M.E.C.S.

Mathematics Educational Card System

Overview

Our card game supports 2 to 8 players, aged from 8 and up. Length of game is 45 minutes (or above, depends on the end point the players decided.)

There are 2 stacks of cards (1 stack for numbers and 1 stack for symbols) at the middle of the table. Each player "plants" 2 cards at most in his turn, in order to construct a proper arithmetic or simple mathematic equation later. The goal of player is to construct more equations and finish them as fast as possible to yield more game points. When a player finishes an equation, he can flip all cards involved, and change it into his own game points.

Players: 2 - 8
Length: 45 minutes

Contents:

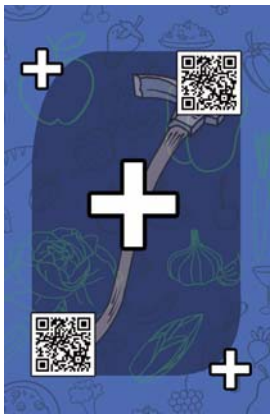
- Number card (0-9), 10 cards for each number
- Simple Arithmetic Symbol card (+, -, ×, ÷, (,) and =), 10 cards for each symbol except " = ", which has 20 cards.
- Advanced symbol card (/, $\sqrt{}$, . , x^2), 5 cards for each symbol
- 20 Objective cards,
- 1 rule booklet

Game Components

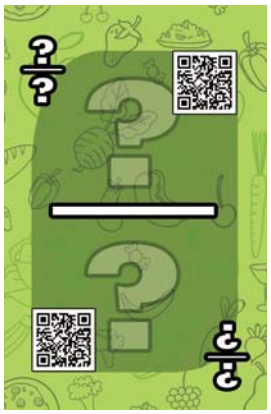
Each set of card game contains 200 play cards with 3 card types, and 20 objective cards, in different background color:

- Red: Number cards (0-9),
- Blue: Simple Arithmetic symbol cards (i.e. +, -, ×, ÷, (,) and =),
- Green: Advanced symbol cards (i.e. ⁄, √, . , x^2).
- Yellow: Objective cards, for challenge mode only

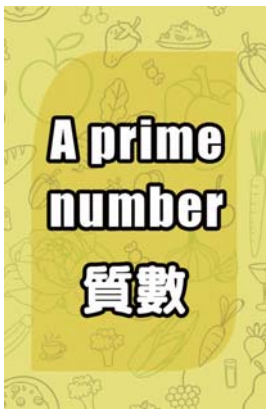
Number card



Simple Arithmetic symbol



Advanced symbol



Objective card

On the front side of play card, the number or symbol of the card is shown. There is a QR code that links to our website. Further information of the number or symbol are provided by QR code scanning, included:

- game tips,
- history of number or symbol,
- fun facts,
- Pronunciation in different languages,
- html5 online games about numbers.

The flip side of a play card is gold coin, which represents the game point the player earned.

1 game point

1 game point

2 game points

3 game points

Our card game system contains 2 game modes: **normal mode and challenge mode**.

How to Start a Normal Mode

Preparation

The area in front of each player is his "equation area". In each equation area, only 1 equation can be planted. Players cannot place the cards overlapping with each other unless there is advanced symbol card (i.e. green card).

For beginners' group, there are 2 stacks of cards, i.e. red and blue cards (One stack is for number card and the other one is for Simple Arithmetic symbols). No advanced symbol cards are involved. The preparation steps are:

1. Remove all green cards.
2. One player shuffles red and blue cards separately.
3. Place 2 stacks of cards with different color on the middle of the table as the draw deck, and all cards in each stack are face-down.

For advanced players' group, there are 2 stacks of cards, they are Number stack (i.e. red card stack), and Symbol stack (i.e. mixed blue and green cards stack). First stack is for number card, the other one is for Simple Arithmetic symbols and Advanced symbols.

1. Mix all green cards with blue cards.
2. One player shuffles red cards, and mixed blue and green cards separately
3. Place 2 stacks of cards on the middle of the table as the draw deck, and all cards in each stack are face-down.

Playing the game

Every player takes 3 cards from the number pile and 2 cards in the symbol pile, keep them in your hands.

After that, everyone takes one number card, and show it out directly. The one with the largest number starts first, then continue the game clockwise. Place this card face-down and put it back into the buttom of the number stack.

When it's your turn:

1. Draw 1 card from the next player's hands (the one who play after your turn, usually left hand side), put it in your hands.
2. **"Plant" on your equation area:** Active player must place down at least 1 but no more than 2 cards from your hands, "plant" the cards in your equation area on the table.
3. **Trade card:** If you only "plant" 1 card in your turn, you can choose 1 card in your hands, put it back to the bottom of the relevant stack, and then take 1 card from 1 of 2 stacks, to trade useless card. Trade card or not is optional. After trading, it is not reversible.
4. After you finish step 2 or step 3, the active player ends his turn.
5. The player to his left takes his turn.

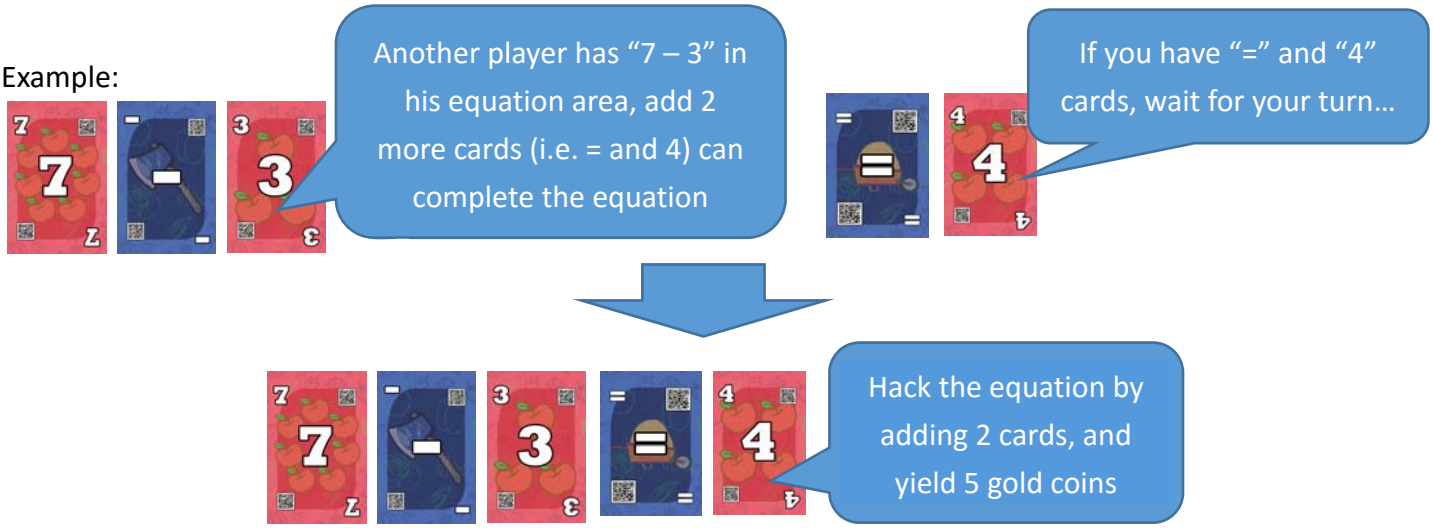
Do it any time:

1. **Restore cards in hands:** Always count how many cards in your hands. Draw cards from the stacks you like until you restore totally 5 cards. (e.g. When card is Drawn away by others, or your turn ends.)
2. **Change card order in equation area:** You can freely change card order in your equation area any time after "planting", but you cannot put any card back into your hands.

Hacking the equation of other players:

1. When it's other player's turn, try to look for any unfinished equation of other players that can be completed in 2 moves (i.e. adding only 2 cards)
2. If you find out one, see if you have suitable cards in your hands to complete it.
3. if you have suitable cards, wait for your turn.
4. When you are active player, draw card from the next player as usual.
5. Surprise the other player by hacking his equation. Instead of planting cards on your own area, plant correct cards to that equation area to complete the calculation. Flip those cards and take them back as your own gold coin.
6. The points that earned are sum up in YOUR total points!
7. Hacking equation is allowed when the equation can be completed by only "adding 2 cards". Players cannot change any order of cards in other players' area to satisfy the requirement of hacking, or adding any card that cannot immediately complete the equation.

Example:



Ending and scoring

When player flips cards as gold coins after completing equation, collect the gold coins as a stack and store it.

- 1 number card (red card) can yield 1 gold coin,
- 1 simple arithmetic symbol card (blue card) can yield 1 gold coin except blanket card (i.e. (,)), which can yield 2 gold coins
- 1 advanced symbol card can yield 3 gold coin.

The game ends when one of the players yield 15 game points, i.e. **15 gold coins**. Every player count his gold coins to see that who is the champion, the first runner-up, and the second runner-up. The more gold coins, the better result.

How to Start Challenge Mode

Preparation

1. Prepare 2 card stacks with the same method as the normal mode, but all green cards must be mixed with blue cards.
2. One player shuffles the objective cards (i.e. yellow cards) and all cards are faced down.
3. Draw 5 objective cards from the pile.
4. A Random Objective card is chosen and is shown it out directly, until the objective is completed.

Playing the game

Every player takes 3 cards from the number pile and 2 cards in the symbol pile, keep them in your hands. Start the game as normal mode.

1. In order to gain game points in challenge mode, the answer of players' equation must fulfill the objective of yellow card. This sets up a specific requirement for the format of players' answer.
2. The first one who complete the objective gains the game points. Flip the cards as gold coin and store it as the normal mode does.
3. Pick another objective card and show it to all players.
4. Basic rules of the game, including hacking equation and changing card order, are just the same as normal mode.

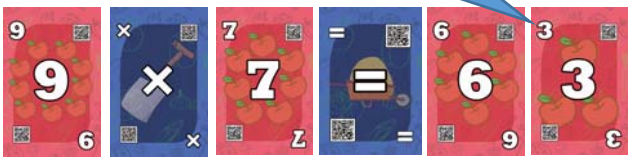
Ending and scoring

1. The game continues until players complete all 5 objectives.
2. The game ends and players score as normal mode.

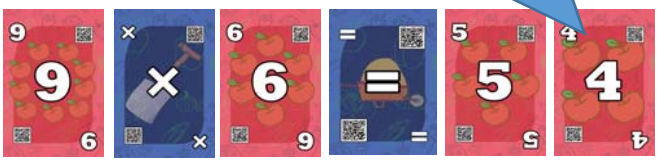
Example:

If the objective card shows "an odd number larger than 50"…

Case 1:
Answer is 63, an answer that is odd number and larger than 50, fulfilled the objective, so this player can yield 6 game points



Case 2:
Answer is 54, which did not fulfill the objective, so this player cannot yield the game points in this challenge mode even the equation is logical.



The web game by scanning QR code

Using mobile device to scan QR code on the number cards (except “0”), there is a little web game which can train players’ calculation skills. Simply use finger to drag and drop in order to calculate a target answer.

The game platform contains few parts:
1. Blue circle (arithmetic symbol)
2. Red circle (number)
3. Objective
4. Score and timer

The background contains the objective, i.e. the target answer of the calculation. It means after the calculation, the answer must be the same as the Background, in order to score.

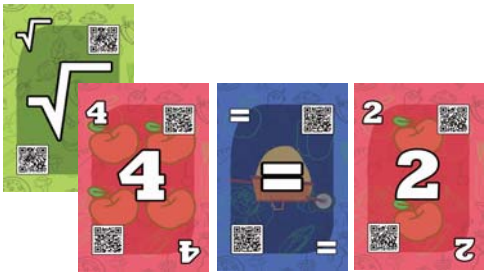
How to play:

1. The circles moves around randomly
2. When a blue circle collides with a red circle, they stick together and stops moving, creating a calculation.
3. If you drag another ball to the calculation, it pops out the answer.
4. Create an answer that matches the background number, to get a point.
5. When times up, type your name to leave your score on the scoreboard.

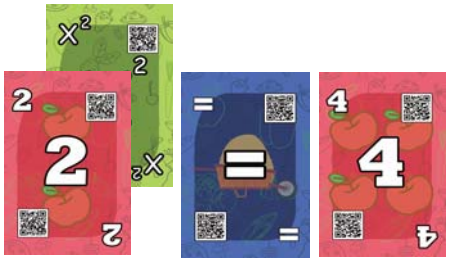
How to use advanced symbol cards

When using advanced symbol cards, there are special placements for them. Each advanced symbol card represents 3 gold coins. Overlapping the cards in need as follow:

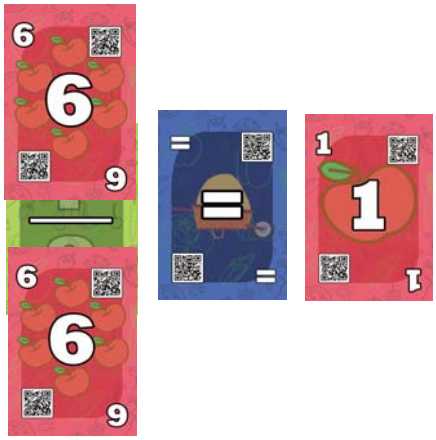
E.g. Usage of square root. In this case, totally 6 gold coins are yielded.



E.g. Usage of square. In this case, totally 6 gold coins are yielded.



E.g. Usage of fraction. In this case, totally 6 gold coins are yielded.



E.g. Usage of Decimal point. In this case, totally 13 gold coins are yielded.