle the cards and o choose a random 3 dig cards to create a 3-digit The object of the gar combining some or all operations. Of course this is not al award points to the pers Repeat as required, bu various players' solution	V show: deal out 7 face up on the table. Now it number by dealing out three further number. me is to reach the 3-digit total by of the original 7 cards using the four ways possible, so you might wish to son who gets closest to the number. It always take time to work through s to the problem.	

# **Closest to 50**



Cards Required:		Players:	
ACE TO QUEEN (Q=12)		MANY	
Mathematical Concepts:	Multiplication, addition, I	reasoning	
How it works:	Having removed the kill each player. Every player has to arr then multiply each pain totals together and see v The ideal outcome is th 50. In reality this rarely for each player is to arr get as close to 50 as po For example, if dealt QI lay them out to give the $12 \times 2 (24)$ $7 \times 3 (21)$ $3 \times 5 (25)$ , which gives 6 Is there a better arrange	ngs, shuffle the cards and deal 6 to ange their cards into three pairs and r together. They then add the three who is closest to 50. Nat the three totals add up to exactly happens of course, so the challenge range their cards in such a way as to ssible. D, 3H, 2S, 5S, 7C and 3D, you might following calculations: 60, off by just 10.	



Finally, a few MAGICAL activities!

#	Name	Mathematical Ideas		
40	Ace Speller	Spelling, reasoning		
41	Piano Trick	Odd and Even, Commutativite multiplication		
42	Massive Memory	Bonds to ten, modulo arithmetic, reasoning		
43	Parity Trick	Parity, odd and even numbers		
44	The Bus to Euston Square	Addition, reasoning, commutativity		
45	The Trick that fooled Einstein	ed Einstein equivalence, inverse		
46	Your Card, My Card	Algebraic reasoning, mental arithmetic		
47	Thirty Seven	Division, factorising, algebra		
48	Deal or Switch	equivalence, pattern		
49	Heaps of Aces	Inverse operations		
50	The Tenth Card	Addition and subtraction		
51	Twenty One Card Trick	Iteration		
52	Tell The Truth	??????!		

# **Ace Speller**



Cards Requi	red:	Skill Level: Medium
SINGLE SET	OF ACE TO TEN	
Mathematical Concepts:	Spelling, reasoning	
How it works:	The magician (that's yo 'A-C-E', moving a card E, instead of putting the up. Lo and behold, it is the Your cynical students impressed. But then you third card - it turns out table. Now they are a b Sure enough, you repet time the correct card ap Their challenge - can the Give each pair of child work on the problem.	u) takes a packet of cards. They spell from top to bottom. On the final letter, a card on the bottom, they turn it face the Ace. You place the Ace aside. are mildly surprised but not overly u spell 'T-W-O', turning over the new t to be the Two. You place it on the it impressed, but trying not to show it. eat this all the way to TEN and each pears. ey work out the order of the cards? ren a set of 1-10 cards and let them



# **Piano Trick**

Cards Required:		Skill Level:	
ANY 15 CAR	DS.	BASIC	
Mathematical Concepts:	Odd and even numbers, commutativity of multiplication		
How it works:	Ask someone to place the Starting with their left he pair of fingers saying 'P four pairs in total. (8 car Move onto the right has three times, but in the finan ODD card." Stress that the odd car take out each pair of placed, and as you tak into two even piles on even size as you are p seven pairs and then ta pile would you like the C Place the odd card or magical wave, then cla move. When they express asked for the odd card saying "PAIR, PAIR, F number. Pick up the ot PAIR, PAIR, ODD CAF pairs and an odd card! F	heir hands in 'piano playing' position. hand, place two cards between each pair, Pair" etc. each time. You will deal ds). and. Do exactly the same apart thing nal gap deal the odd card saying "and rd has gone to their right hand. Next cards in the same order they were e them out say "Pair" and split them the table. Explain that both piles are blacing a card on both. Repeat for all ake the odd card and say "And which DDD card to go on?" n whichever hand they say. Make a im that you have made the odd card ess doubt, pick up whichever pile they d to go in, and deal the cards in 2s PAIR, PAIR." There will be an even ther pile and say as you deal "PAIR, RD." Sure enough there will be three But how does it work?!	

#### **Massive Memory!**



Cards Required:		Skill Level:	
і тип раск		ADVANCED	
Mathematical Concepts:	Bonds to ten, modulo arithmetic, reasoning		
How it works:	The magician asks the sp any spot card but not sho looking at each card just i one. She deals through the second time she seems through she correctly ann Here's the secret - it's ki 1-10 add up to 220, so magician kept a runnin Therefore if she gets to t she knows that a 3 must as the spectator was aske BUT: this takes a lot of co is a better way. In her he but every time the total go this way keeps her cal example, suppose the firs another 9. The running total would I Once she gets to the en missing card must be a si The second run through is she spots three of the size Don't dismiss this - it will impressive memory! Also calculation practice.	pectator to shuffle the pack and take out we the magician. She then claims that by twice she will be able to spot the missing remaining 51 cards slowly once. The s to race through the cards - halfway ounces the name of the missing card! hown as 'casting out tens'. Four sets of if all the cards were present, and the g total, this is what she should get. he end of the pack and the total is 217, be missing. Court cards can be ignored, ed to take a spot card initially. Decentration and is prone to error. There ead, the magician keeps a running total bes over 10, she simply subtracts 10 and culations to single digit numbers. For st 4 non-court cards are a 9, a 7, a 5 and be 9, 16 (so 6), 11 (so 1), 10 (so zero). d, let's say she is on 4. She knows the x (bonds to 10). s to spot 6H, 6C, 6S and 6D. As soon as es, she simply names the missing one! I make you look as though you have an b, more importantly, it is fantastic mental	



Cards Required: 1 full pack		Skil Level:	
		INTERMEDIATE	
Mathematical Concepts:	Parity, odd and even		
How it works:	How it works:You will need an accomplice for this one. Lay out 16 cards in a 4 by 4 array. Ask your accomplice to leave the room, or to turn their back.Ask a volunteer to turn any 8 cards face up. You then mix the cards around so that each row contains both face up and face down cards. Invite the volunteer to turn over a single card.Your accomplice turns round and immediately correctly indicates the card that the volunteer turned over!The secret lies in the rows and columns. When you mix the cards, make sure that every row and column has an even number of face up cards (zero, 2 or 4).Whichever card they then turn over, when your accomplice 		
	Better still, why not get students to work it out and invite to perform it?		



Cards Required: 16 - see below		Skil Level:			
		BASIC			
Mathematical Concepts:	Addition, reasoning, commutativity				
How it works:	Set out a grid of sixteen cards, 4 cards by 4 cards, using any suits but with these values:				
	5 3	3	6	4	
	4 2	2	5	3	
	6 4	4	7	5	
	7 5	7 5 8 6			
	Invite four spectators forwards. The first person places 50p on any card face, then turns face down the other cards in its row and in its column. Once this is done, the next spectator is invited to place their coin on any face up card, then similarly turn face down the cards in its row and column (if not already face down). This is repeated for the third spectator (who has a choice of four cards) and finally the fourth spectator is left to place her 50p on the last card.				
	You display a picture of the Number 20 Bus, Destination Euston Square, Ticket price £2.				
	Add up the money that has been placed down - £2 Add up the values of the face-up cards - 20. All aboard! So: why is the total always 20? What is the secret of the grid? If each number in the grid is the sum of its (invisible) column header and row header, what were they?				

Cards Required: 1 full pack		Skil Level:
		BASIC
Mathematical Concepts:	equivalence, inverse	
How it works:	<ul> <li>This is fiendish! Ask a spectator to cut a small packet from the top of a face-down pack. The number isn't important, but explain that they will need to count so not take more than around a dozen.</li> <li>Meanwhile you also take a packet - make sure that you take roughly 9 or 10 more cards than them. Now instruct your spectator to count their cards secretly while you do the same.</li> <li>Say that even though you couldn't know how many they have, you are confident enough to make not one but three predictions!</li> <li>here's how: if you find you have 20 cards, say: "I have the same number as you, plus 4 plus enough to make your number add up to 16."</li> </ul>	
Note that the two bold numbers can be anythin they add up to the number of cards in your har cut off 23 cards, you could change the num prediction to (say) <b>5</b> and <b>18</b> .		numbers can be anything as long as aber of cards in your hand. So, if you could change the numbers in your t <b>18</b> .
	Ask the spectator to count their cards, one at a time, face down onto the table. Deal yours to match, then another 4, and finally starting with the number one larger than theirs, count on and you will run out at exactly 16 - your prediction was correct!	
	There is some very clever algebra at work here. But what	



Cards Required:		Skill Level: BASIC
ACES TO NI	NES	
Mathematical Concepts:	Algebraic reasoning, me	ental arithmetic
How it works:	Invite everyone in the class to take a card from the pack, without you knowing its value. Take any 8-spot (8C, 8H, 8S, or 8D) for yourself but do not reveal its value yet. Now ask everyone to do the following steps: Double your number Add 2 to the total Multiply by 10 Halve Subtract 2 Now announce "You are now thinking of a 2-digit number. This number was predicted ahead of time. The first digitis in your hand!" Ask them to take a look. And then announce: "But more amazingly, the second digitis in MY hand!" Slowly turn your card around to show them the 8; this works - the algebra is quite simple as follows. Suppose their number is 'n':	



#### Mean Thirty Seven

Cards Required:		Skill Level:
ACES TO NINES		BASIC
Mathematical Concepts:	Division, factorising, algebra	
How it works:	Division, factorising, algebra         Ask the pupils to take any 3 cards and ask them to investigate how many ways they could arrange them to create a 3-digit number. There are 6. Once they have found all six, ask them to write down and calculate the mean average of the six 3-digit numbers.         Finally, they should divide this average by the total of the 3 digits that make up their original choice.         Without knowing anything, you announce that the answer is - THIRTY SEVEN?         So - how?         Algebra provides the solution here; if the three digits are a, b, and c the total of all 6 numbers will always be 200(a+b+c) plus 20(a+b+c) plus 2(a+b+c), i.e. 222(a+b+c).         Dividing this by 6 to find the mean gives 37(a+b+c). Divide this by (a+b+c)et voila!         (Thanks SDTF - I had never seen it done like this!)	

#### **Deal or Switch?**



Cards Required:		Skill Level:
ONE SET OF SUIT	ACE TO TEN, ANY	BASIC
Mathematical Concepts:	Equivalence, pattern	
How it works:	Hold the packet of ten or mix them according to 'deal', you deal the top of If they say 'switch', how the two top cards and table. During the whole down. Ask them to say 'deal' of the cards are dealt into look for patterns in ma one. Amazingly, they order? How? Before the t 10-9-8-7-6-5-4-3-2-A or packet) but do not rev exactly as described and Because dealing and s for them to work out w plenty of sets ready! Warning- you will likely the	cards face down. Explain that you will your spectator's wishes. If they say card, still face down, onto the table. wever, you <i>first switch the position of</i> <i>then</i> put them down as a pair on the procedure, keep all of the cards face- or 'switch' again, and continue until all a pile. Explain that it is important to ths, and turn over the cards one by are in perfect A-2-3-4-5-6-7-8-9-10 rick starts, have the cards in der, (10 on the top of the face-down real this fact. Now perform the trick d it will work automatically! Why? switching changes nothing; but that's vith their own set of cards, so have fool yourself the first time you try this!

Cards Requi	red:	Skill Level:
FULL PACK		BASIC
Mathematical Concepts:	Inverse operations	
How it works:	<ul> <li>it Secretly have the aces on top of the face-down pack. Ask the spectator to cut the pack into four roughly equal piles, Keep the cards face-down throughout the trick. Put the piles in a row across the table. Keep track of the pile with the aces on top, and make sure it goes at the end of the row. We will refer to it as pile 4.</li> <li>Pick up the pile at the opposite end (pile 1). Explain how the cards are going to be mixed. Deal the top three cards, one at a time, face down into the space just vacated by pile 1. Next, deal a single card onto each of the other three piles in any order, chosen by the spectator.</li> <li>Ask them to do exactly the same procedure with pile 2; pick it up, deal three cards into the space, then one card on top of each of the other piles. Ask them to do the same with pile 3, and finally with pile 4. (Secretly the aces pile).</li> </ul>	
Finally, ask them to turn over the top card of each pil will be staring at the four aces!		n over the top card of each pile - they r aces!
	How - this is to do with inverse operations. The first three deals ADD A SINGLE CARD on top of the aces. The final deal REMOVES THREE CARDS - this precisely 'undoes' the addition and leave the aces to be spread out across the four piles - genius and certainly one of my favourite card tricks!	

#### **Tenth Card Prediction**



Cards Required:		Skill Level:
FULL PACK		BASIC
Mathematical Concepts:	Addition and subtraction	
How it works:	Secretly note and write down the name of the tenth card from the top of a pack. Now ask someone for a number between ten and twenty (I explain that we don't need to use the whole pack for this trick, so how many would you like me to use etc. to make it feel a random choice.)	
	Deal this many cards off the top, keeping everything face- down. Put the rest of the pack out of the way, as we do not need them again. Now say you will select one of the cards at random.	
	Ask the spectator to add together the digits of their number (for example if they had chosen 16 the total would be 7. Ask them to deal down to the 7th card in the pile and loo kat it.	
	Reveal your written pree looking at!	diction - it is exactly the card they are
	How? I invite you to try this in private first, but with the tenth card turned face-up. Hopefully this will help you to see how the trick works.	
	Clue: the higher the nuppack the original tenth c	mber called, the further down in the ard will be



#### Twenty One Card Trick

Cards Required:		Skill Level:
ANY 21 CARDS		BASIC
Mathematical Concepts:	Iteration	
How it works:	No book of mathematical card tricks would be complete without this old chestnut - just don't ever show it to a magician or they will groan!	
	Deal 21 cards into 3 piles of 7, making sure each card is visible. Ask the spectator just to think of any card, and to indicate which pile it is in. Gather up the piles, ensuring that the chosen pile goes between the other two, Now quickly redeal the cards, dealing across rather than down, so deal a card to pile A, a card to pile B, a card to pile C, then another card to pile A, etc.	
	Again, ask the spectator which pile their card is in. Again, as you gather up the cards, place this pile between the other two. Do this a third time and finally gather up the cards.	
	Explain that you will find	their card by magical spelling.
	Spell and say 'Y-O-U-F for each letter. Pause card. It will be theirs!	C-A-R-D I-S', dealing a single card dramatically, then turn over the next
	This procedure always eleventh position, so you	guarantees that their card will be in u can spell anything that fits!

#### **Tell The Truth!**



Cards Required:		Skill Level:
ANY NINE CARDS		BASIC
Mathematical Concepts:	WHO KNOWS??!!!	
How it works:	<ul> <li>Ask the spectator to shuffle the cards, then place the 9 cards face down in 3 piles of 3.</li> <li>Next they should lift up a pile, look at the card on the face, and replace that pile on top of either of the other two, then put this larger pile on top of the third pile to reassemble the pack. You can have your back turned if you trust them!</li> <li>Now pick up the pack and tell them that you are going to spell to their card, but that they are allowed to lie when answering your questions.</li> <li>Ask for the value of the card. Whatever they say, deal cards one at a time, from the top of the packet, into a pile on the table. When you finish, drop all the cards in your hand on top to reassemble the packet. Now spell 'OF", and do the same procedure (i.e. deal two cards face down, then drop the remainder on top.)</li> </ul>	
	Next ask for the suit of their card, reminding that that they can lie if they wish. Repeat the dealing process.	
	Finally, spell MATHS. Turn over the card dealt on the letter 'S'; it will be their card!	

So there we are; 52 cool things to do with a pack of cards in maths classrooms.

I hope that you find at least some of them really useful and enjoyable to develop your pupils' mathematics skills.

Andrew Jeffrey, 52, 1st July 2018



