Rulebook

Prologue: The Tale of Numberforge

In the heart of the realm, where the land's very essence is bound to the magic of numbers, lies the kingdom of **Arithmetopia**. For centuries, Arithmetopia has stood as a bastion of knowledge and wisdom, a kingdom built on the principles of arithmetic, geometry, and the secrets of prime numbers.

But today, the kingdom faces an unprecedented threat. Dark forces, known as **Math Monsters**, have descended upon Arithmetopia. These insidious creatures, born of chaotic equations and sinister algorithms, are wreaking havoc on the land, endangering the very fabric of this mathematically blessed realm.

Desperate to save his land, **King Mathias XII** ordered the kingdom's sages to invoke the ancient Summoning Algorithm, calling forth champions from beyond the realm: *humans* from a distant world. The prophecy says that only these outsiders possess the clarity and creativity needed to rekindle **Numberforge's** sacred flames.

To restore balance, four **Numerites** must be claimed from the four ancient **Numbermines** scattered across the realm, each resonating with a different essence of mathematical power. Only when all four are united within the flames of the Numberforge can a number of true perfection be forged, one powerful enough to unmake the chaos and banish the Math Monsters back into the void.

Now, as one of the summoned humans, you must journey through the land, craft powerful numbers, and face the Math Monsters that plague Arithmetopia. But only one will rise above the rest and earn the title of **Master Numberforger,** whose name shall be etched and remembered as the saviour of Arithmetopia.



Content of the Box:

48 Minion Monster Cards



42 Boss Monster Cards



1 Score Board



72 Royal Foundry Tool Cards



24 Starting Tool Cards



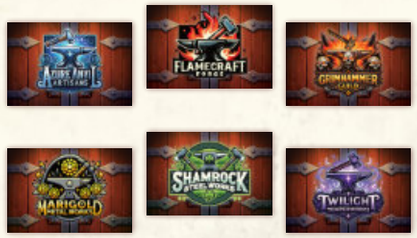
6 Player Tokens



48 Numerite Cards



6 Numberforge Cards



1 Royal Foundry Token



3 Score Reference Cards



10 Markers



Markers can be replaced with any standard whiteboard markers.

1 Timer



Battery not included.

Game Overview & Victory Condition

The game is played over **10 rounds.** Each round is divided into three phases:

1. Preparation phase
2. Numberforge phase
3. Scoring phase

In this game, **King's Favor [ ]** serves as both victory points and in-game currency. Players earn during the Scoring Phase and may spend it during the Preparation Phase to craft new tools

At the end of the final round, the player with the most King's Favor wins. If tied, play the Tiebreaker round. If still tied, the player who spent the most in the Royal Foundry wins. If the tie remains, players may either play another Tiebreaker round or share the victory.

First Game

If this is your first time playing **Numberforge**, we recommend the following:

1. Use **Normal** difficulty.
2. Play **without the timer** for the first game.
3. Assign an experienced or confident player as the **Game Master (GM).**
4. Allow players to ask questions and clarify their calculations during the game.
5. Focus on understanding the tools and rules rather than playing optimally.





Setting Up the Game

1. Choose one player to be the **Game Master (GM)**; a non-player may also serve as GM.

2. Each player chooses a color and receives the following in that color:
   - 1 Numberforge Card,
   - 4 Starting Tool Cards,
   - 1 Player Token
   - 1 Marker

   Each player then writes their name (or nickname) on the back of their Numberforge Card.

3. Choose a starting player and give him/her the **Royal Foundry token.**

4. Based on the players' skill level, the GM chooses the difficulty level of the game, then selects 11 Math Monsters according to the **Monster Deployment Guide** below. (e.g. at Normal difficulty, choose a level 2 or 3 Boss Monster for Round 8)

Round	Elementary	Easy	Normal	Hard	Brutal
1	Minion Lv 1	Minion Lv 1	Minion Lv 1	Minion Lv 1	Minion Lv 1
2	Minion Lv 1	Minion Lv 1-2	Minion Lv 1-2	Minion Lv 2	Minion Lv 2
3	Minion Lv 2	Minion Lv 2	Minion Lv 2	Minion Lv 2-3	Minion Lv 3
4	Minion Lv 2	Minion Lv 2-3	Minion Lv 2-3	Minion Lv 3	Boss Lv 1
5	Minion Lv 2	Minion Lv 3	Minion Lv 3	Boss Lv 1	Boss Lv 2
6	Minion Lv 3	Minion Lv 3	Boss Lv 1	Boss Lv 2	Boss Lv 3
7	Minion Lv 3	Boss Lv 1	Boss Lv 1-2	Boss Lv 3	Boss Lv 3-4
8	Minion Lv 3	Boss Lv 1	Boss Lv 2-3	Boss Lv 3-4	Boss Lv 4
9	Boss Lv 1	Boss Lv 2	Boss Lv 3	Boss Lv 4	Boss Lv 4-5
10	Boss Lv 1	Boss Lv 2-3	Boss Lv 4	Boss Lv 4-5	Boss Lv 5
Tiebreaker	Boss Lv 2	Boss Lv 3	Boss Lv 4-5	Boss Lv 5	Boss Lv 5



5. Prepare the table according to the following illustration:



6. Arrange the chosen Math Monster cards in the monster area in a staircase stack, starting with the tiebreaker monster, then the monsters faced from the last round to the first. Ensure each monster's target number remains visible.

7. Ensure the **Submission Area** is accessible to all players.

8. For non-competitive, relaxed play, the timer may be omitted. If used, set the **timer** to 1 minute and place it next to the Submission Area.

9. Choose the **Score Reference Card** that matches the number of players, then return the others to the box.

10. Prepare the Score Board and place all Player Tokens at **5 King's Favor** .

11. In the **Royal Foundry**, set up 12 different Tool cards in two rows of six. The number of each tool in the Royal Foundry must be equal to the number of players. Return all remaining cards to the box.

12. Shuffle the **Numerite cards** and place it face-down near the GM.

With this, you've completed the setup and are ready to play.



Preparation phase

1. The GM moves the top monster from the Monster Area to the Active Monster Area (or on top of previous active monster) on the Score Board (see table layout above) and announces its target number. If determining the target number requires drawing from the Numerite deck, draw the required cards, place them in the Monster Random Number Area, and follow the monster's instructions.

2. If a player owns **Secret Stash** (see Tool list below), the GM replaces the optional number if it was used in the previous round. If the number was not used, the Secret Stash owner may choose to keep it or replace it.

3. Starting with the player holding the Royal Foundry token and proceeding clockwise, each player may craft a tool by paying its **KF** cost and repositioning their token on the Score Board (cannot go below zero). Take the corresponding tool card and add it to your collection. For details, check the list below. You can also find this information on the back of the tool card.

4. All starting Tool Cards and any subsequent Tool Cards obtained from the Royal Foundry must remain visible on the table at all times.

5. Each player **may craft up to one tool per round. Crafted tools remain with the player for the rest of the game.**

6. Players may have multiple copies of the same tool. Each copy may be used once per round (e.g. two Addition Anvils allow two addition operations).

7. After all players have had a chance to craft, the GM confirms everyone's readiness. The game then proceeds to the Numberforge Phase.

List of Available Tools

Each tool may be used only **once per round**, but becomes available again in the next round.

No	Tool Name	cost	Function	Examples
1	Addition Anvil	2	Allows you to add two numbers to get their sum	2+3 = 5 5+9 = 14
2	Subtraction Chisel	3	1) Allows you to subtract one number from another to get the difference 2) Allows you to change a positive number into a negative number, and vice versa. 3) Using it twice in a row results in addition	8-2 = 6 6-9 = -3 -(3+4) = -7 -(-8) = 8 3-(-2) = 3+2 = 5
3	Multiplication Mallet	2	Allows you to multiply two numbers to get their product. Note: Adjacent brackets also indicate multiplication and require this tool.	6x8 = 48 4x(-7) = -28 (8)(9) = 72
4	Division Axe	1	1) Allows you to divide one number by another to get their quotient 2) Allows you to form a fraction	6÷2 = 3 7÷2 = 3.5 $\frac{2x3}{1+6} = \frac{6}{7}$
5	Square-Root Hammer	1	Allows you to get the square root of a number	$\sqrt{9} = 3$ $\sqrt{2} = 1.4142..$
6	Squaring Furnace	5	Allows you to square a number (i.e. multiply a number by itself)	$5^2 = 25$ $(-9)^2 = 81$



7	Secret Stash	3	This tool gives you an optional extra numerite card to use this round. If the number is used, it must be replaced with a new one next round. If unused, you may keep it or exchange it with a new number.	
8	Digit Duplicator	4	This tool allows you to use a number a second time	7+5 = 12, then 7(DD)+12 = 19 OR 12+12(DD) = 24
9	Decimachina	4	Allows you to multiply OR divide a number by 10	3x10 = 30 OR 3÷10 = 0.3
10	Increment-Decrement Quenching Tanks	5	Allows you to add 1 OR subtract 1 from a number	7+1 = 8 OR 7-1 = 6
11	Binary Bellows	6	Allows you to add OR subtract OR multiply OR divide a number by 2	6+2 = 8 OR 6-2 = 4 OR 6x2 = 12 OR 6÷2 = 3
12	Linking Chain	7	Allows you to link two INTEGERS to form a new number	$\overline{2\ 3}$ = 23 $\overline{10\ 5}$ = 105

**Important Note: Tools are limited to its usage above. Tools operation may only be applied to numbers. You may not modify, combine, or perform operations on a tool or on the defined effect of a tool. (see FAQs for examples).*



Numberforge Phase

1. The GM reminds all players of the monster's target number.

2. Before starting, the GM ensures the Numerite deck has at least 5 cards. If it has 4 or fewer, shuffle the discard pile and the remaining cards to form a new deck.

3. The GM reveals the top four cards of the Numerite deck one by one in the Numerite Display Area, reading each number out loud. After the fourth card is revealed, all players begin the Numberforge phase.

4. During the Numberforge Phase, each player must use all numbers on the four revealed numerite cards to create a number that best satisfies the mission (see calculation examples below). Note that:

   a. All four numbers must be used

   b. Used numbers cannot be reused, unless the player has a Digit Duplicator

   c. Unless the mission states otherwise, you have to make a single number only

   d. Each tool may be used only once

   e. Each tool may be used only as described on the back of its card.

   f. You do not have to use all of your tools

   g. Each operation must correspond to a tool owned by the player

   h. **You may use any number of brackets** in your calculation

   i. You may write your calculation in multiple steps; it does not need to be written in a single line.

   j. You are encouraged, but not required, to write the final answer in your calculation.

   k. All calculations must be done within the scope of real numbers only (see FAQ).

   l. For competitive games, standard order of operations (PEMDAS) applies.

5. **Calculators**, mobile phones, and other external computational aids are **not allowed** during the Numberforge Phase, unless permitted by the GM.

6. Each player must write their full calculation clearly on their Numberforge card. The remaining space may be used as scratch paper. Once satisfied, they may submit it to the Submission Area. Submitted cards cannot be taken back.

7. **Players must remain silent** during the Numberforge Phase to avoid disturbing others.

8. If a timer is used, the first player to submit their Numberforge card starts it. All other players then have 1 minute to finish their answers. Each newly submitted Numberforge card is placed on top of the previously submitted cards.
   Exception: When facing a **Level 5 Boss**, the timer works differently. The round is played within a fixed time limit. **Ten minutes** is recommended, but players may agree on a different duration.

9. The submission period ends when the timer rings five times or when all players have submitted their Numberforge cards, whichever comes first.



Calculation examples

For all example calculations below, players only own one copy each of the basic operators (+, -, x, /), the target number is 16 and the revealed numerite cards are 4, 4, 7, and 9.

Example	Comment
(4 + 4) x (9 - 7) = 8 x 2 = 16	The ideal calculation. Everything is clearly written in a single calculation line, complete with the final answer. All four numbers are used, and each operation used corresponds to a tool owned by the player.
4 + 4 = 8 9 - 7 = 2 → 8 x 2 = 16 //	It is perfectly fine to write your solution in multiple steps. This solution is just as good as the first one.
(4 x 4) + (9 - 7) = ~~17~~ 18 ✓	If there is a discrepancy between the calculation and the written final result, the calculation is the one that counts.
4 - 4 = 0 9 + 7 = 16 //	This answer is invalid because the number 0 is not used, so the player failed to create a single number that satisfies the mission. To make it valid, the player should add another step, for example: 16+0 = 16
4 + 4 + 4 + 4 = 16 ✗ ✗ 7 and 9 unused	This player commits three mistakes: 1. There are only two 4s available, and once used, it cannot be reused. 2. The 7 and 9 are unused. 3. The player only owns 1 Addition Anvil but used 3 addition operation.
9 x 7 = 63 67 ÷ 4 = 16.75 // 63 + 4 = 67	Your final answer does not need to be an integer, as long as it is a real number. You do not need to match the target number exactly, but your answer must satisfy any mission requirement (the number must be even, or less than 808, etc), if any, and will be scored based on how close it is to the target.

Scoring Phase

Once the Submission period in Numberforge phase ends, the Scoring phase begins.

1. Any player who fails to submit their Numberforge card is placed in the lowest position. If multiple players fail to submit, they all share that position. Example: In a 5-player game, if 2 players fail to submit their Numberforge cards, both are placed 5th, while the remaining players compete for 1st - 3rd place.

2. The GM reveals the submitted Numberforge card, starting from the one on top. All players review the solution together and may ask for clarification (e.g. illegible writing or verifying tool availability). If valid, the final answer is recorded. An answer is **invalid** if it violates any of the following:
    a. Not all four numbers are used
    b. A number is reused, except through the use of the Digit Duplicator.
    c. A tool is used more than once
    d. A tool not in player's collection is used
    e. A tool is used incorrectly
    f. Unable to process all available numbers into a single number, unless the mission states otherwise.
    g. The mission's requirement is not met (e.g. the result must be even, or less than 808, etc)
    h. The answer is not a Real number

    Repeat this process until all submitted Numberforge cards have been judged. Any disputes are resolved by the GM, who has final authority.

3. Players may use calculators and other external computational aids during the Scoring Phase.

4. If an answer is invalid, its Numberforge card is placed in the lowest position, together with any players who failed to submit. The remaining valid Numberforge cards are ranked based on the following priority (see Scoring example below):
    a. Answers that better satisfy the mission rank higher.
        i. For "Target" missions, ranking is based on the absolute difference from the target number (e.g. with a target of 20, both 19 and 21 are equally good).
        ii. If there are multiple target numbers, ranking is based on the sum of the absolute differences from each target (e.g. with targets 50 and 100, an answer of 51 and 98 has a total difference of 3).
        iii. For "Max" and "Min" missions, the greatest number and the smallest number wins, respectively.
    b. If answers are equally good, the one submitted earlier ranks higher.

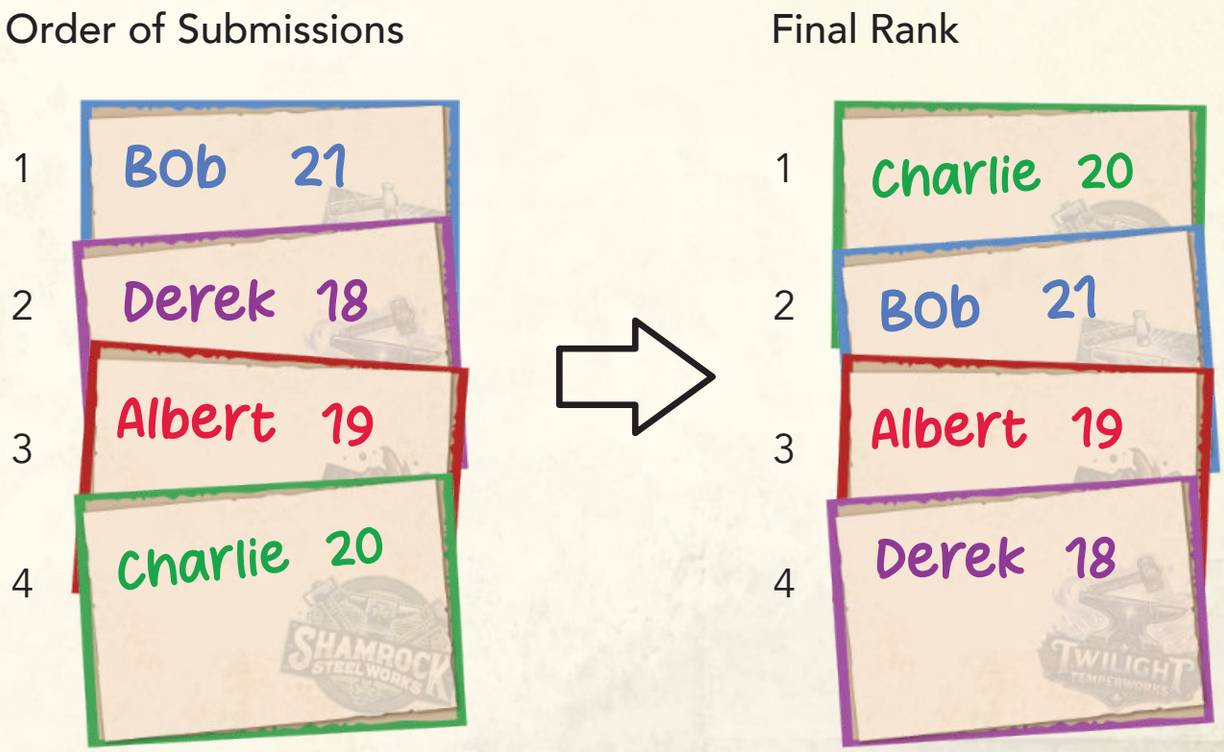


5. Rank players from 1st, 2nd, and so on based on their results. Refer to the Score Reference Card to find the number of gained by each player, then move each player's token accordingly on the Score Board.
6. At the end of the Scoring Phase, the player with the Royal Foundry token passes it to the player on their left.
7. Clean-up phase: The GM discards all the revealed Numerite cards to the discard pile, and also ensures that the Timer is ready to use for the next round.

Then the next round begins

Scoring Example

In the example below, the target number is 20, and all players' answers are valid.



Although Charlie submitted last, he ranks 1st because his answer is spot-on. Bob and Albert are equally close (absolute difference of 1), but Bob submitted first and therefore ranks higher. Derek has the largest difference to the target number (2) and ranks 4th.

End of the Game



The game ends at the **end of the 10th Round.** The player with the most King's Favor wins the game.

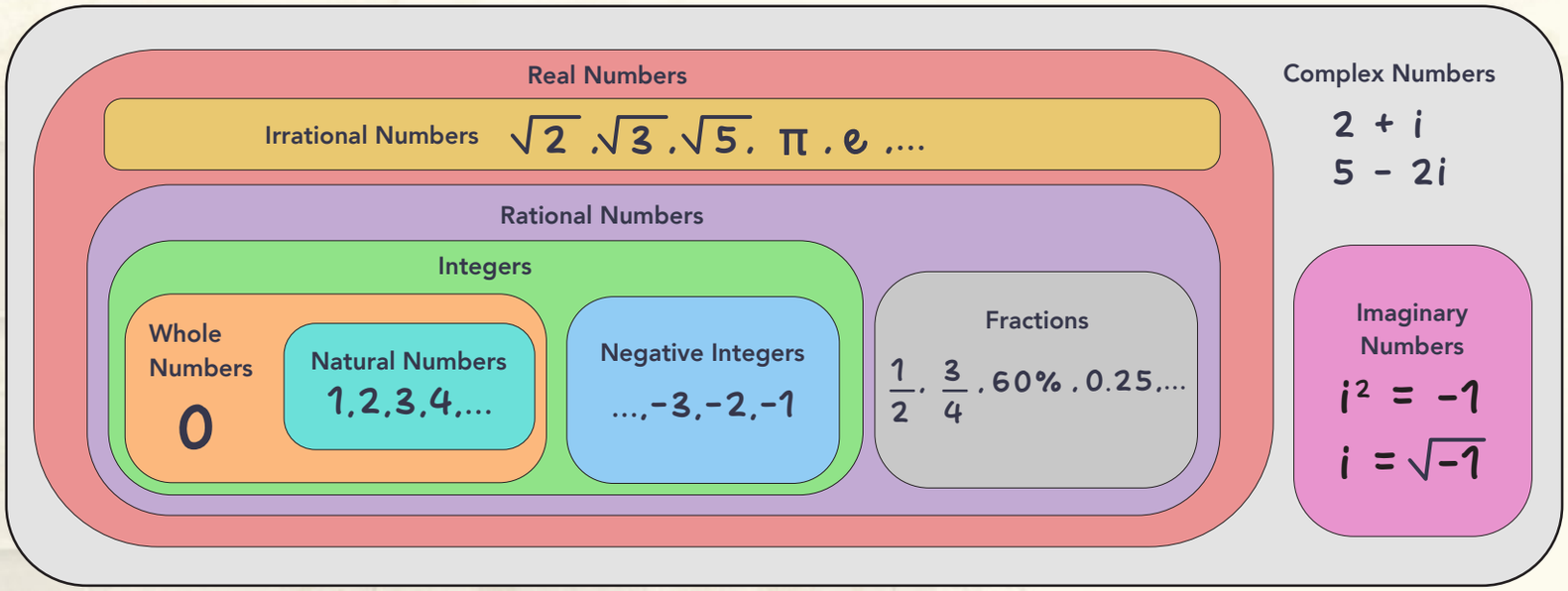
In the case of a tie, play the Tiebreaker Round. If it's still a tie, the winning players must calculate the total price of the Royal Foundry tools in their arsenal. The player who spent the most wins.

If the tie remains, players may either play another Tiebreaker round (with a new monster from the box) or share the victory.

Frequently Asked Questions (FAQs)

1. **Q:** What are real numbers?
   A: Real numbers include all commonly used numbers, such as zero, positive and negative integers, fractions, decimals, and irrational numbers. Imaginary and complex numbers are not real numbers.

   Classification of Numbers



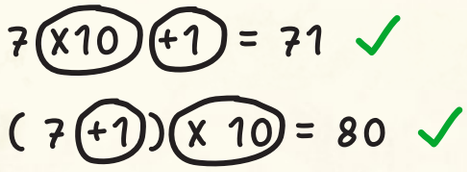
2. **Q:** What if the player forgot to write bracket(s) and/or messed up on their order of operations?
   A: Unless it is a competitive game, it is deemed acceptable as long as the player can clarify properly.

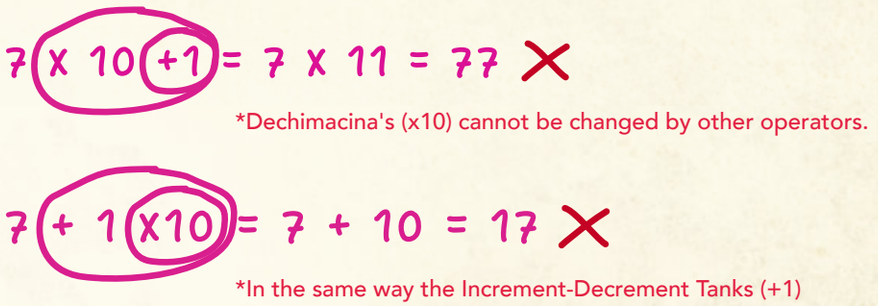
3. **Q:** Is there a video explanation on how to play Numberforge?
   A: Yes, it is available on YouTube

4. **Q:** What does "Tools may only be applied to numbers. You may not modify, combine, or perform operations on a tool or its effect" mean?
   A: Some tools—such as the Squaring Furnace, Decimachina, Increment–Decrement Quenching Tanks, and Binary Bellows—introduce numbers into a calculation. These tool-generated numbers **cannot** be treated as normal numbers and cannot be modified or operated on in any way. For this reason, we recommend **circling** tool-generated numbers to avoid mistakes and improve clarity.

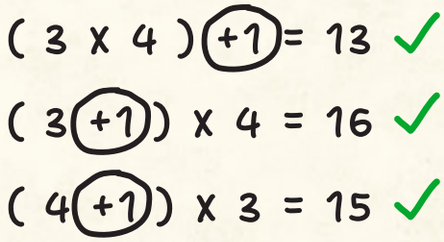
   See the examples below: operations shown in **black** are allowed, while those in **purple** are illegal.

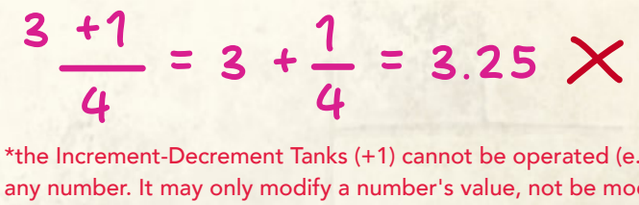
Example 1





Example 2





5. **Q:** Is there an electronic / online version of Numberforge?
   A: Currently no, but we do not rule out the possibility of having one in the future.

6. **Q:** Will there be a Numberforge official tournament in the future?
   A: We're planning for that. Check our Instagram or Discord for updates.

7. **Q:** How to contact you?
   A: You can contact us at *lido.gamestudio@gmail.com.* We love to hear from you.

Credits

Creating Numberforge has been a deeply fulfilling journey, one that would not have been possible without the encouragement, enthusiasm, support, and friendship of many incredible people along the way.

I would like to thank my wife Pameilia and auntie Helen for their continuous support; my invaluable partners Raynald and Ryan from Star Generation; Reki, Imawan, Roma, Yosafat and friends from the Asfales7 board game community; Alden, Ethan, Nathan, Rainier, and all of my students; Panji, Jaka, Adit, Sylvana, Wisnu and other E-cube teachers; Ko Hari, Davin, and Quin; William, Hans, Pangestu, Wikan, Misael, Rudi, Darryl; and everyone else who contributed to the development and playtesting of this game.

I sincerely hope this game brings you great joy while also sharpening your mental math, tinkering, and problem-solving skills in a fun, engaging, and thought-provoking way.

Soli Deo Gloria.

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NUMBERFORGE