

Manipulatives of the Month

Pack of cards

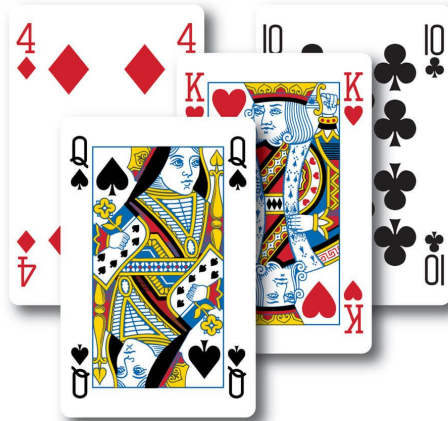


Pack of cards

Playing cards are typically made from paper. They are commonly used for playing card games, magic tricks or even fortune telling.

A 'standard' pack of playing cards consists of 52 cards with four different suits of Spades, Hearts, Diamonds and Clubs.

Each suit contains 13 cards: Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King. Modern decks also usually include two Jokers.



History:

Playing cards have been around in Europe since the 1370s. Some early packs were hand painted works of art which were expensive and affordable only by the wealthy. But as demand increased, cheaper methods of production were discovered so that playing cards became available for everyone.



England, 17th century

10 ways to use playing cards in the maths lesson

This month we explore **10 different ways to use a pack of playing cards** in the maths lesson.

Playing cards are a fantastic resource for the classroom. A pack of playing cards contains a lot of maths just waiting to be explored. Every card has a number value, most have numbers on them, and all have symbols (hearts, diamonds, spades, clubs) that can be counted and correspond to the number on the card.



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Fancy a quick game of cards?

Card games can change student's perceptions of learning about numbers, help them to build confidence and give them a practical and tactile experience. This resource allows students to practise many different elements of maths, from core skills like addition and subtraction to more complex concepts like fractions and probability.

Using playing cards for maths really stacks up when you want to deal with numbers!

Activities



1. Quick sort
 - *Ordering & number recognition*
2. Lower or higher
 - *Memory & sequencing*
3. Bigger than yours
 - *$<$, $>$, equivalent fractions*
4. Simple Place Value with a Twist
 - *Place Value & reasoning*
5. Find or Grab!
 - *Memory & addition of number bonds*
6. Make 25 with 5
 - *Fluency practice with addition*
7. Question Time
 - *Develop fluency with numbers*
8. Factor Snap
 - *Factors & common factors*
9. Total 100
 - *Column addition & Place value*
10. Speedy Doubles
 - *Doubles & mental recall*

1. Quick sort

Ordering and number recognition



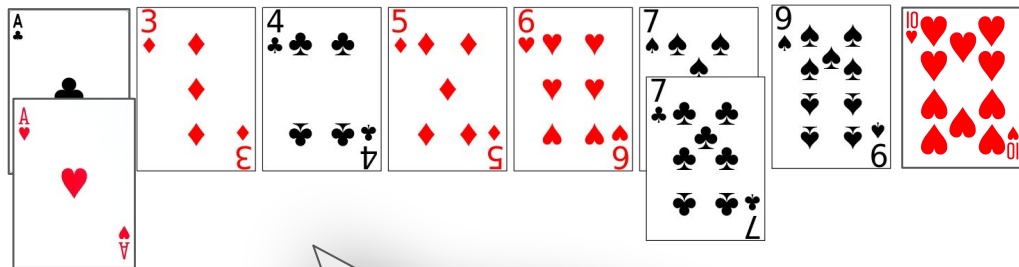
Required: Cards Ace to Ten and 1 - 4 players

Shuffle the pack and deal ten cards face down to each player. Make sure that each player has plenty of table space for this game.

Say “1,2,3 go”, and each player must look at and then correctly arrange their ten cards in ascending order (from left to right) in a row in front of them. If they have two cards of equal value they should place them in a staggered pile.

The first person to place all ten cards correctly wins the round. Each player then collects up their ten cards, mixes them and passes them to the person on their left.

Then the game starts again.



1,2,3 go

2. Lower or higher

Memory and sequencing



Required: Any complete suit. (Ace to King)

Mix the 13 cards face down. Turn the top card face up.

Say whether you think the next card will be higher or lower (King is the highest, Ace is the lowest). Turn it over. If you are correct, repeat the process and guess whether the second card will be higher or lower than the second card.

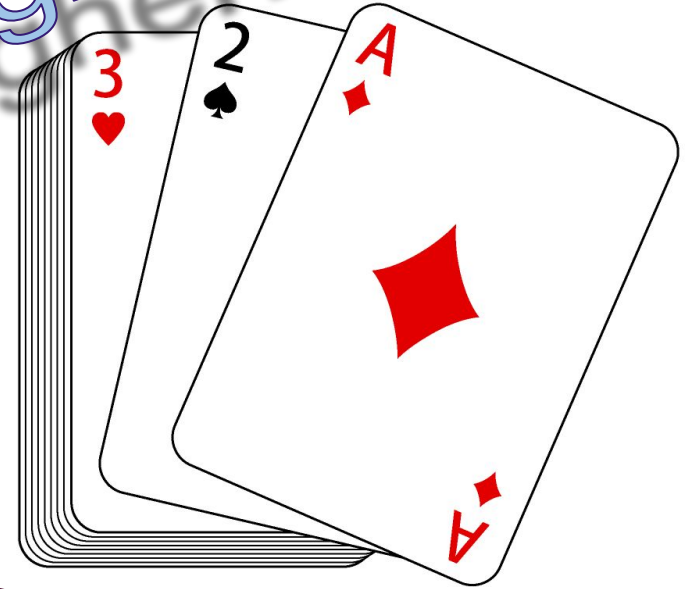
Keep going as long as you guess correctly; when you guess wrong, mix the cards together and another player has a turn.

The winner is the first person who guesses correctly twelve times in a row (i.e. completes the whole suit).

Alternatively, play for a set amount of time and the winner is the person who has the longest 'run' of successful guesses.

You could try with several suits or even the whole pack.

"Higher!"



"Lower!"

3. Bigger than Yours!

$<$, $>$, equivalent fractions



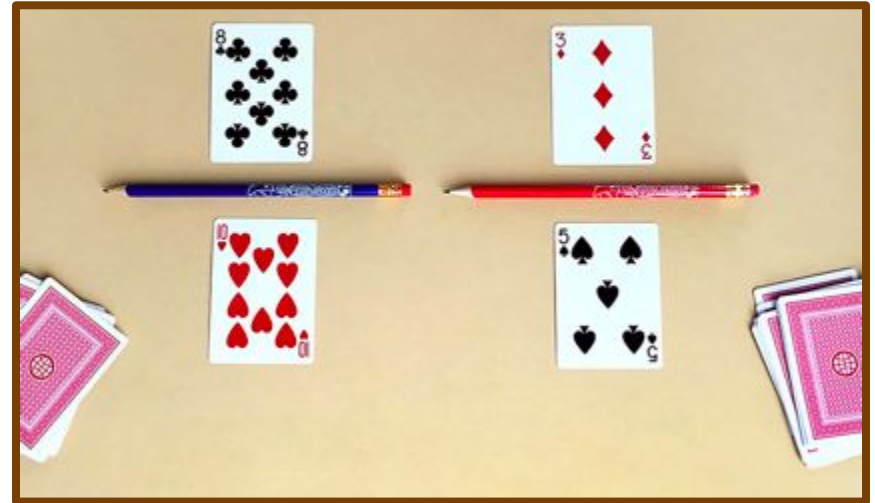
Required: Full pack of cards and 2 players

Each player turns over 2 cards. Then the players make the largest fraction they can with their 2 cards, deciding which should be the numerator and denominator.

The player with the largest fraction wins the cards.

If they are unsure, a calculator can be used to adjudicate (by dividing).

The game continues until the pack runs out.
The winner is the player with the most wins.



This is a game of luck rather than skill, but there is still value in the discussion as they reason about the relative size of each fraction.

4. Simple Place Value with a Twist

Place value and reasoning

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Required: Aces to 9s and 2 - 4 players

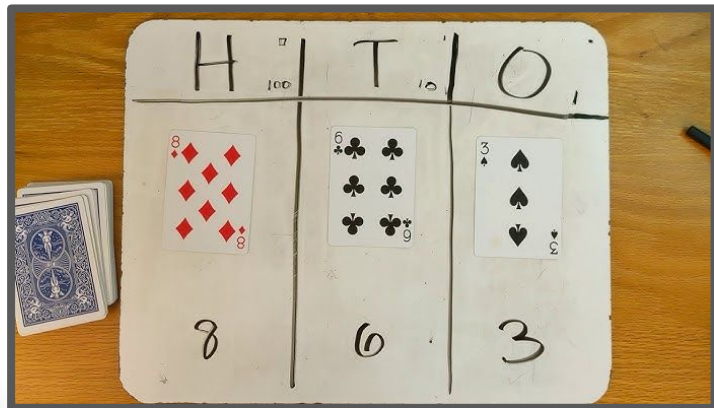
Simple: Flip over 3 cards. Each player creates the largest number they can. Players compare numbers, and the largest number wins.

The Twist: Shuffle and **deal nine** cards to all players.

The players then have to **make three numbers** using their cards - a **two-digit** number, a **three-digit** number and a **four digit** number but trying to make the **BIGGEST** number each time.

The cards are then put down on the table face down - two-digit, three-digit and four-digit. Players then reveal their numbers one at a time to see who has won that particular round.

The highest two-digit number receives 2 points, the three-digit number 3 points and the four-digit 4 points. If there is a tie the points are shared.



This game works well when played for three or four rounds. Shuffle the cards after each round.

5. Find or Grab!

Memory and addition of number bonds

Required: Pack of cards (alter suit to suit players) and 2 or more players

We are making number bonds in this game
For example, number bonds to 10. You can vary the total. If player 1 turns over a 2, they would then need a 8 to make 10.

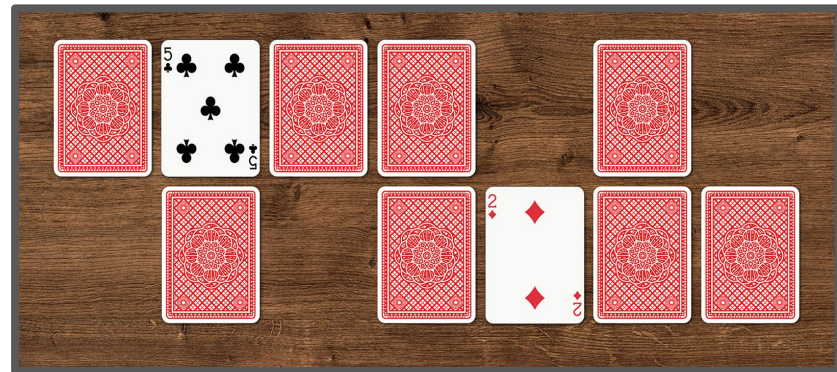
Place cards on table face up for easy level or face down for a challenge.

Take turns to find matching pairs of cards that make the total agreed. Keep going until you turn over two that do not make the total. Then it is the next player's turn.

Play continues until all pairs are found.

Select another number to make and play again!

GRAB - spread the cards onto the table and say 'Find two cards to make 10.' etc



6. Make 25 with 5

Fluency practice with addition



Required: Pack of cards and 2 - 4 players

Each player is dealt 5 cards to hold in their hand. The remaining cards are placed face down in a pile in the centre (discard pile). The top card is turned over and placed beside the pile.

Play the Game

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

Players take it in turn 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.

Gain or loss

Required: Pack of cards and 2 - 4 players

Each player starts with 15 points. Values are assigned to face cards. Place the cards in the middle of all players. The first player flips a card over.

- If the card is **black**, they add it to their total.
- If it's **red**, they subtract it.

Highest point total when all the cards are gone wins!

7. Question Time

Develop fluency



Required: Pack of cards (Ace = 1, Jack = 11, Queen = 12 and King = 13). Any number of players

Players can either grab a card or find a card in answer to the question.

Fractions

- The card which is a third of 9
- The card which is a fifth of 35
- The card which is a tenth of 100
- The card which is two thirds of 18
- The card which is three quarters of 12
- The card which is four fifths of 10
- The card which is half of 14

Factors

- The card which is a factor of 27 between 5 and 15
- The card which is the highest common factor of 4 and 8

Prime Numbers

- The card which is the next prime number after 8
- The card which is the third prime number (1 is not a prime number)

Multiples

- The card which is a multiple of 3 between 14 and 17
- The card which is a multiple of 2 greater than 8 but less than 12
- The card which is the lowest common multiple of 3 and 4.

Square numbers and square roots

- The card which is the square root of 169
- The card which is three squared

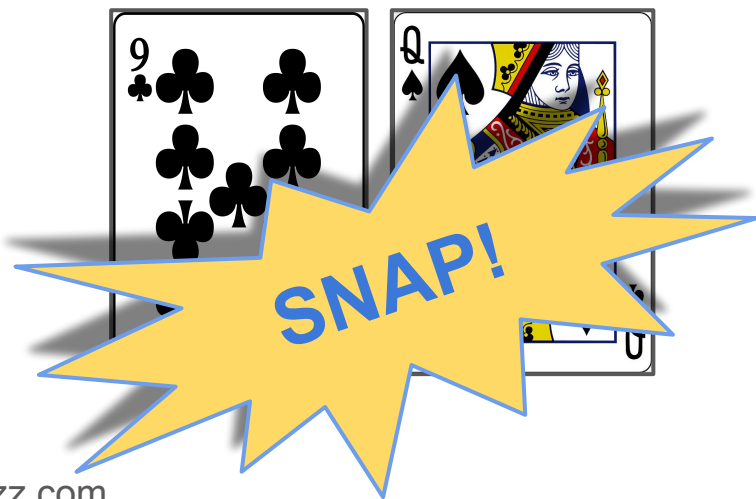
8. Factor Snap

Factors & common factors



Required: Pack of cards (Ace = 1, Jack = 11, Queen = 12 and King = 13) and 2 players

Shuffle the cards and give half 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**.

The player who correctly calls SNAP first wins the cards.

If the cards do not share a common factor, play continues with each player dealing a new card.

After a set amount of time, the player with the most cards is the winner.

9. Total 100

Column addition & place value

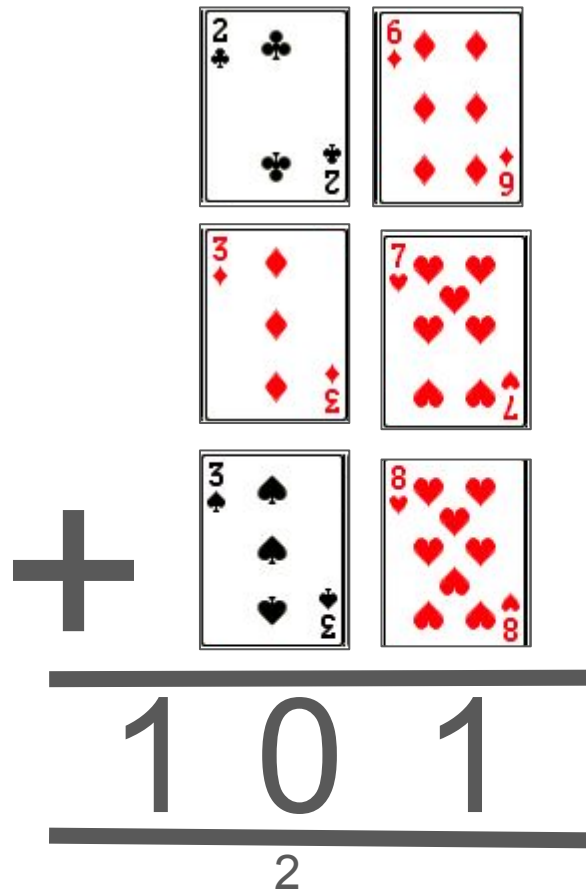
Required: Ace - 10 cards up to 6 players

Shuffle the pack and deal six cards to each player. Players must arrange their six cards like this, forming three 2-digit numbers, then find the total of these three numbers. Is this the closest to 100?

The object of the game is to reach a total as close to 100 as possible.

There are many possible variations.

How could you arrange the cards? What are you looking for?


$$\begin{array}{r} + \\ \hline 101 \\ \hline 2 \end{array}$$

10. Speedy Doubles

Doubles & mental recall



Required: Full pack, any number of players

Shuffle the cards and deal the top card face-up on the table.

Players must quickly work out the number that is double the value of the card and call it out. The first player to call it out wins that card for their '*treasure*' pile.

Once all the cards are dealt, the player with the most cards in their treasure pile is the winner.

It is possible to play this game in two or even three teams - players can take it in turns to represent their team. This avoids any one player dominating the game.

To take the speed element away altogether, each player could simply write down what they think the double is on their whiteboard, and a point is awarded to everyone who gets the correct answer.



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