BioDiverse City

The "BioDiverse City" gameplay guide is an educational simulation for middle school students focusing on urban neighborhood development and sustainability. It involves teams managing neighborhoods, using funds for community enhancements, and promoting a sustainable ethos. The game integrates urban planning, environmental science, and economics, encouraging teamwork and community engagement. It includes a currency system equating money with community labor hours, adding complexity. The guide details objectives, player roles, game setup, gameplay considerations, and winning strategies, aimed at providing a multidimensional learning experience.

BiodiverseCity Simulation

"BioDiverse City" stands out as an innovative educational simulation, specially crafted for middle school students. This interactive game provides a dynamic platform for simulating the complexities of urban neighborhood development across a decade. In this immersive experience, players are grouped into teams, each responsible for a distinct neighborhood. The central thrust of the game is fostering an understanding and appreciation of sustainability and urban biodiversity.

Teams are tasked with utilizing allocated funds to spearhead community enhancements. These enhancements are not just limited to physical improvements but also encompass the nurturing of a sustainable ethos within their neighborhoods. The game intricately weaves together elements of strategic planning, cooperation, and effective resource management, challenging players to think critically about the long-term impact of their decisions.

As the game progresses, players engage in various scenarios that mimic real-life challenges faced in urban development. This includes balancing the immediate needs of their community with the overarching goal of sustainable living. The simulation also introduces the concept of a currency system, where money is equated with community labor hours, adding another layer of realism and complexity to the gameplay. This unique feature emphasizes the value of human capital in urban development.

By integrating aspects of urban planning, environmental science, and economics, "BioDiverse City" offers a rich, multidimensional learning experience. The game's design encourages teamwork and fosters a sense of community among players, as they collaborate to achieve common goals. It's an engaging tool that not only educates but also inspires students to become proactive stewards of their environment.

BiodiverseCity Simulation

Educational Elements of BioDiverse City

Integrating Key Concepts: The "BioDiverse City" simulation serves as a dynamic educational tool, effectively integrating essential concepts from urban planning, ecology, economics, and community involvement. It presents a unique opportunity for middle school students to explore these interconnected disciplines in a practical setting.

Real-world Application: Through gameplay, students are exposed to real-world challenges of urban development, such as resource allocation, environmental sustainability, and economic constraints. This hands-on approach encourages them to apply theoretical knowledge in a simulated environment, enhancing their understanding of complex concepts.

Critical Thinking and Decision Making: The game fosters critical thinking by requiring students to make strategic decisions that affect their simulated neighborhoods. These decisions have to be made considering both short-term needs and long-term sustainability goals, mirroring the balancing act often required in urban planning and environmental management.

Community Engagement and Teamwork: A key educational element of the simulation is its emphasis on teamwork and community engagement. Students must collaborate, negotiate, and collectively strategize to achieve their objectives, mirroring the real-world necessity of community involvement in sustainable urban development.

Economic Understanding and Resource Management: By integrating a currency system that equates money with community labor hours, the game introduces students to basic economic principles and the importance of effective resource management. This aspect helps them understand the value of human resources and labor in the context of urban development.

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Correlation with "Sustainability and Services" Curriculum

Linking Game Elements to Curriculum Topics: The "BioDiverse City" simulation offers a practical extension to the concepts introduced in the "Sustainability and Services" curriculum. By engaging in the simulation, students can apply and deepen their understanding of various environmental and sustainability topics covered in the curriculum.

- Ecosystem Services and Urban Biodiversity: The game's focus on enhancing green spaces and promoting biodiversity in urban settings aligns with the curriculum's lessons on ecosystem services. Students learn the importance of preserving and enhancing natural elements in city environments.
- Sustainable Practices: The simulation encourages students to consider sustainable practices in urban development. This mirrors the curriculum's emphasis on sustainability, including the efficient use of resources and the long-term impact of development choices.
- Community Engagement in Environmental Challenges: The collaborative aspect of the game reflects the curriculum's focus on community involvement in addressing environmental challenges. Students learn the value of working together to achieve sustainable outcomes.
- Practical Application of Theoretical Knowledge: By participating in "BioDiverse City," students can directly apply the theoretical knowledge gained from the curriculum. This reinforces their learning and provides a deeper understanding of how sustainability concepts are applied in real-life scenarios.

Recommended Prior Knowledge for "BioDiverse City"

Foundational Understanding of Sustainability Concepts: For students to fully engage with and benefit from the "BioDiverse City" simulation, it's recommended that they have a foundational understanding of the topics addressed in the "Sustainability and Services" curriculum. This prior knowledge will enable them to make informed decisions and understand the broader implications of their actions within the simulation.

BiodiverseCity Simulation

- Key Areas of Focus:
  - Ecosystem Services and Biodiversity: Knowledge of how ecosystems function and the importance of biodiversity in urban areas.
  - Sustainable Practices: Understanding sustainable living practices and their importance in urban planning.
  - Community Involvement: Awareness of the role of community engagement in addressing environmental issues.
  - Enhancing the Learning Experience: Familiarity with these concepts will not only help students navigate the simulation more effectively but also enrich their overall learning experience, allowing them to connect classroom learning to practical scenarios.

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BioDiverse City Gameplay Guide

- **Objective**
  - Players will take part in a simulated experience in which urban neighborhoods use earmarked funds to enhance their communities over the course of up to ten years. At the end of the gameplay period, players will evaluate their success by tallying up community support points they have earned through the developments they have created.

- **Players**
  - Number of Players - The game was designed to be played with a standard class (20-30 students), with two or three students serving as facilitators and the rest split out into six teams of neighborhood players, one team for each neighborhood. However, fewer can play if desired.
  - Player Roles
    - **Neighborhood Players** - Neighborhood players represent residents of their neighborhood who are active in their Neighborhood Association. They are not elected to this role, but rather are voluntary
    - **Facilitators (optional)** – ----Facilitating participants do not directly work to improve neighborhoods, but rather serve support roles that keep the game moving along. These side roles are optional, as the teacher may elect to address but are helpful when playing with a larger number of students. Facilitating roles may include:
      - Mayor – The Mayor serves as the master of ceremonies during gameplay. He or she provides the narrative and distributes Achievements, and distributes money, time tokens and community support tokens to the neighborhood players. (The teacher may wish to take on this role.)
      - The Distributor hands out enhancement tokens as ordered.
      - The Banker keeps the money, time tokens and community support tokens organized.

BiodiverseCity Simulation

- **Game Setup**
  - Materials
    - 1 Game Board depicting six neighborhoods surrounding a city center.
    - 1 deck of narrative cards
    - Neighborhood association guidebooks for students
    - Gameplay guide document for teachers
    - Enhancement pieces in organizer boxes.
    - Currencies
  - Board description
    - The game board depicts six neighborhoods surrounding a city center. Each neighborhood includes three types of properties:
      - Community Properties, which include the park and the lands surrounding the office buildings and businesses in the neighborhood.
      - Residential Properties, which appear as lots with houses on them.
      - City-owned Vacant Lots, which appear as lots with no houses.
    - Each neighborhood contains a natural water source in the form of a stream, and borders two adjoining neighborhoods as well as the city center.
    - Each neighborhood also appears with certain enhancements already in place, such as shade trees or flowers. These may be used to create gardens if desired.

- Layout during Gameplay
  - Establish spaces within the room that will serve as the Mayor's Office, the Distribution center and the Bank. (*You may want to set these areas away from the gameplay area to mitigate crowding.)*
  - Place the boxes of Enhancement pieces at the "Distribution Center".
  - Place Currency tokens at the "Bank".
  - Place Achievement Cards at the "Mayor's Office".
  - Place the Narrative cards on the designated space within the City Center on the game board.
  - Windmill, Recycling Center and Biofuel Recover Center tokens should be placed off the board, but nearby.

- **GamePlay**
  - Opening Narrative
    - The game setting should be explained by Mayor. The narrative may be read verbatim, or ad-libbed for effect. However the narrative is delivered, be sure to include the following points:
      - The neighborhoods surrounding the city center have experienced urban blight. Once thriving neighborhoods now suffer from a relative lack of amenities, abundant vacant lots and low economic fortitude.
      - Recent research indicates how citizens' lives can be improved by increasing the amount of green space, promoting urban biodiversity and supporting sustainable practices within the city's neighborhoods.
      - The mayor is enacting an initiative that calls upon residents of these neighborhoods to make improvements in these areas are made in their respective neighborhoods.
      - This five-year initiative includes a grant of up to $1000 per year to be awarded to each participating neighborhood to be used to

purchase enhancements that may be planted in the community.

◊ Your neighborhood residents can be counted upon to help. You can count on 25 people hours from each residential household in your neighborhood. Attracting new inhabitants will add to this, and new businesses will provide extra funding through surplus tax revenue. But this will require Benchmark incentive and LEED loft housing to provide the mixed use building infrastructure

◊ The mayor may wish to emphasize to the players that though the grant funds and guaranteed volunteer workforce is guaranteed for the first five years, the game will continue past that time. Thus, they should make their enhancements in such a way as to earn as much reward funding as possible during the grant period.

◊ Neighborhoods can only enhance areas in their own neighborhoods. If they wish to help with enhancements in another neighborhood, they should do so by donating unused funds, people hours or community support.

◊ Each Currency, which represents goodwill from neighborhood residents and local businesses, can be exchanged for funding or work hours interchangeably as indicated by either side of the playing currency.

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- **Rounds**
  - Each 'round' of the game represents 1 calendar year of gameplay.
  - Each 'year' involves three distinct phases:
    - **Narrative Phase** – During year 1, this phase comprises the Mayor's initial speech and the distribution of the initial grant money and people-hour tokens to each neighborhood.
      During subsequent years, each neighborhood draws a Narrative card and reads it aloud, following instructions on the card as appropriate. Narrative cards may affect the entire city, or just the neighborhood that drew the card.
    - **Development Phase** – During this phase, all neighborhoods purchase enhancements for their neighborhood and place them on the board. Note that this phase may be time consuming. The Mayor may elect to establish a time limit to hurry students along.
      - At the end of this phase, ALL UNUSED CURRENCY UNITS (including money, people hours and community support) must be returned. No currency of any type can be 'stockpiled' for the subsequent years.
    - Report Phase – The Mayor invites each neighborhood in turn to explain what developments they created. If they have achieved accomplishments, the appropriate cards are handed to the neighborhood team. If Residents or Businesses move in due to achieved benchmarks, these are added to the board at this time. After all reports have been made and achievements distributed, the Mayor then distributes (as appropriate) any money, people hours and community support units that are due to each neighborhood. Play then continues with the next year's Narrative Phase.
  - A simple game consists of ten years. You may, of course, elect to extend the game or shorten it as time allows.

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Gameplay Considerations

- **Currency**
  - Currency treats money and community labor hours as interchangeable at a rate of $100 being equal to 25 hours of unskilled labor since labor can be purchased and volunteer efforts save spending. All unspent funds are collected at the end of a round, and all rewards are payed out in the round following the achievement (making this the only route for carrying funding over between rounds).
  - Green "gardens" and gold "achievements" pay out a one-time gain, "benchmarks" bump up the funding of every round going forward in perpetuity
  - Neighborhoods are encouraged to negotiate and cooperate with each other. Any currency unit may be freely given to or traded with another neighborhood. Negotiations may only take place during the Narrative and Development Phases.
- **Enhancements**- Once placed, Enhancements cannot be moved.
  - Basic Enhancements
    - *Basic enhancements may be placed on any community property, including the schoolyard, the grounds surrounding office buildings and businesses, and the neighborhood park.*
    - *Basic enhancements may be placed on residential properties by adding $500 to their cost. This suggests the resident can be sold on the development of land they own. This additional cost may be waived if the enhancement is placed on the property surrounding the player's chosen home.*
    - *Basic enhancements intended to comprise a garden should be placed so that they are touching. Basic enhancements may not be placed on parking lots or on roofs of buildings.*
    - *Each basic enhancement may only be included in ONE garden. Gardens cannot 'share' basic enhancements.*

- Advanced enhancements
  - *Advanced enhancements may be placed on City-owned Vacant lots only after an enhance permit has been purchased for that lot, or when supporting infrastructure is in place as described in the student guidebook*
- Lot Upgrades
  - *Lot Upgrades can only be placed on City-owned Vacant Lots. An enhance permit must be purchased to upgrade for certain advanced enhancements, the other upgrades require no modification of preexisting infrastructure and thus need no special permitting*
  - *Once placed, Lot upgrades cannot be moved, but permits may be purchased and held in advance of the construction of the associated enhancement*
- Citywide Enhancements
  - *Citywide Enhancements can only be purchased cooperatively.* Citywide enhancements are not applied until at least four neighborhoods (or all participating neighborhoods, whichever is fewer) have paid the requisite cost.
  - *Citywide Enhancements are placed in the City Center when purchased.*
  - *Neighborhoods must pay for a given upgrade at the same time.*
  - *Two benchmarks are only accomplished through Citywide enhancements. students should plan accordingly*

- **Achievements**
  - Gardens (Green)
    - *Enhancements that comprise a garden should be placed so that they touch.*
    - *Gardens cannot 'share' enhancements.*
    - *As many Gardens of each type may be set up in a given neighborhood as desired. Each Garden draws community support* as

a *separate achievement*.

- Collective Achievements (Gold)
  - *Collective achievements can only be earned once per neighborhood.*
  - *Collective achievements may be earned using all enhancements as described, even if those enhancements comprise Gardens. (or sections of other gold achievements provided the component enhancements are properly grouped)*
- Benchmarks
  - *Each Benchmark can only be earned once per neighborhood.*
  - *The "Results" payoff can only be collected if adequate LEED housing is in place (1 business and four residents are housed per unit, it may be helpful to mark the five separate windows on the placeable piece to keep track of how the spaces fill up)*
  - *New Residents and Businesses are added once, but the currency pay-off incurred by each are reproduced each year.*

- **Narrative Cards**
  - *Events described in the Narrative cards may be drawn for each neighborhood or to affect the entire city*. When drawing for the city, if the card specifies an event that cannot affect all neighborhoods, assume that the event affects only the neighborhoods subject to it (ie if the card says loose a shade tree, only those neighborhoods which have one can loose it).
  - *Some events incur costs.* Unless the card specifies that an action is optional, affected neighborhoods must pay the cost, provided they have the resources available to do so. However, no player can incur a negative balance in any currency or placeable gamepiece.

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- **Winning the Game**
  - Game Length – -A simple game lasts 10 ‘years’. However, you may elect to lengthen or shorten the game per your group’s preference.
  - Winning -- Winning may take on one of several forms:
    - **Soft Close Endgame**-- Citywide enhancements figure into two available benchmarks but also represent a fiscal high mark of the game. Students may declare the game complete once funding has run its course through the exhaustion of gold achievements and benchmarks.
    - **Every Neighborhood For Itself** -- At the end of the final ‘year’, Neighborhoods should tally up how many new residents and businesses they enticed into their neighborhood. Whichever brought in the most wins the game!
    - **Collective Victory** – The Mayor may set a challenge for the city as a whole to bring in a given number of residents and businesses, with a promised reward if they succeed.

BiodiverseCity Simulation

Printable Enhancement pieces and Currencies

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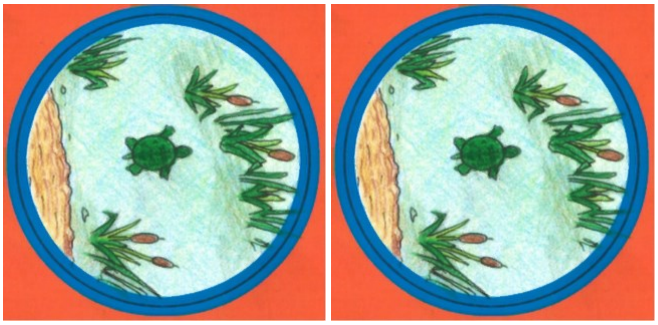

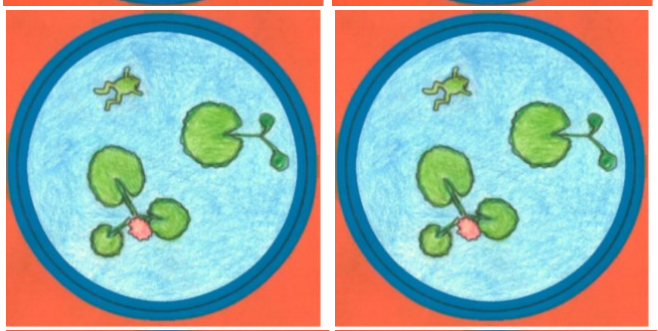

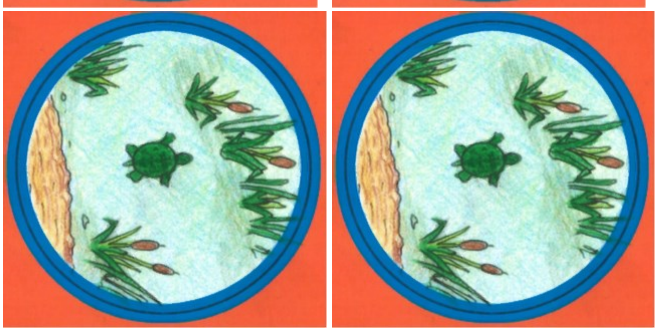

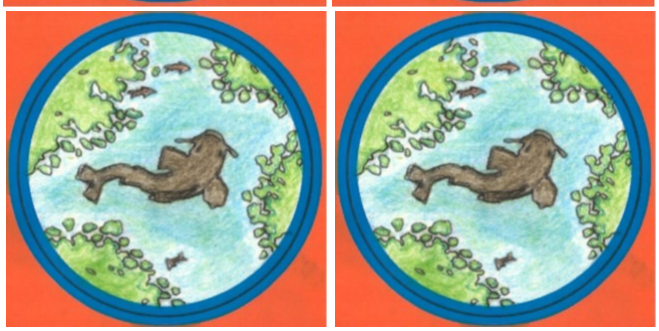

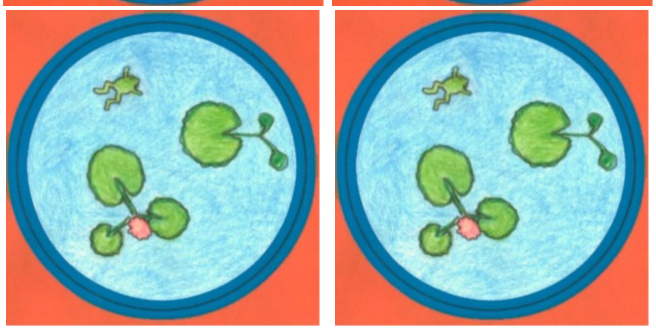

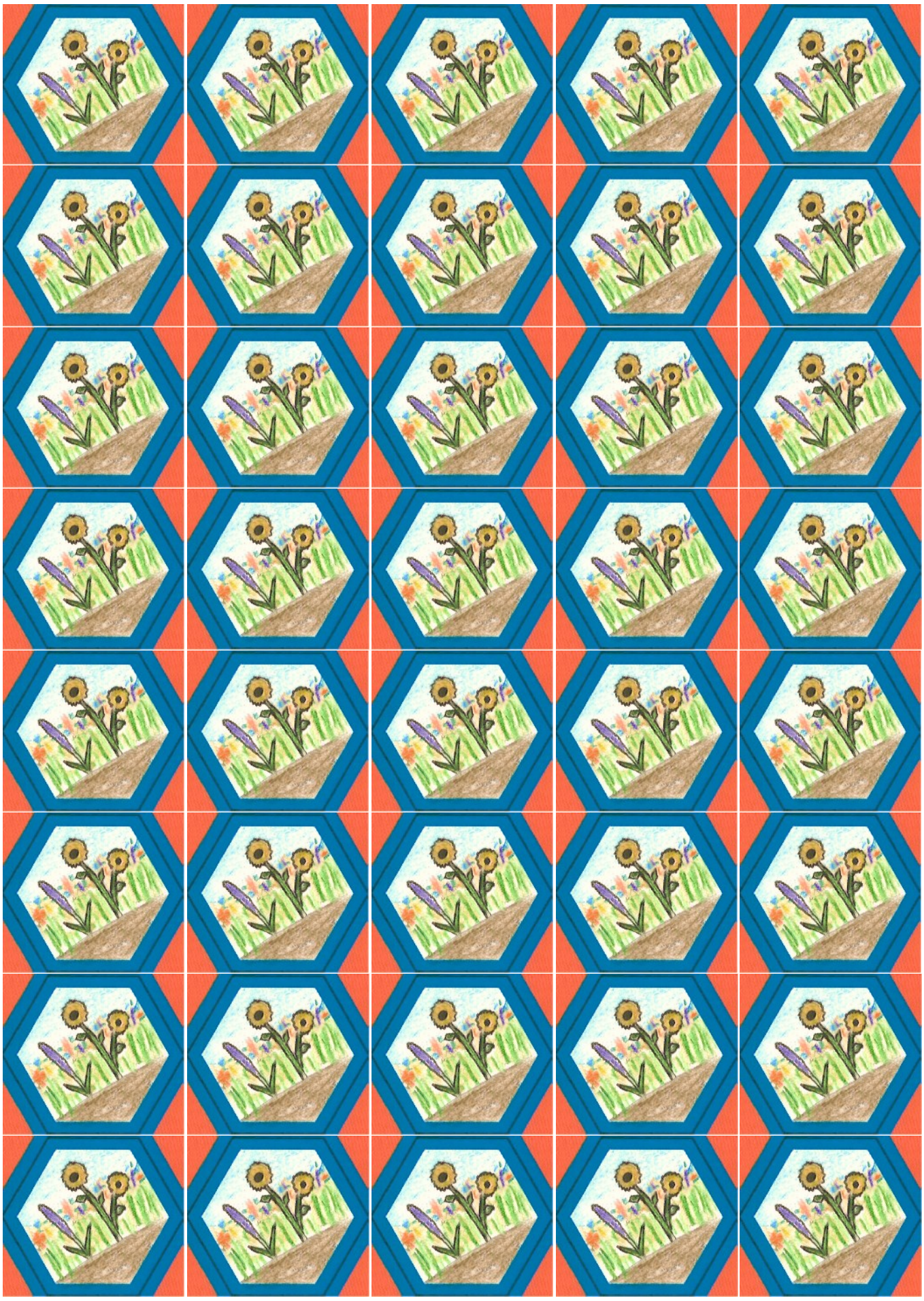

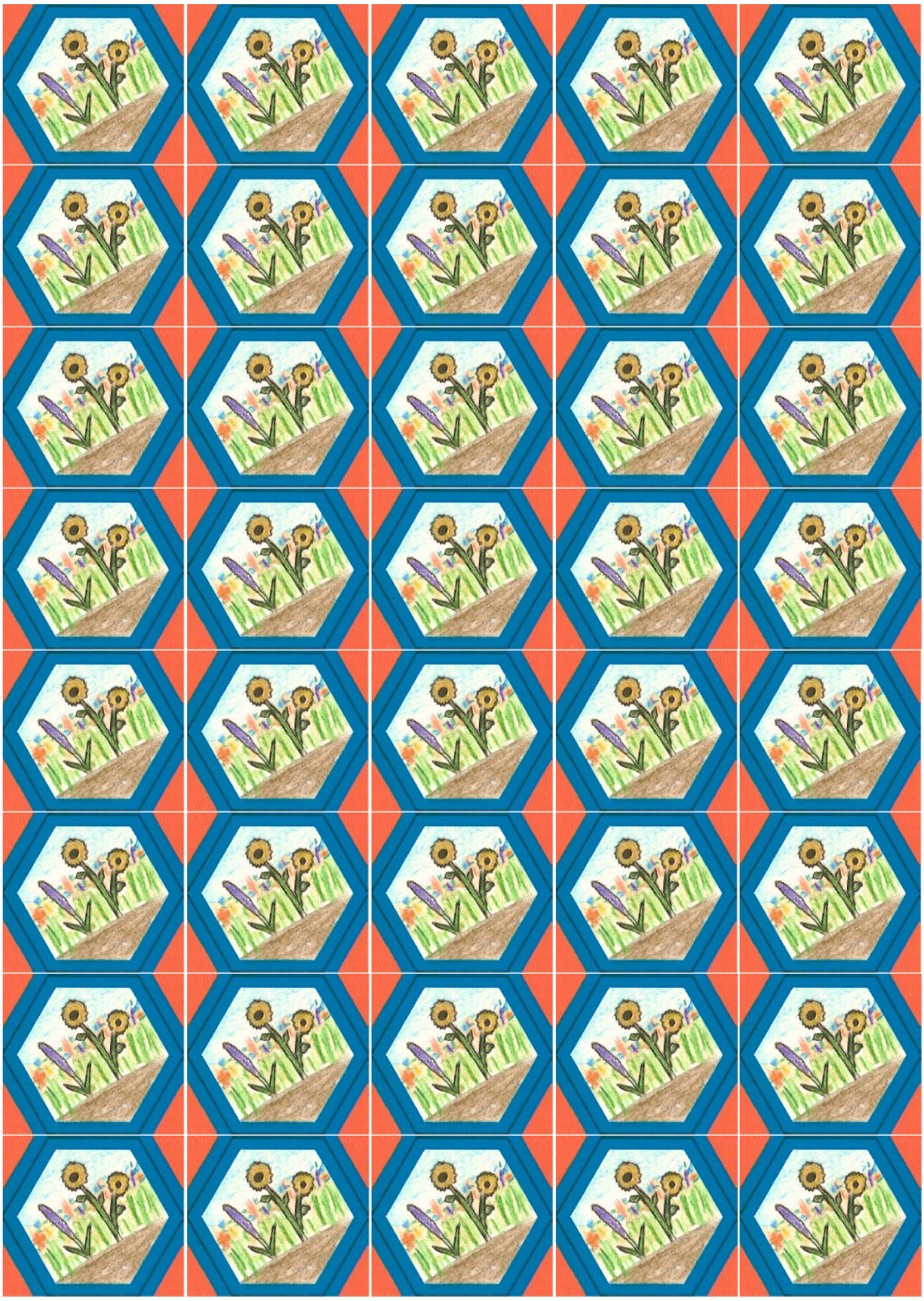

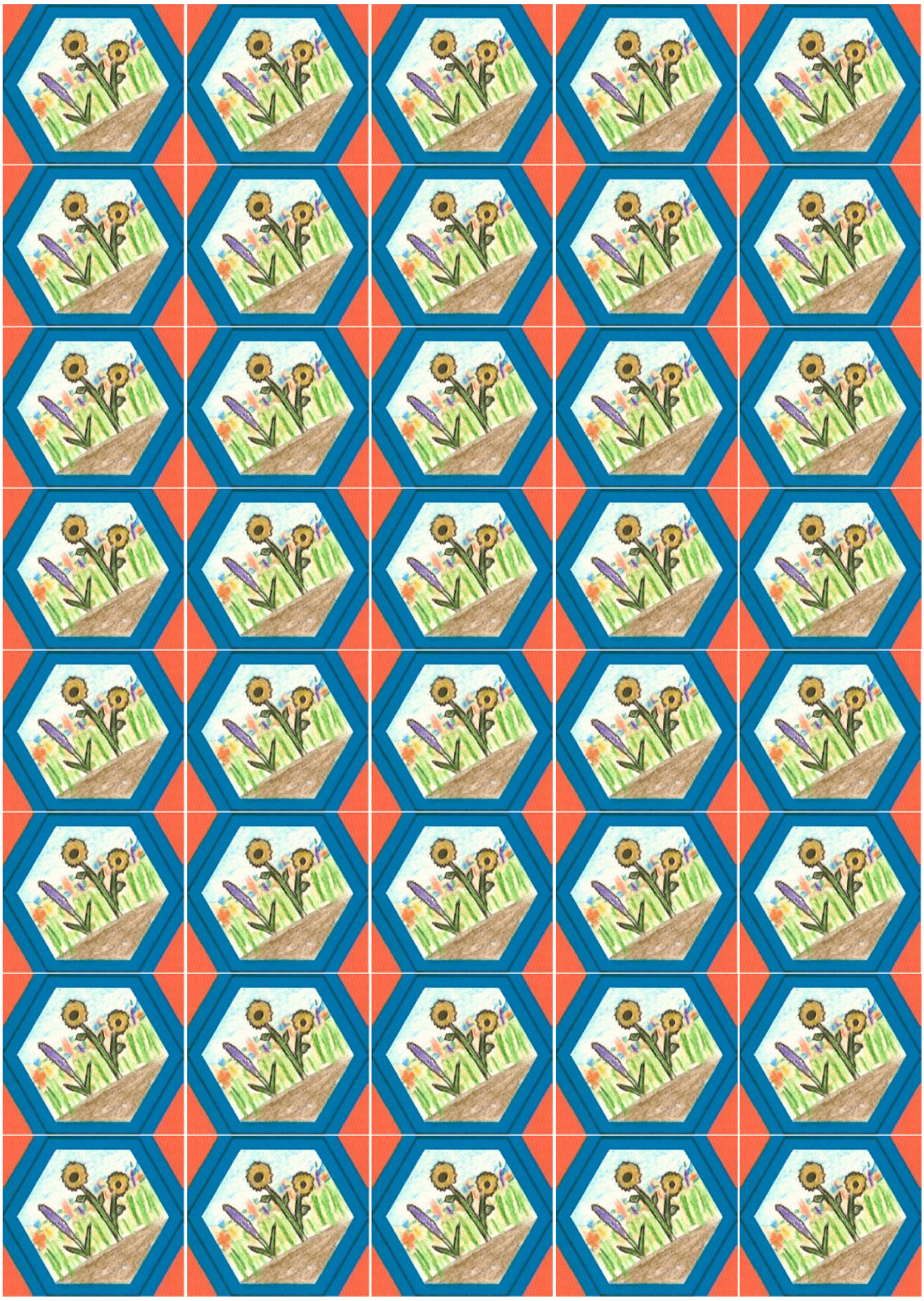

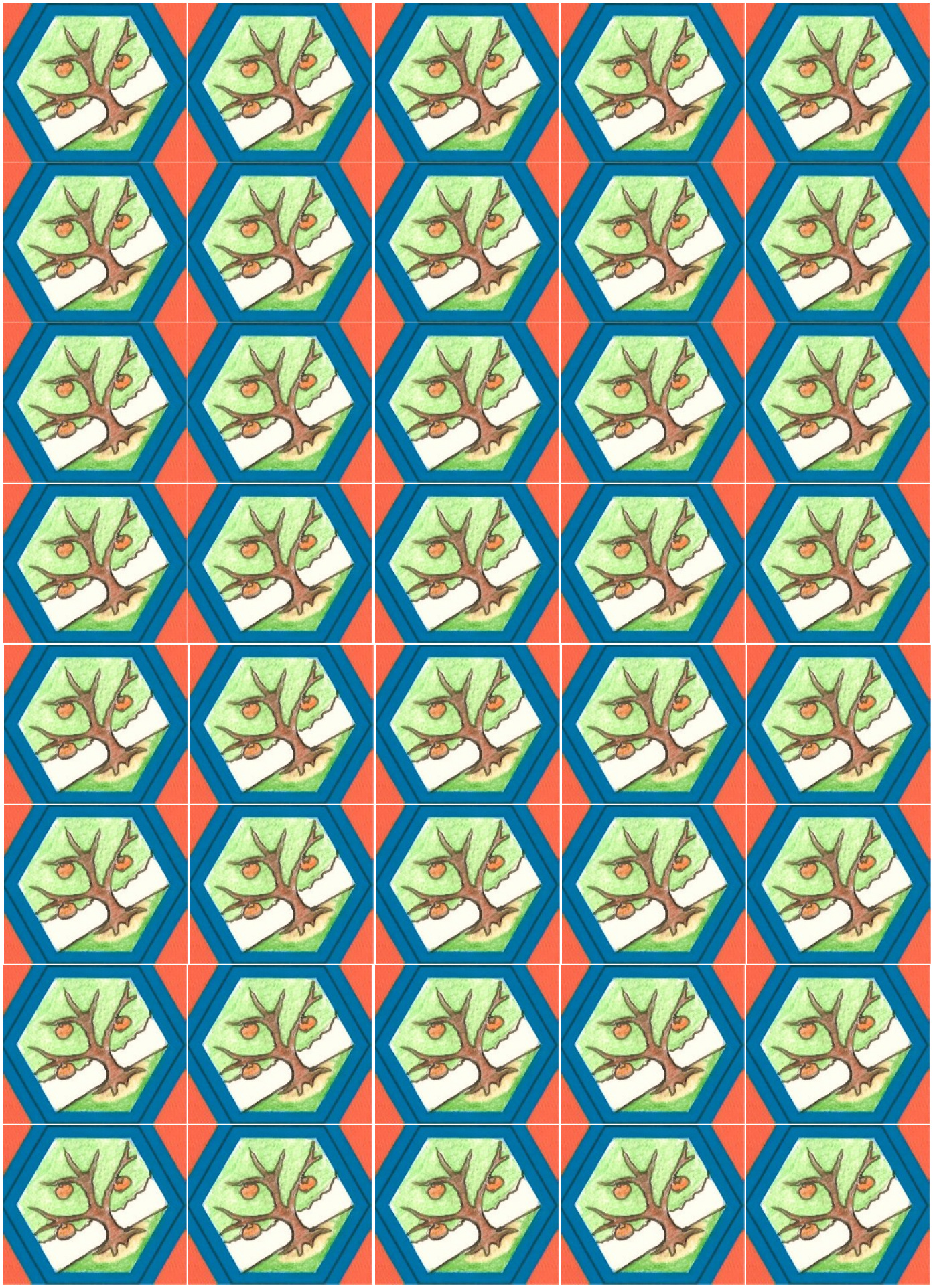

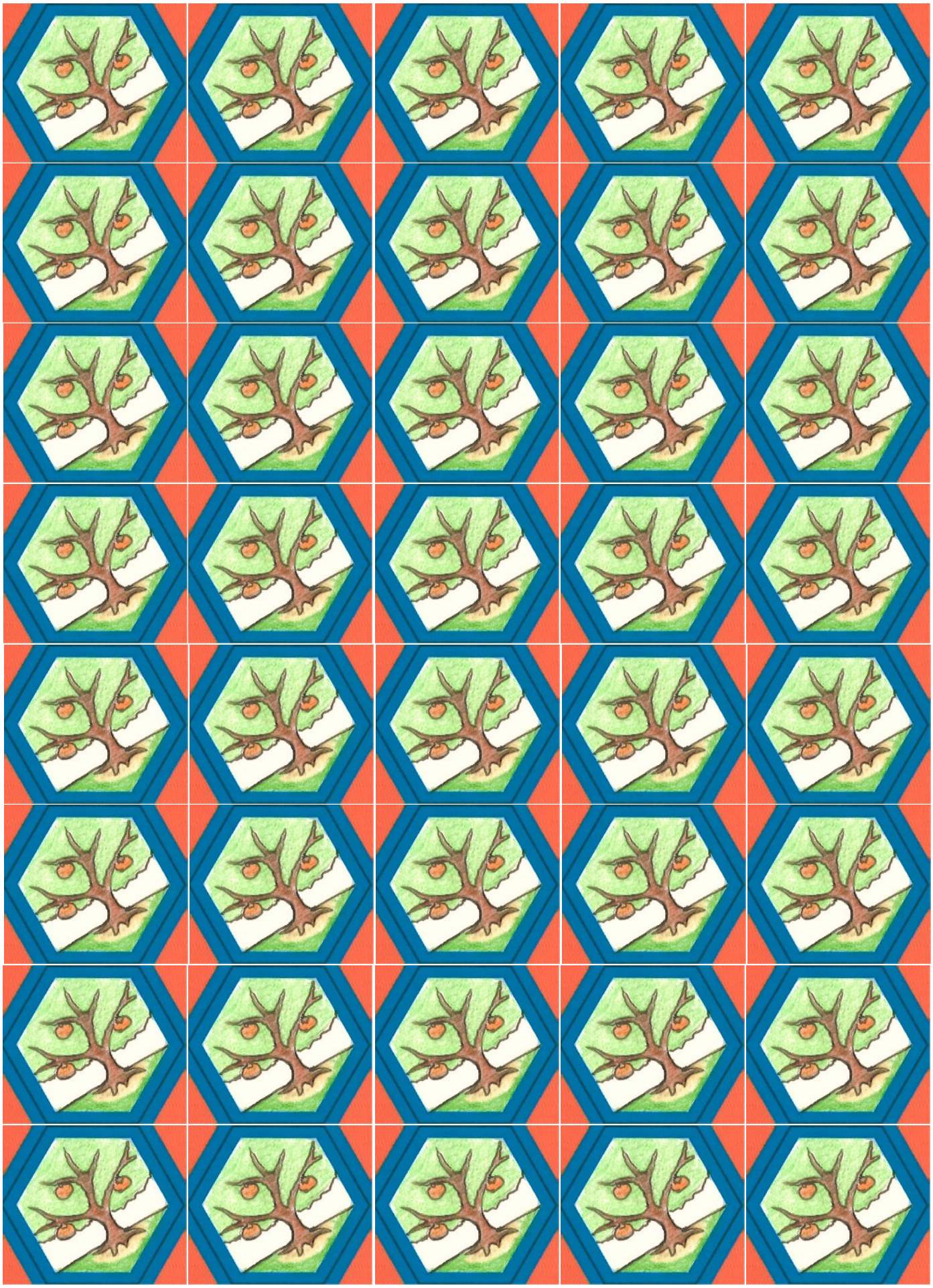

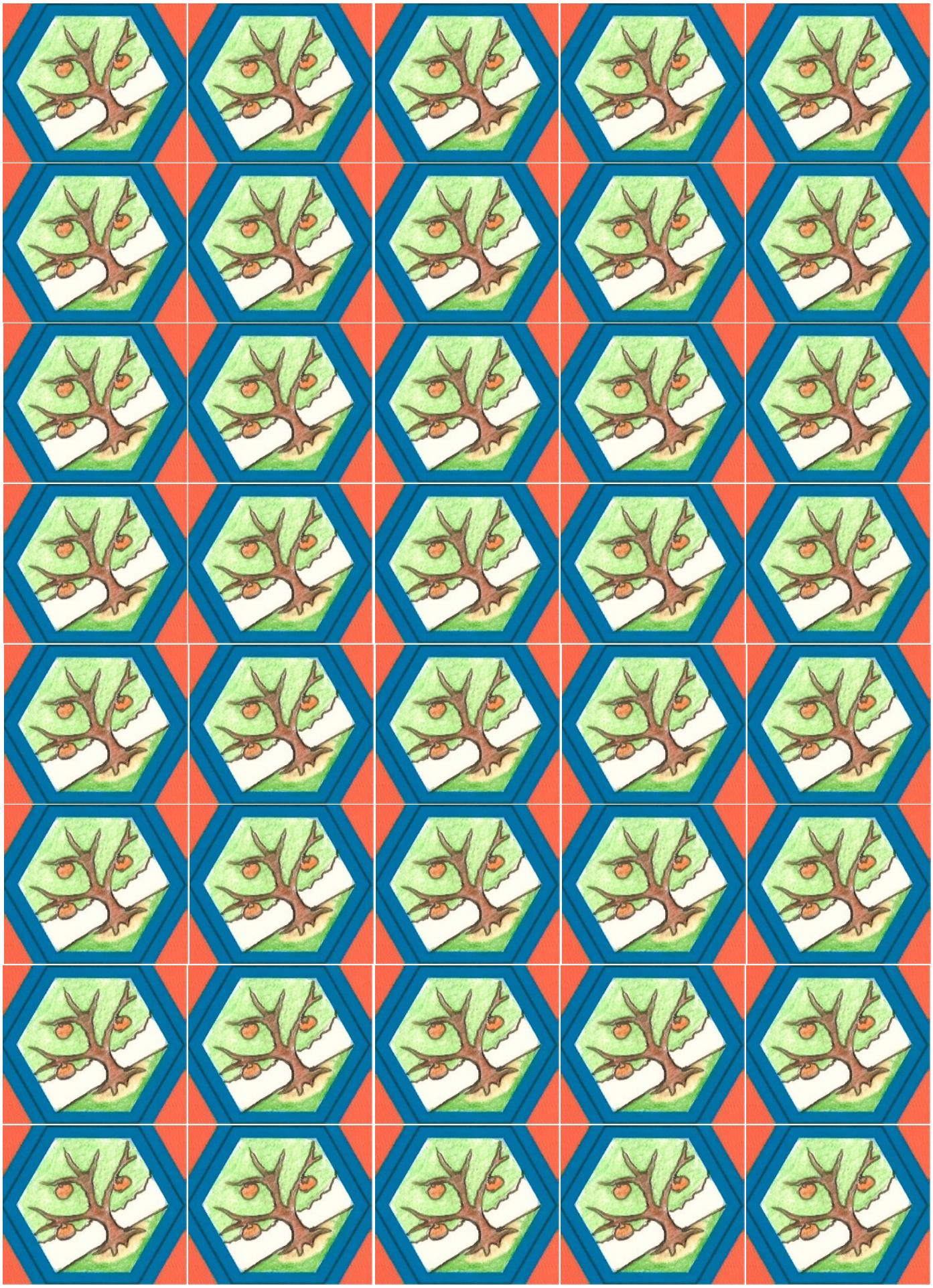

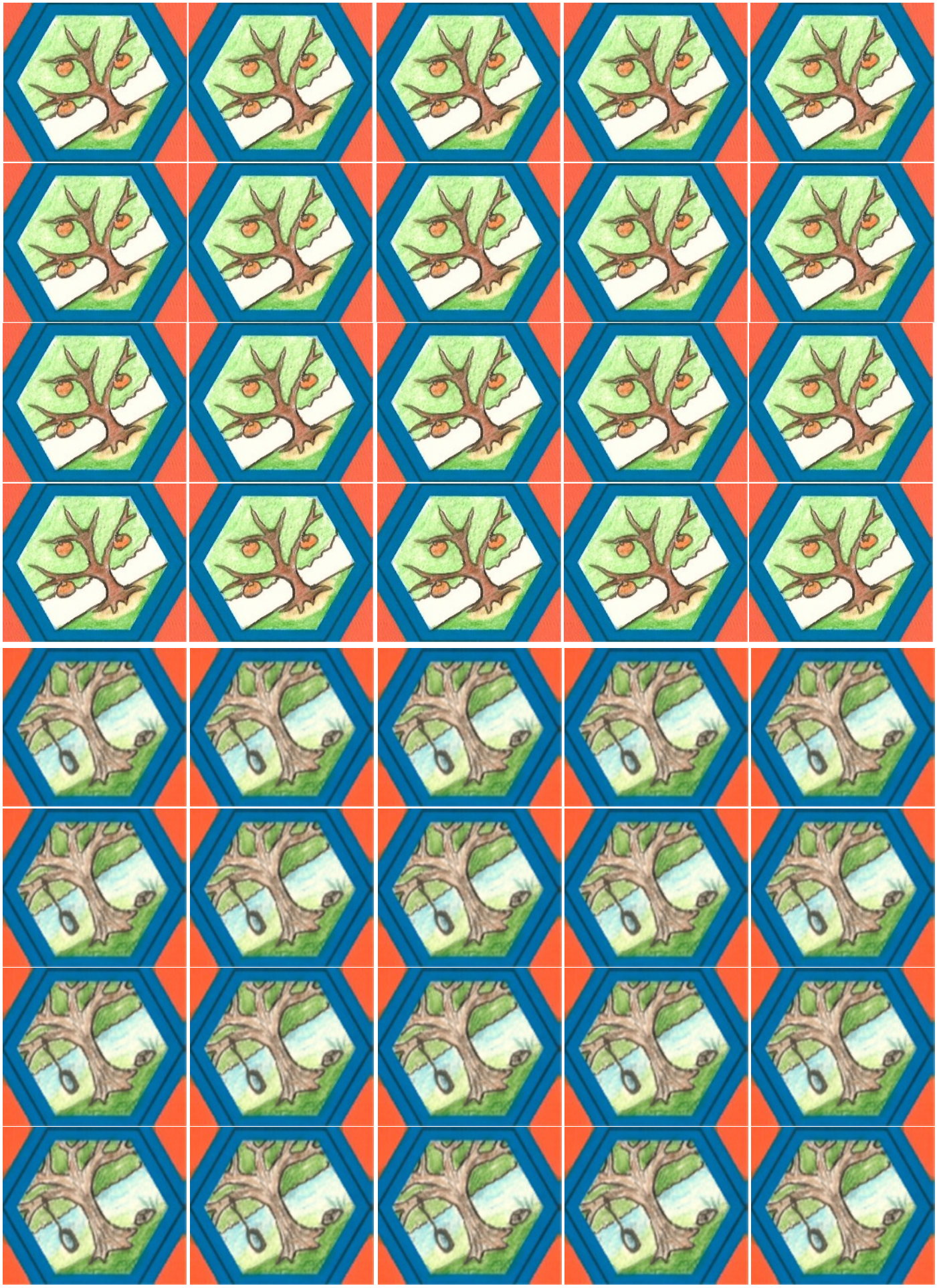

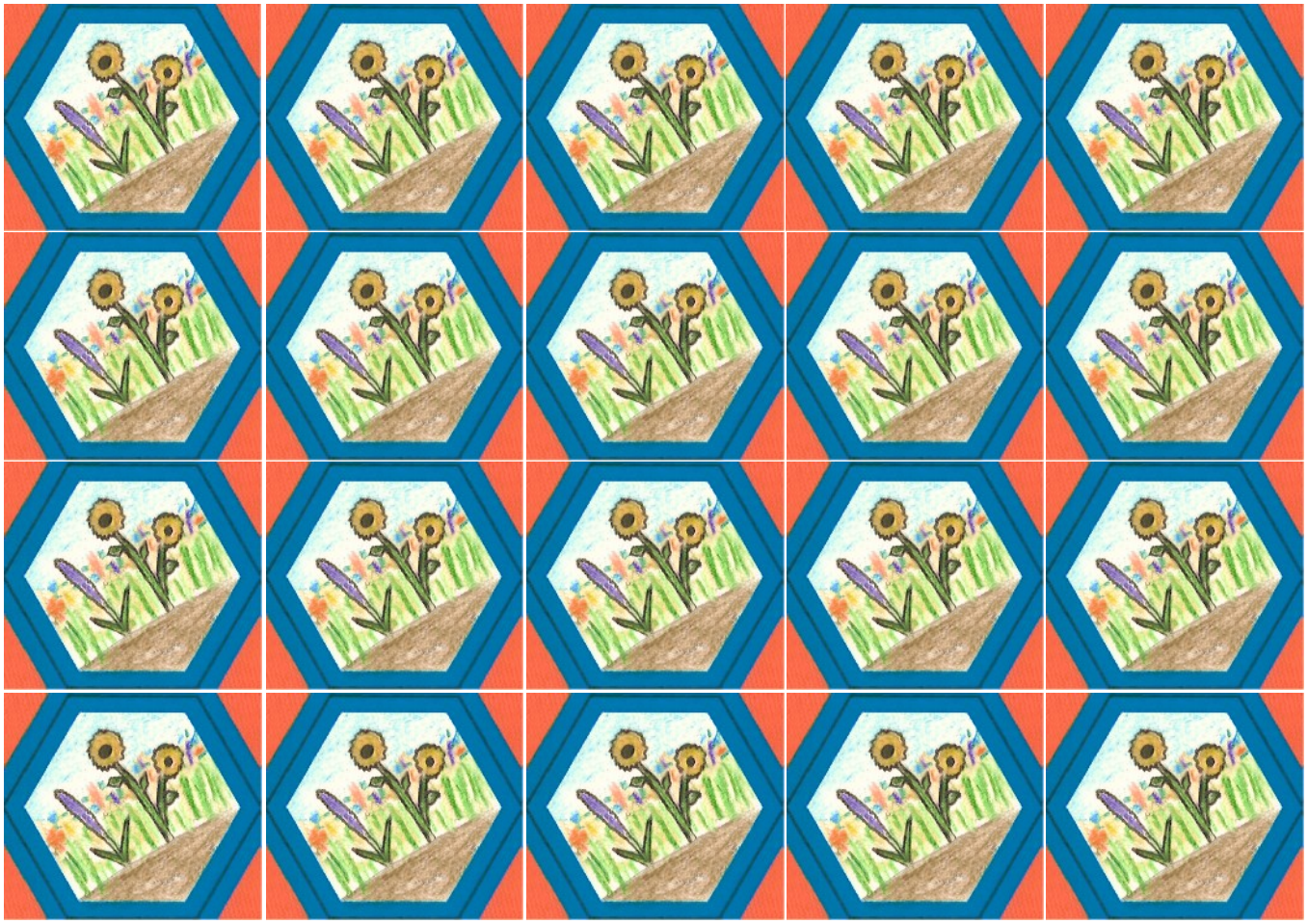

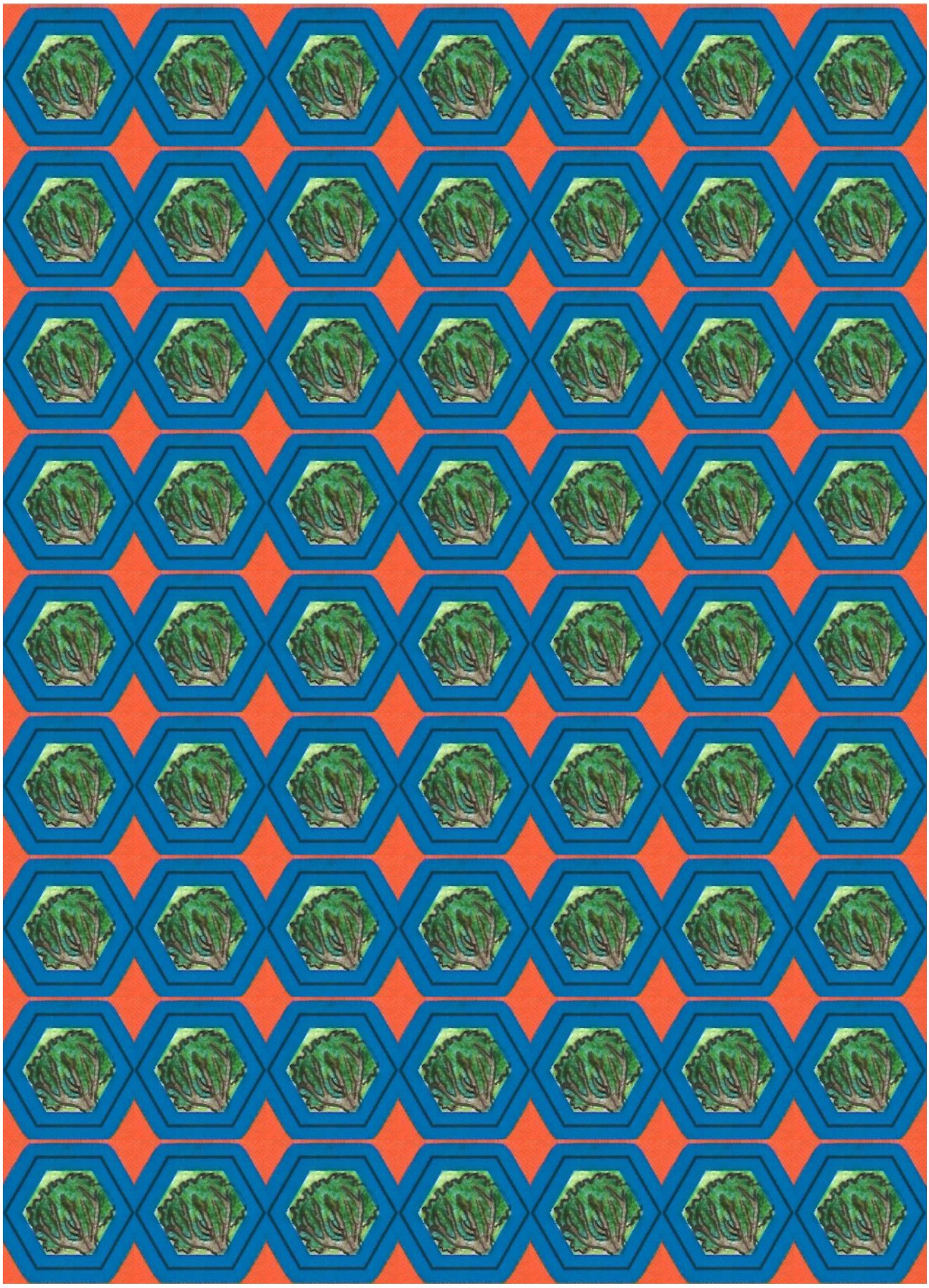

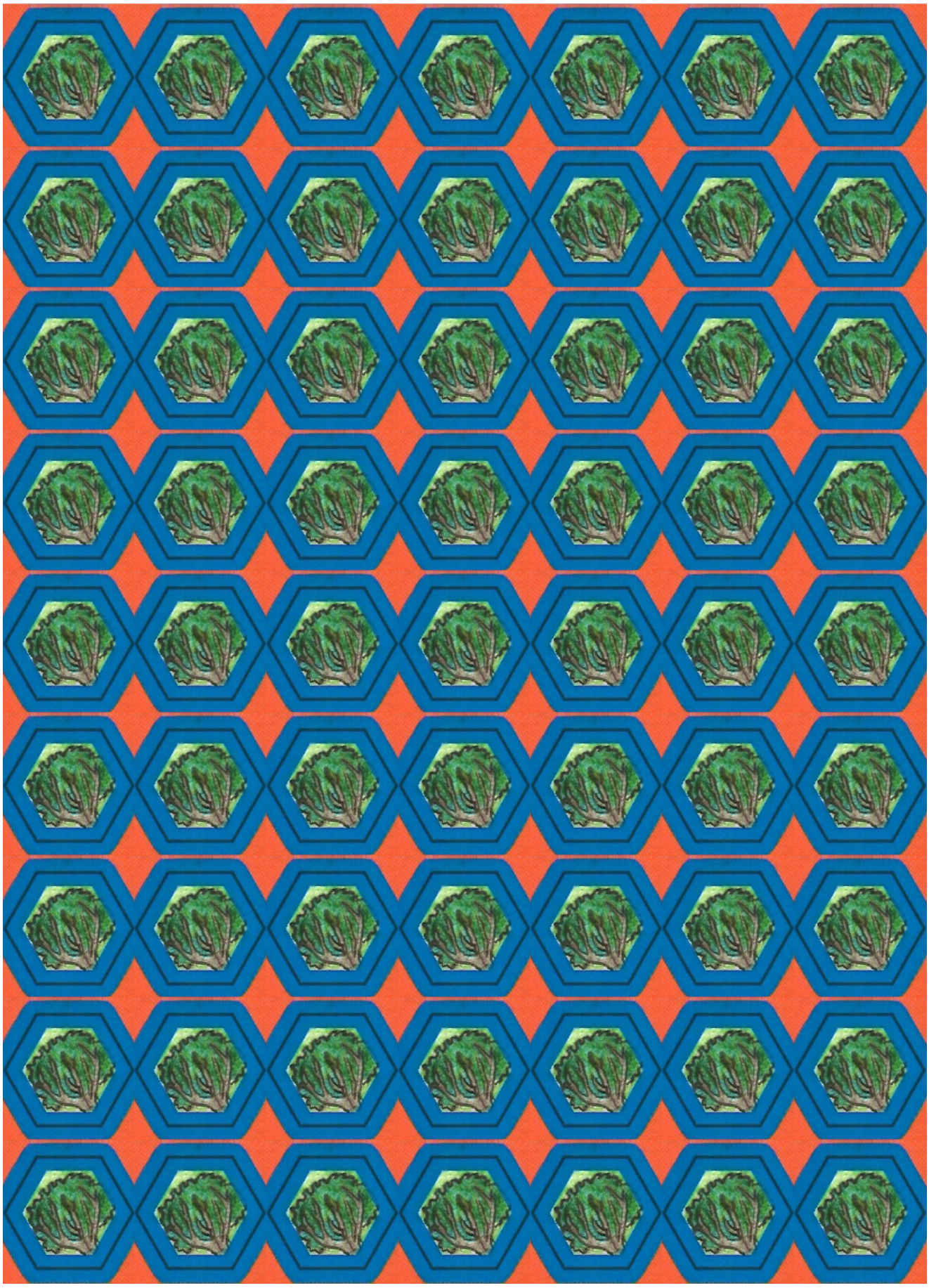

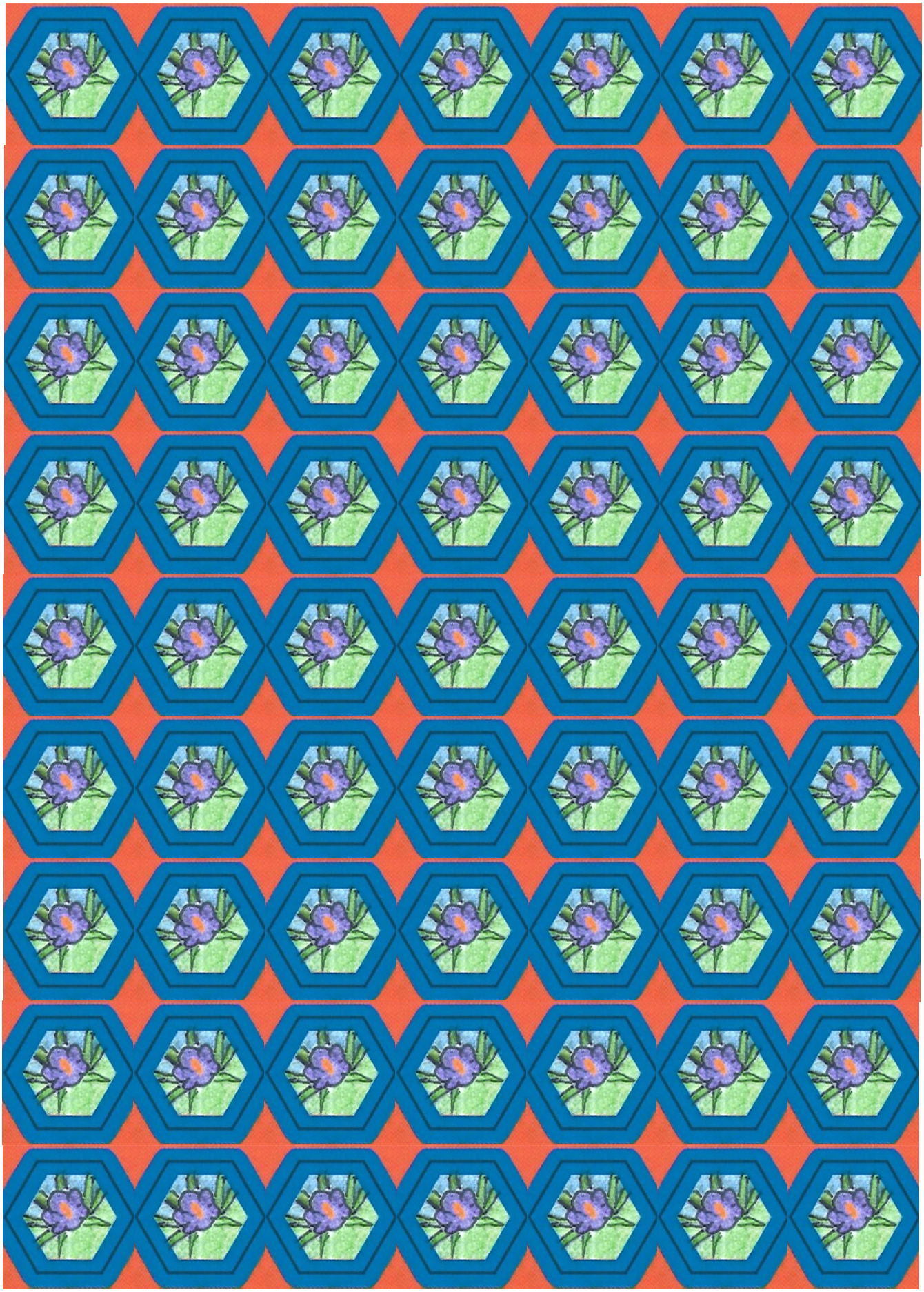

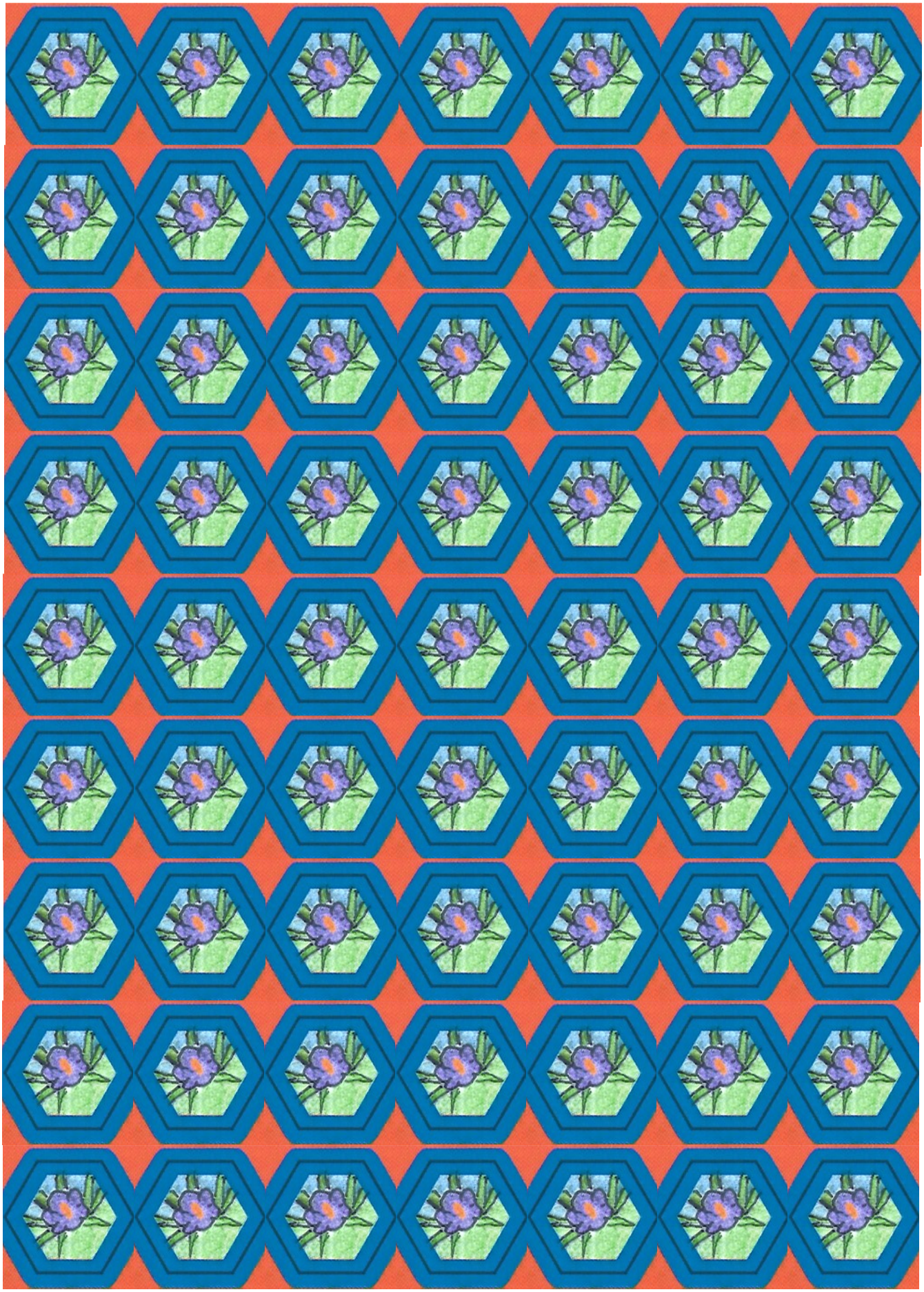

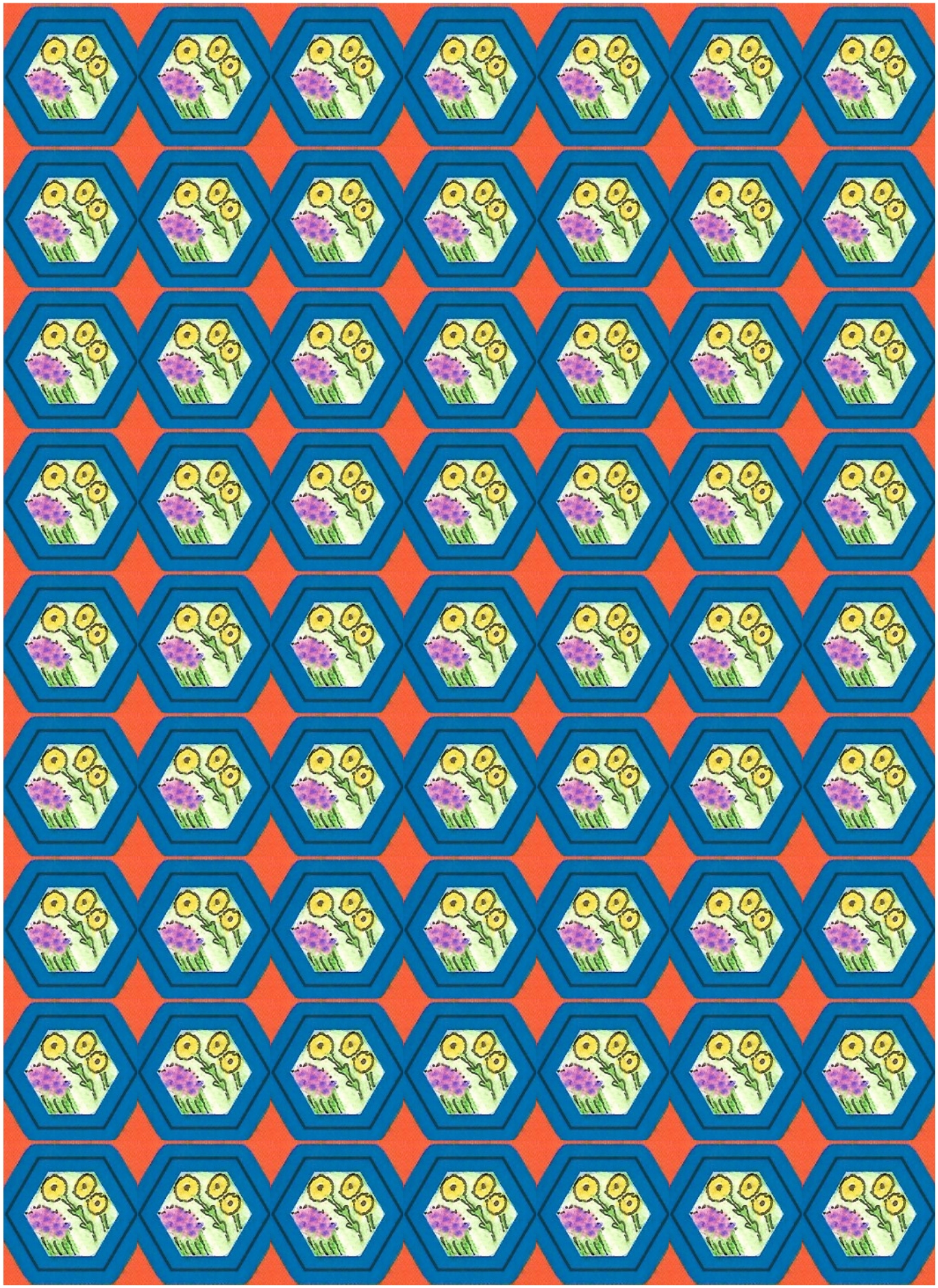

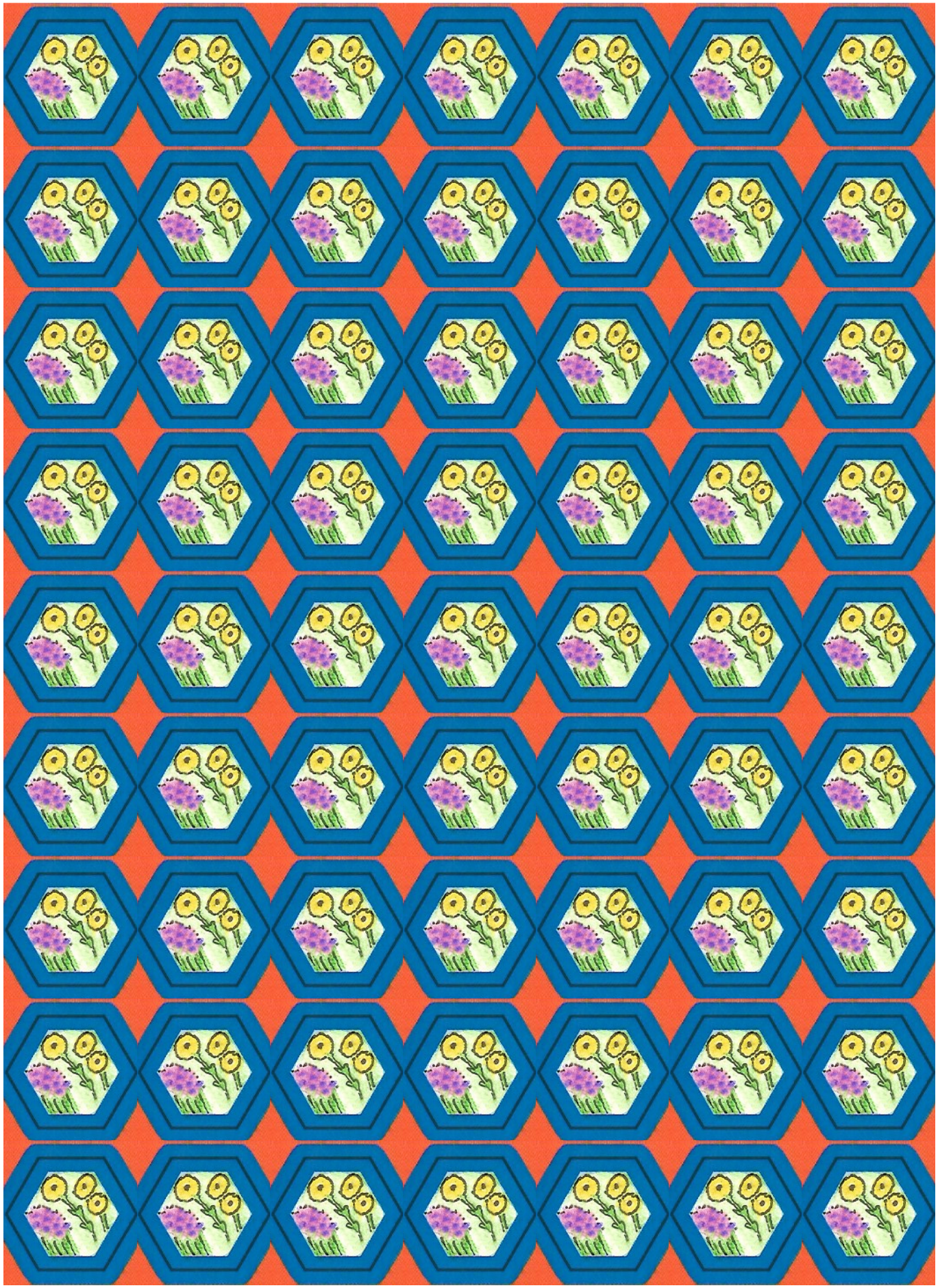

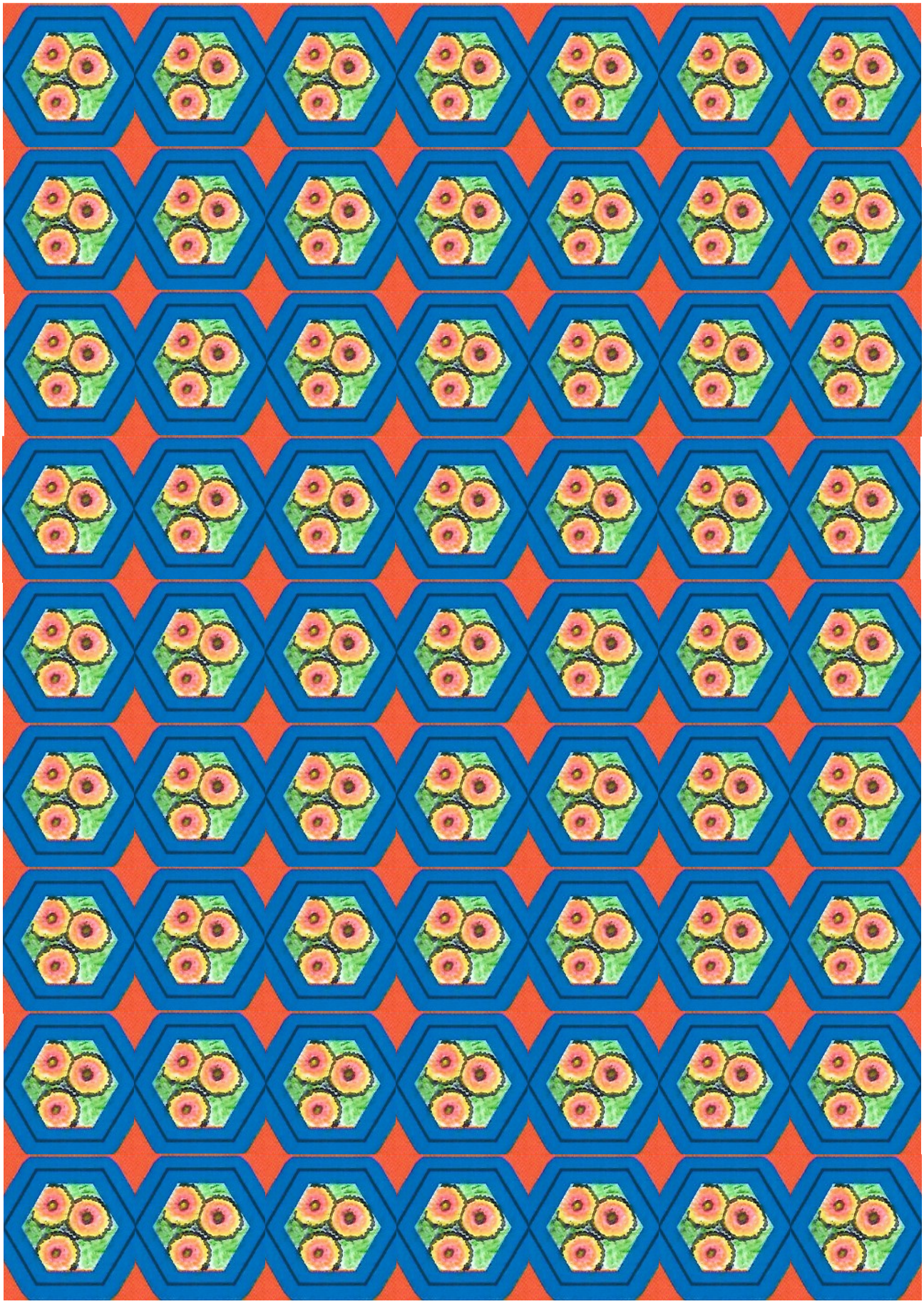

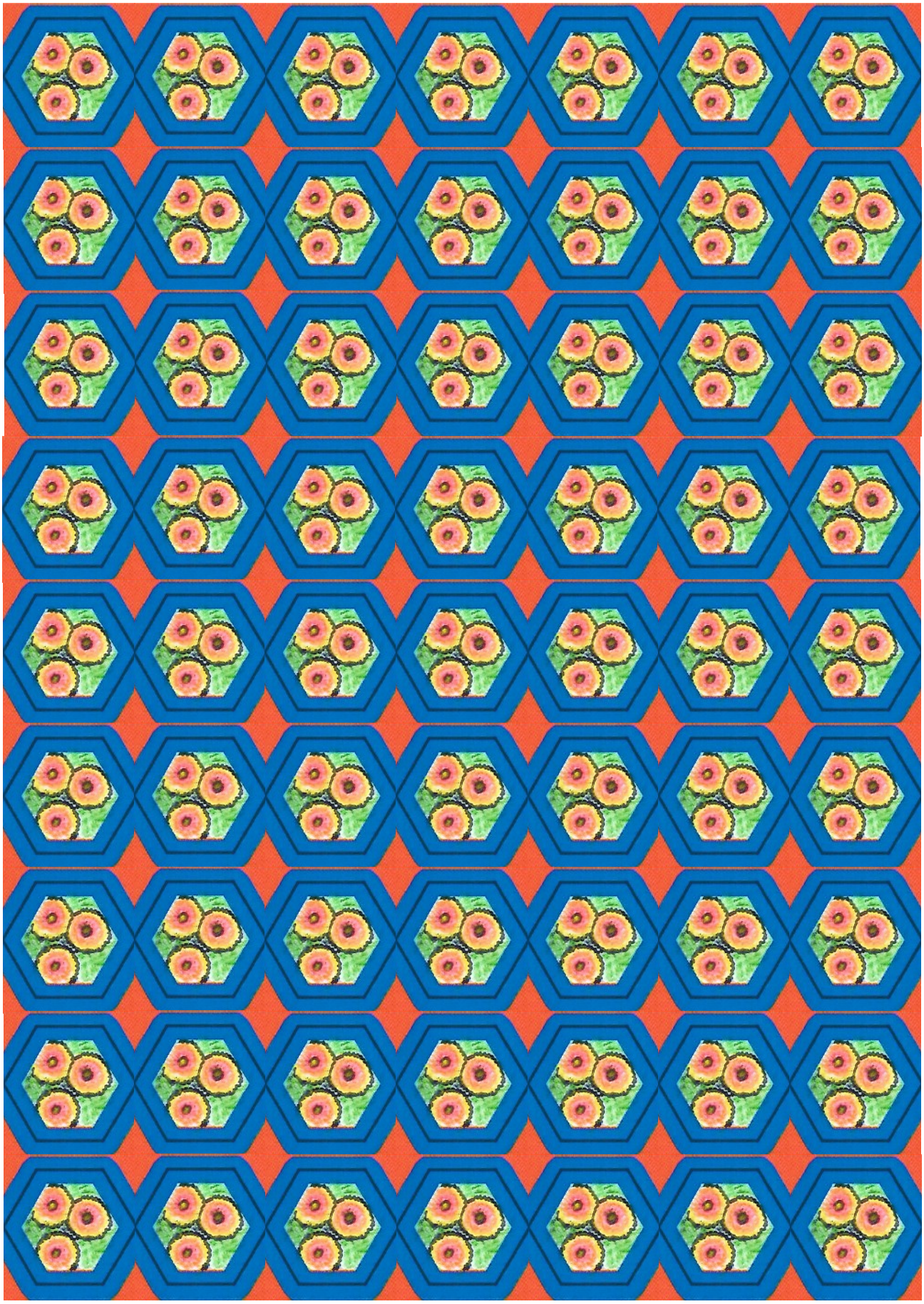

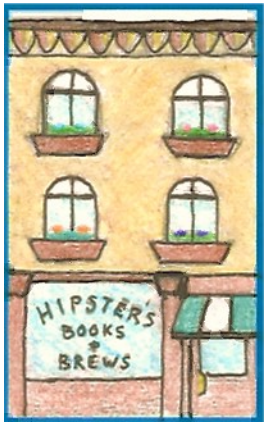
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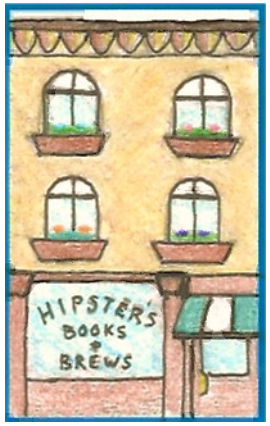
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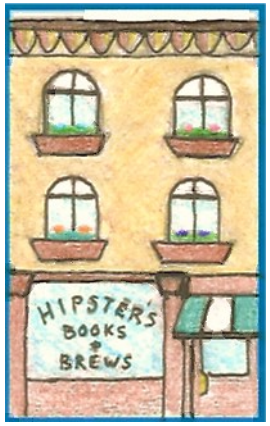
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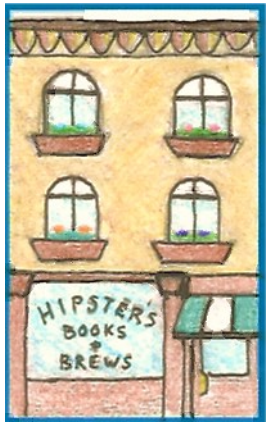
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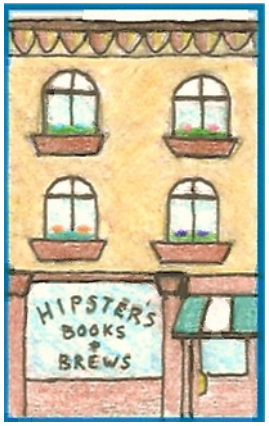
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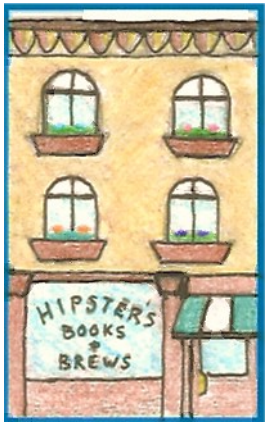
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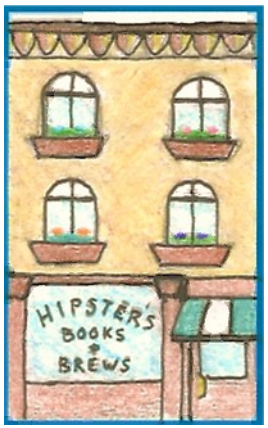
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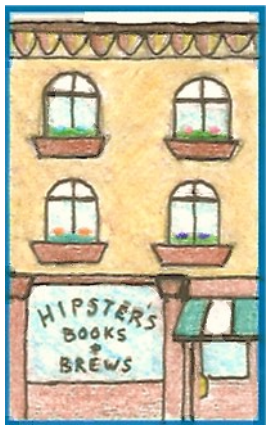
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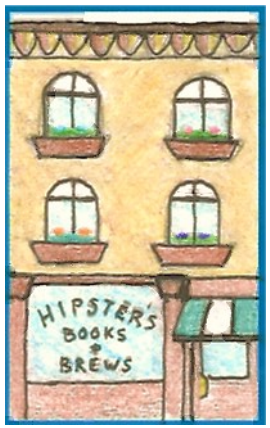
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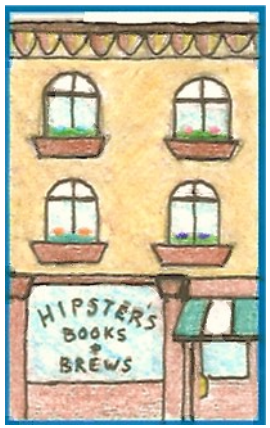
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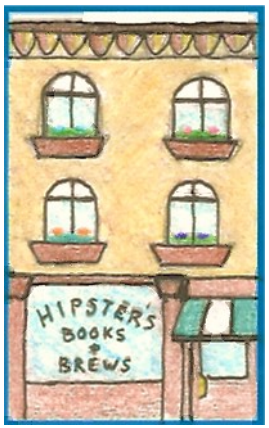
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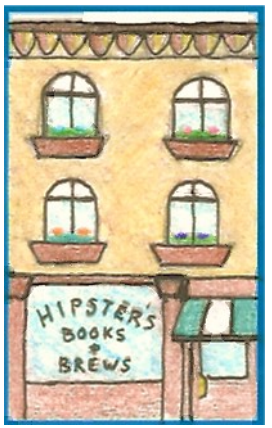
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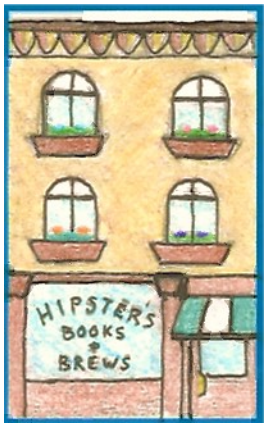
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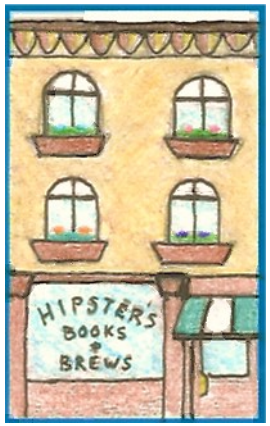
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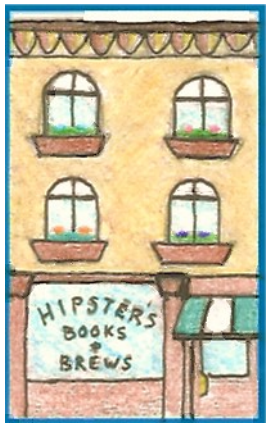
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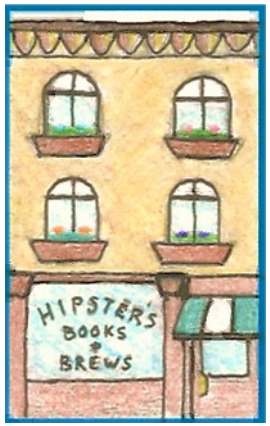
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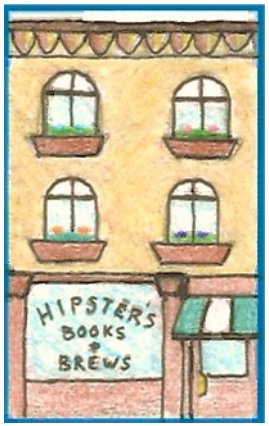
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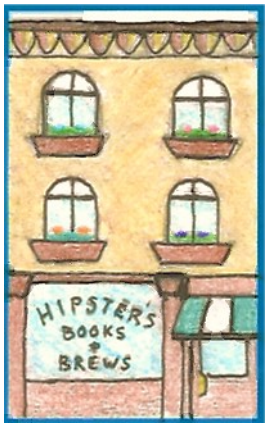
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25 HOURS of EFFORT

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WARM – SOFT CASH

25 HOURS of EFFORT

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WARM – SOFT CASH

25 HOURS of EFFORT

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WARM – SOFT CASH

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WARM – SOFT CASH

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WARM – SOFT CASH

25 HOURS of EFFORT

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WARM – SOFT CASH

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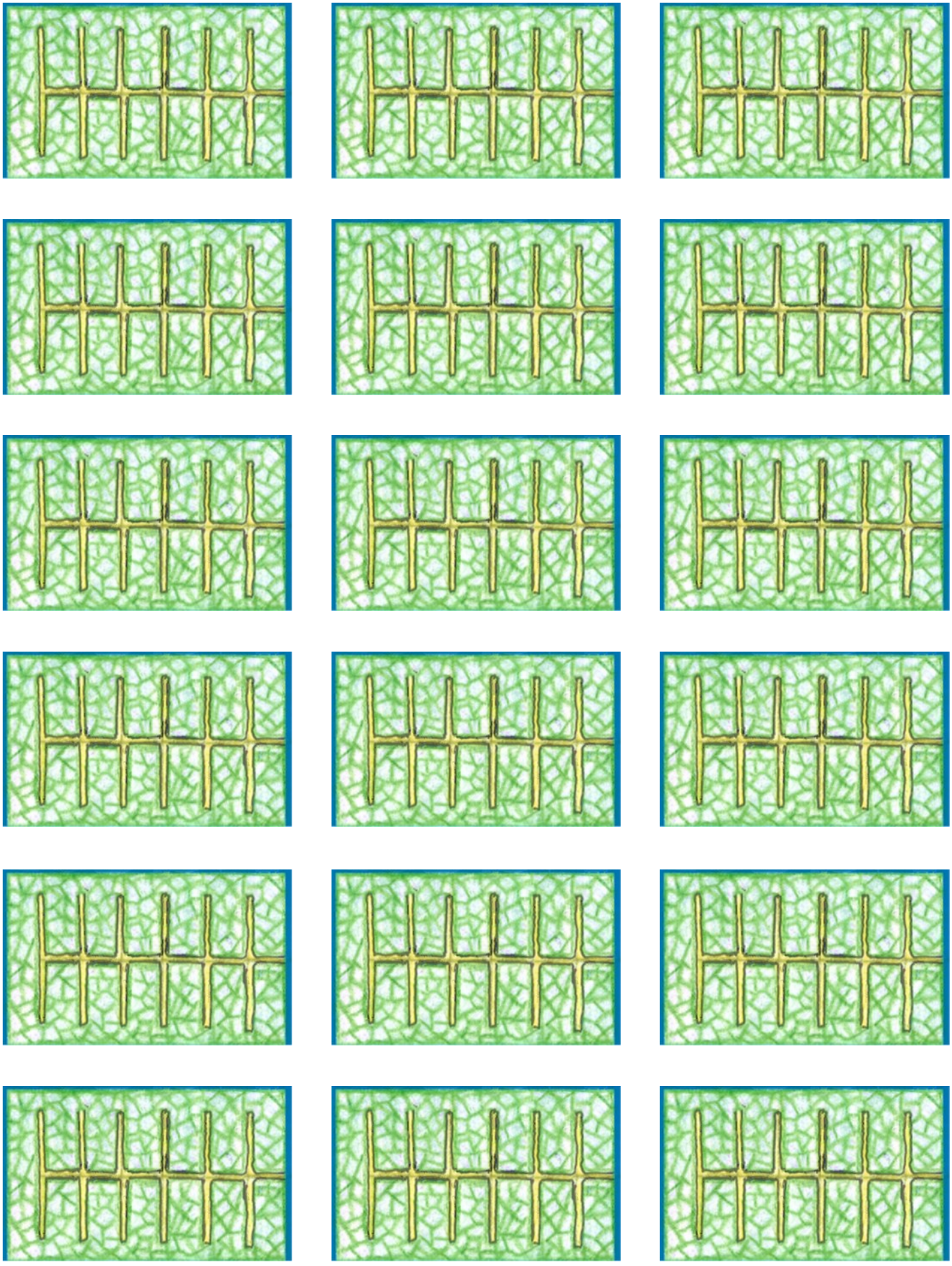

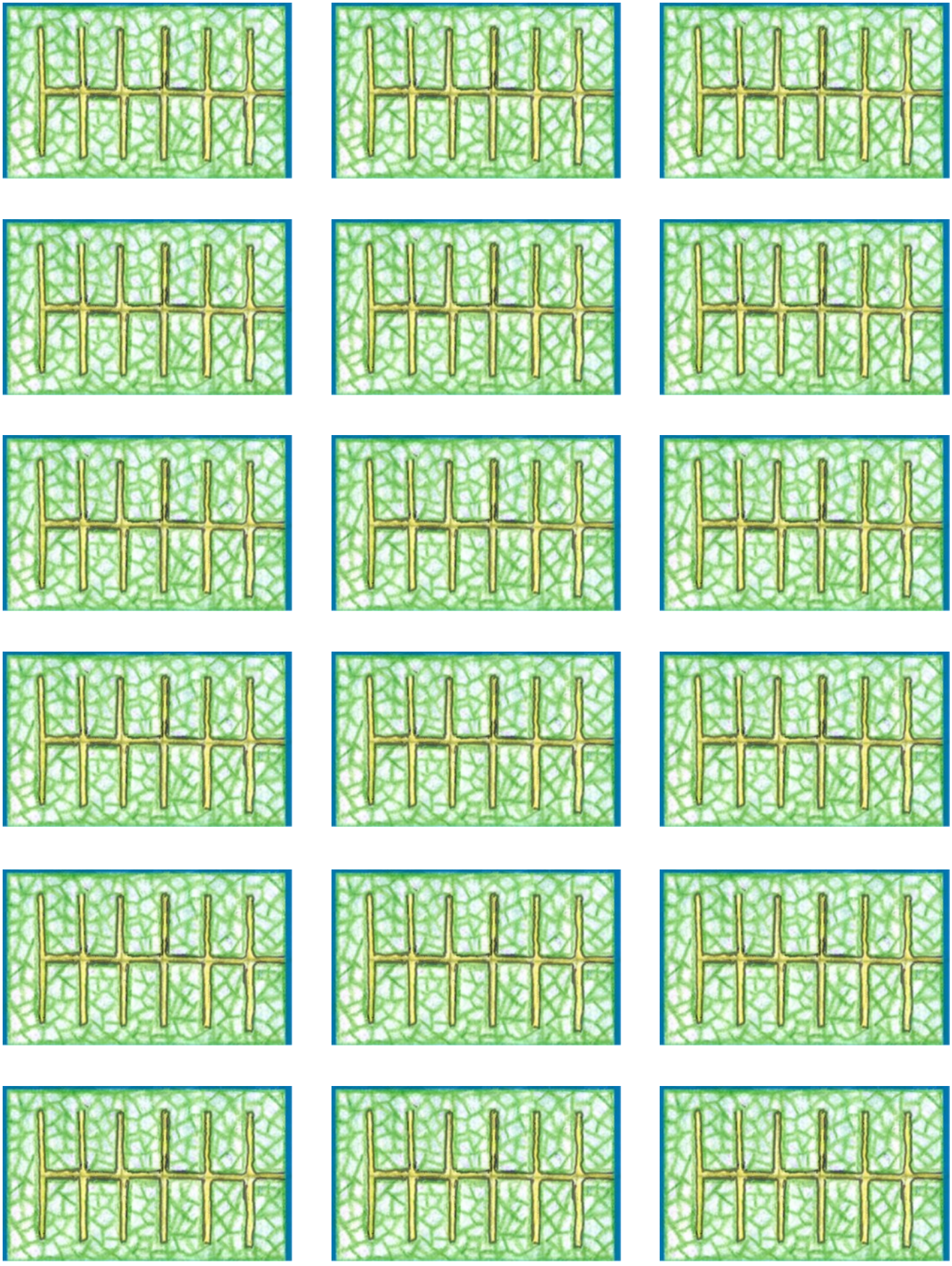

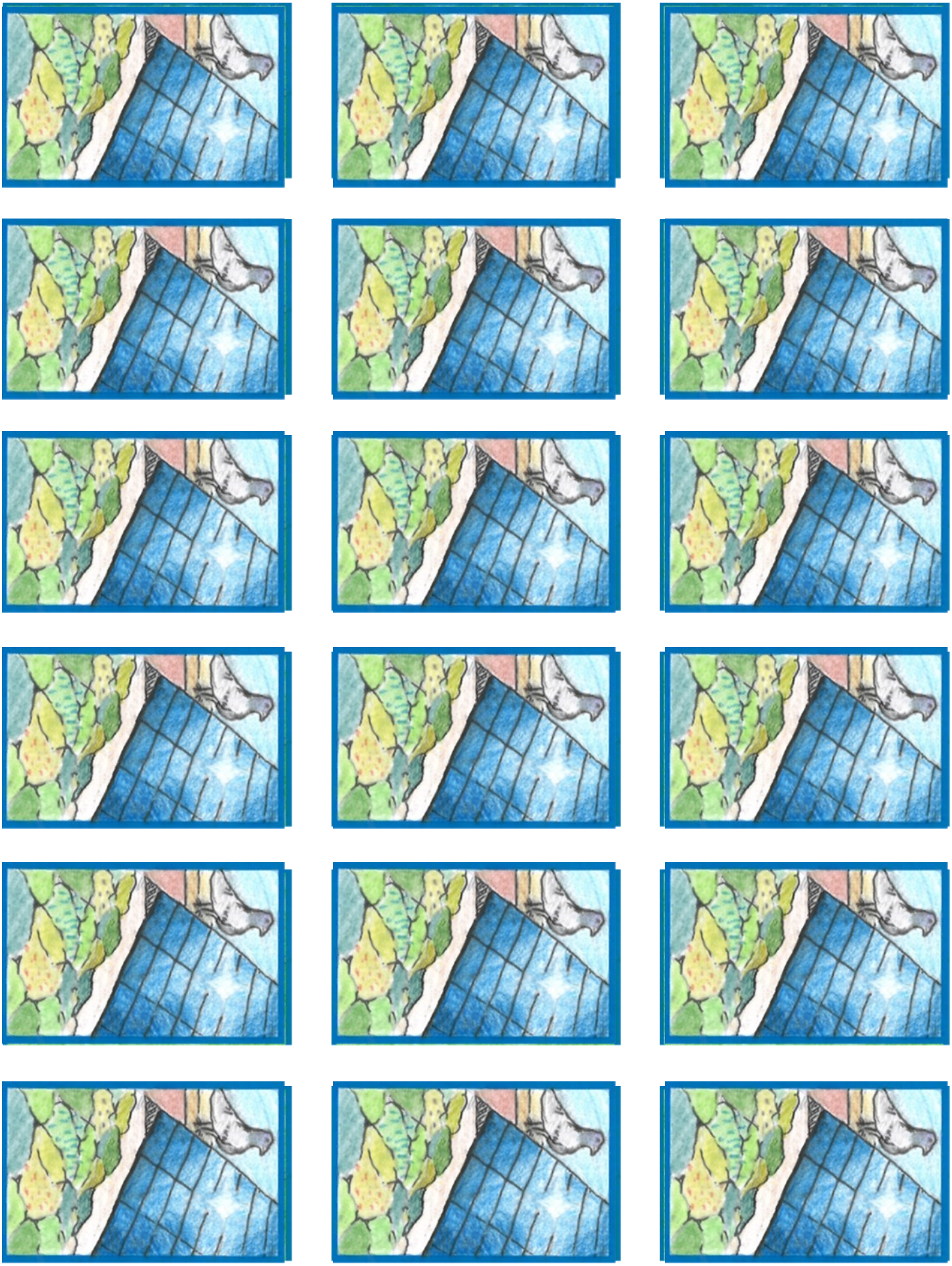

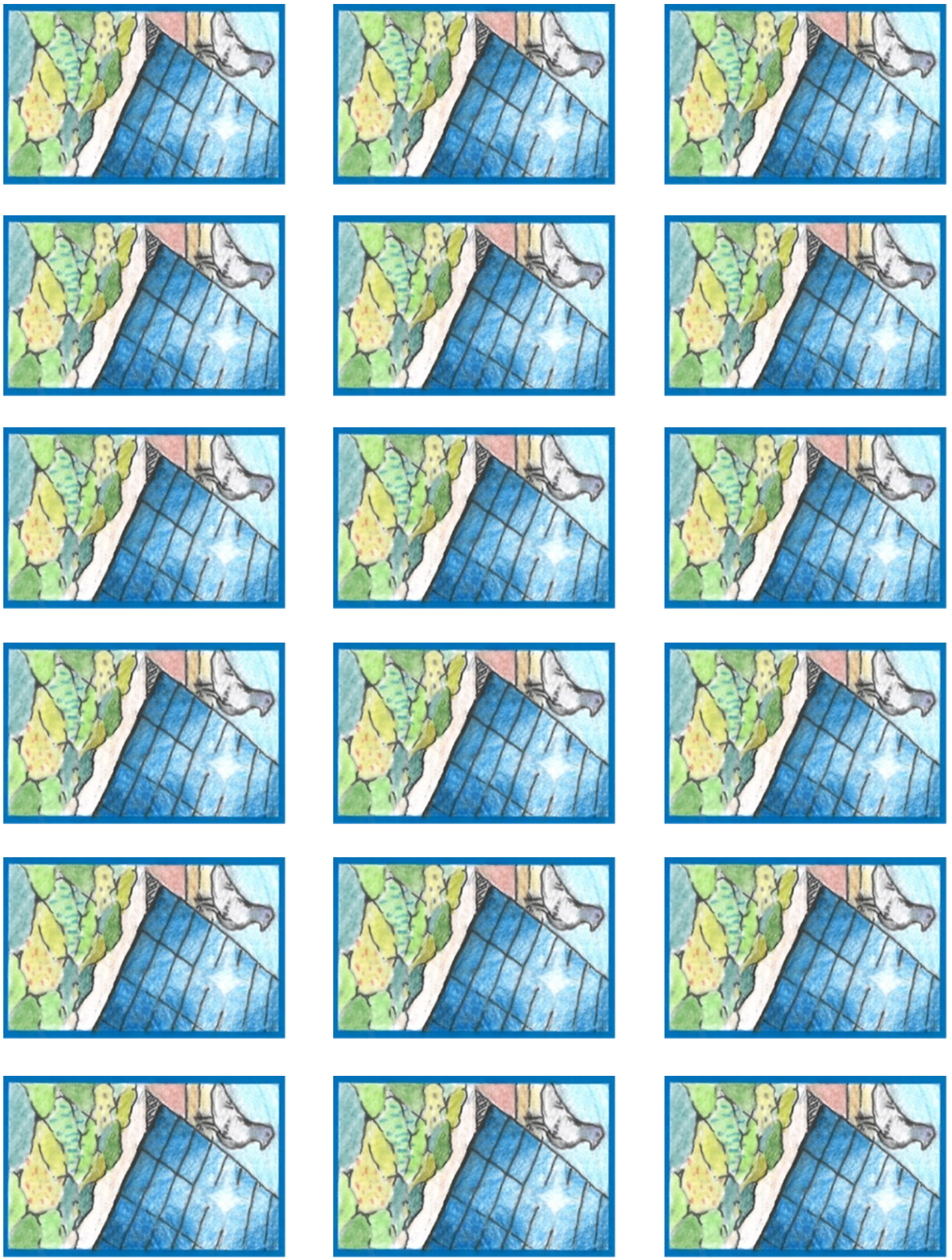

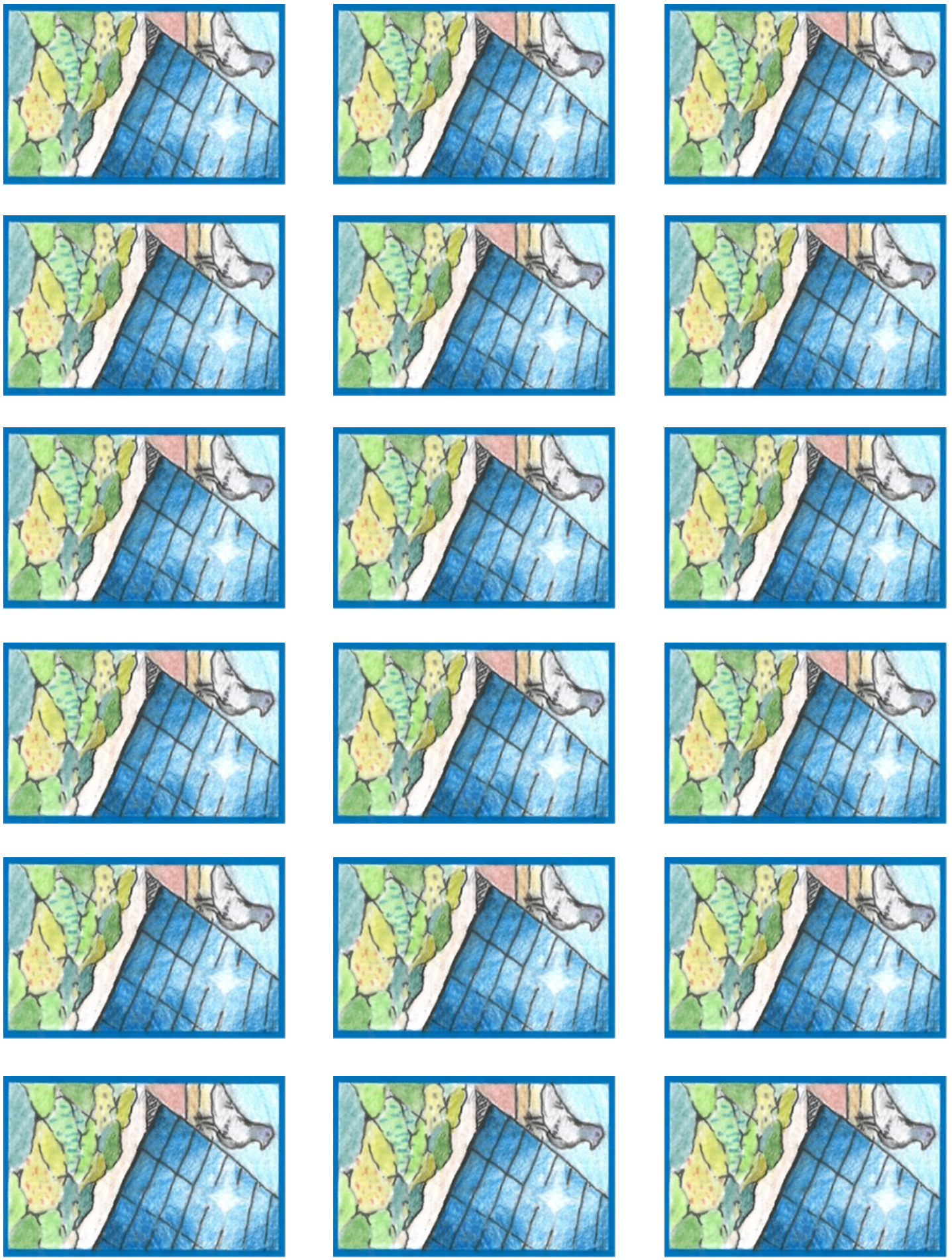

BiodiverseCity Simulation

Narrative Cards: Foraging to farming

"So you're telling me Helianthus is wild sunflower and Queen Anne's lace is wild Carrot? We technically could already have some of these things growing if we looked around?" Any neighborhoods with a Butterfly or Bird Garden discovers 2 bonus Summer flowers. Any Neighborhood with a Wetland or Rain garden discovers 2 bonus Spring flowers	Carol took a class on "lost herbalism" and collected such medicinal as Common plantain, Mullein, Milk Thistle, Eastern Clematis, Willow and others from abandoned lots around the neighborhood. She donates $400 after a breakthrough leads to her small herbal soap making side hustle becoming immensely popular among people with sensitive skin.
Apparently some knuckleheads can't tell the difference between a Quinoa plot And a bed full of wild recruited goosefoot. Maybe because they're close relatives, I mean you could eat either. Neighborhoods with a Community garden lose 50 hours work replanting after the bed is prematurely torn out by a passerby who thought they were weeding.	The national historic register recognizes a former Native American site nearby and plants an interpretive garden featuring the wild species they transplanted to cultivate near their settlements without actually domesticating. Gain a pocket park

BiodiverseCity Simulation

Narrative Cards: Foraging to farming

After multiple reports that the neighborhood dogs were compulsively eating acorns and not getting sick, the local vet investigated and found that the big Burr Oaks are tannin deficient mutants, which produce "sweet acorns". You get 25 hours for each shade tree as residents gather them for acorn bread in the fall. Probably still not a good idea to let Fido eat the shells though.	You read that plucking off under ripe fruit from a tree in its first year will cause it to put the energy into its roots instead, making it healthier in and more productive in the long run. This is something multiple cultures discovered through trial and error. For every Fruit tree planted this year, you may set an additional 50 hrs. on top that will pay off in homegrown produce as $200 next round (rollover funds)
A university professor studying rice knows that ancestral strains do fine in moist unflooded ground, flooding's just something modern varieties became adapted to as it was used for pest control. He offers $300 from grant funding to experiment in your Rain Gardens with wild strains for a round, assuming you have any available to use	Growing plant crops within the range of their wild ancestors tends to offer perfect growing conditions, but it also places them in the presence of wild species that naturally evolved to like to eat them. Often the domesticated varieties are less resistant than their wild cousins if bred elsewhere Your neighborhood loses 100 hours keeping squash bugs off your pumpkins, squash, cucumbers, melons and gourds. If only you'd planted Seminole squash…

BiodiverseCity Simulation

Narrative Cards: Beginnings of Agriculture

The local park service finds a mixed floor of Bloodroot, mayapples, and wild Ginseng. These useful and relatively rare understory plants are hard to artificially cultivate so it's decided the best option is to expand the forest edge. Gain a Shade tree that must be placed in the park	No, Bradford pears don't actually give you pears, not without extensive training followed up with grafts from an edible pear variety. On top of that, they're now considered invasive if they go to seed. Neighborhoods possessing fruit trees must choose the following Lose the largest patch of fruit trees **Or** Spend an additional $100 on each tree in the patch getting them properly root grafted
Charlie's roasted Chickpeas is a local brand of snack food. The legumes are shelf stable, calorie dense, and can be grown in large amounts that benefit farmers with the nitrogen that the plants put back in the field between rounds of other veggies. • Gain $200 if you have a farmer's market with local farmers that will grow them • Gain $200 if you have an Artisan's market that can sell them. • Gain $200 if you have a mass transit system as it will aide in distribution. That's a lot of specialized labor.	A farming operation out of town grows both Manoomin and Cranberries in a habitat specific setup that is highly susceptible to runoff pollution. Nobody realizes how much it plays into the local economy Lose $800 unless your neighborhood has a Porous parking lot or pond that will provide retention

BiodiverseCity Simulation

Narrative Cards: Beginnings of Agriculture

Janet made an error in preparing her elderberry Jam this year. Everybody got a trace amount of cyanide poisoning from the fact that the berries were heated enough to kill the bacteria, but not the defensive compounds that leached from the seeds Lose 75 hours to everybody who received a jar experiencing gastrointestinal distress	An art teacher at the local elementary school discovers an art project of painting small rocks to look like strawberries. Turns out, birds that get tired of striking stones with their beaks will leave an area alone even when real berries are present! Unfortunately, this isn't as applicable to larger plants as bird netting spend $100 on bird netting and buy a shrub for normal price **or** Spend 25 hours painting rocks and have only short berry plants without the shrub cost
You planted seeds from a Cantaloupe you bought at the store and the resulting vine gave you cantaloupes, but tangy ones with a green pumpkin like outer rind. Apparently the fruit from the store still developed when it was cross pollinated by French melons in the next field over because cucurbits aren't picky about their mates, and that cross got you hybrid seeds Gain 75 hours when you realize these freaky weirdo fruits can still be used to bribe neighborhood kids for volunteer work.	Clearing out an area reveals a fully recruited stand of perennial asparagus. Let's be honest, asparagus probably isn't anyone's first choice, but somebody long ago has already done the hardest part for you and that isn't worthless. Save 150 work and gain a shrub just making the best use of the plant diversity that's freely available.

BiodiverseCity Simulation

Narrative Cards: Geography and Spread of Agriculture

The restaurant in your neighborhood is looking to add some color to their dishes but doesn't want to also manage a full garden. You pull out a seed catalog and show the chef a number of ornamental varieties of the Brassicas from all over the world which could be worked into landscaping if they avoid spraying chemicals. They cut a check. Gain $600 exclusively for placing a pocket park or green roof near or on the grey restaurant building.	You thought the native pollinators of tomatoes, peppers, and potatoes, would be able to get eggplant to fruit, but it turns out that the weird phenomena of buzz pollination that nightshade plants and insects have must be somehow tuned to a different frequency over in India. That and the city lacks pollinator diversity. Lose 25 hours trying to research the issue and fruitlessly waving an electric toothbrush around the eggplant's flowers. You get a lot of weird looks from passing neighbors.
We should have been more selective about which fruit trees are suited to this latitude. While we got away with a number of hardy peaches, cherries and plums, the Pomegranate is a no go and the olive always loses its flower buds to late frost before they can make fruit Lose 1 fruit tree **AND** Exchange 1 fruit tree for a Shade tree to represent the olive's inability to produce	"Technically that's a vine of native muscadines, not wine grapes, but the Italian honeybees are familiar enough with its Mediterranean relative that it still works as an agricultural package. (Only downside is that the grapes don't all mature at once in the bunch.) Gain $200 from grape and honey sales if you have a Farmer's market.

BiodiverseCity Simulation

Narrative Cards: Geography and Spread of Agriculture

You notice that Apples and aliums are from the same part of the world and might get along as companion plants. Then you remember bulb plants can be staggered in bloom times if you bury them right. Then you realize this all technically describes a butterfly garden. Gain 1 flower of each season to place around a fruit tree from a seed supplier willing to let you test run the idea if it helps advertise some crocus.	There's a question over which Native fruit to plant. **Flip a coin.** Heads- you plant native persimmon which is closer to eastern European and North Asian relatives than its south American cousin. Lose $300 on a tree that dies from a particularly hot summer Tails- you plant pawpaw, a tree which is similar to bananas, but tolerant of temperate regions and spreads by splitting off more trees from the roots. spend $300 and gain 2 fruit trees when the heat wave doubles your investment
A vegetable gardener's artichoke seeds somehow got contaminated with thistle seeds, a close relative from the same part of the world, after a whole growing season, the sneaky mimics that were too prickly to harvest release their own seeds to the wind Lose 50 hours weeding and maybe ask your biology teacher about Vavilovian mimicry.	The Botanical garden drops by to collect seeds adapted to the local conditions in order to have a greater genetic diversity of useful traits in their preserved seed bank. They also pass out seeds collected from the center of each species native range that historically had populations in your area Gain 2 prairie patches

BiodiverseCity Simulation

Narrative Cards: Exploring Native Polyculture

Attempts at homemade maple syrup in the neighborhood take a lot of time and effort but pay off in product due to favorable weather this year spend 175 work hours and get $1000. That's **only $300 net gain**. To get a given volume of syrup you have to boil 40 times that amount of sap down to the greater concentration of sugars.	It's determined that one of the lots in your neighborhood sits on too steep of a grade for developers to benefit from building a structure on it. Pay $300 for terracing *plus pay to install* either A. nature playground- get 150 hours' community involvement back B. A pocket park- get 100 hours' community involvement back C. A community Garden – get 100 hrs. and $200 in produce back
After noting that Hugelkultur beds traditionally work with rootstock vegetables, one of your neighbors tries piling on an extra thick layer of compost and mulch over their bulb flowers. The plants pass through winter with zero stress and put the energy into new bulbs Gain 6 spring flowers	A researcher looking into water loss in drier climates has questions of whether systems designed for wetter areas share operating principles with Uyghur Karez, Nazca Puquois, African sanddams and Zuni waffle Gardens. She gets the University to set up a test plot in your neighborhood. Receive all components to install a rain garden adjacent to an existing wetland garden or vice versa.

BiodiverseCity Simulation

Narrative Cards: Exploring Native Polyculture

Attempts to turn around, well-drained mound into a giant herb spiral were partially successful in that the anise, parsley and fennel recruited a lot of black swallowtails. Should your neighborhood decide to make the conversion to a butterfly garden and still get herbs as a side benefit? Gain a full Butterfly Garden for only the cost of its fruit tree, $300	Some older immigrant ladies from the neighborhood get to talking at the Community garden about styles of growing in their home countries. One common theme is that Terra preta, Chinampas, and Rice paddies all indicate that loads of fertile nutrients can be accessed by using aquatic mud to amend the soil Save $900 on fertilizer if you possess both a Community Garden and a wetland garden
Whether you want to call it guild plantings, shade cropping, or food forestry, a number of the companion vegetables that don't like to roast in the summer sun are benefitting from a broken tree canopy nearby while the trees themselves are reaping ecological benefits in return. Gain $400 of productivity for any tree adjacent to a Community garden plus $100 of fruit production if it is a fruit tree.	Seeing the lot was too built up and rocky, but not wanting to be left out on all the cultivation one of the LEED loft tenants tried to make rooftop Chicken coops work. It doesn't work for the neighbors! Spend $600 and gain a green roof for one LEED building when an agreement is struck to help them convert in return for an end to the smell and 4:00 am rooster calls. Disregard this card if no LEED building is in your neighborhood.

BiodiverseCity Simulation

Narrative Cards: Exploring Native Polyculture

While explaining pemmican to a class of high school students, a local historian points out that a lot of old recipes from before refrigerators were about making food not only last longer but also "denser" so what you stored in the pantry would go further to keep you fed. It sparks some thoughts. Save $100 for every fruit tree when families start using food dehydrators and Ziplocs on homegrown produce instead of paying extra for fresh fruit out of season	Upon clearing some brush out of an area, you happen upon a wide patch of White Sage. Knowing this plant is sacred to several Indigenous groups and increasingly hard to source because of wild poaching, you inquire with the Native Heritage Association run directly by a nearby recognized tribe to find a good home for it. The conscientious act of goodwill indirectly leads to 25 hrs. community involvement when you end up befriending the woman who comes to collect the plant
A deep dive into the cultural meaning of sunflower among the Wampanoag revealed that there was always a practical consideration to planting it along the north and east sides of your garden. It distracts birds from eating your crops by being the first bright food source they see in the morning Gain 4 Summer flowers to place near the community garden or fruit trees	Armed with the proper guidebooks, teens in the botany club that walk home from school start pulling invasive weeds along their route while leaving natives and naturalized plants that provide a service or product. Gain 3 trail sections when their shortcut evolves into a desire path, which evolves into an ethnobotany trail.

BiodiverseCity Simulation

Narrative Cards: Displacement of Traditional Crops

Emerald ash borer and bagworms proliferate in the area due to the fact that the parks former landscape architect liked to copy and paste the same species of tree to line walkways Lose 3 shade trees	Several years ago hydrangeas were a big fad. It's not that their bad, it's just that there were so many more than there was any good use for. Receive 8 Shrubs. Yes, 8. Find a place for them.
Continuous planting of tomatoes has really depleted the soil of phosphorus and magnesium. You will need to amend the soil to return it to productivity at this rate Spend $200 per community garden on adding these minerals back with "the weird fertilizer".	Netflix drops a competition series in October called Jack-o-lantern face off. After gete okosomin squash makes an appearance there's a surge in demand for fun heirloom vegetables like romanescue, purple sweet potatoes, cucamelons, gem corn, and Chioggia beets. Gain $300 if you have a Farmer's market

BiodiverseCity Simulation

Aside from the fact it made the pies and cider somehow blander as other varieties fell out of favor, the universal popularity of Golden delicious apples actually caused the bottom to fall out of the market as they became literally "a dime a dozen" it reached the point where growers have started cutting them down to replace with something more unique Lose 2 Fruit Trees	The livestock conservancy presents at a public hearing on the disappearance of the "old Macdonald" style farm and what it means for breeds like Easter egger chickens. In response, the city not only legalizes potbelly pigs as pets but acquires a small herd of Valais sheep to graze overgrown public areas Your neighborhood only saves $100 on lawnmower gas vs veterinary care, but you gain another 50 hrs. community involvement from the unofficial petting zoo let loose in the park each Thursday and free wool sourced to the artisan's market. Not ba-a-a-a-d.
Increased prices for corn brought on by ethanol speculation cause local farmers to convert the bulk of their production away from varied produce. This in turn spikes the cost of fruits and vegetables at the Farmer's markets and grocery store since local production isn't meeting demand and outside sources come with shipping costs and perishability issues over the long commute Lose $800 to market forces and inflation	The demand for artisan textiles has shot up and there is the potential to receive funding through the Artisan's market by planting flax, but the only practical and streamlined way to collect the fibers is to let the plant monopolize its own space. Gain $800 from the presence of an artisans market if you plant 8 summer flowers this round in a single cluster with no spaces between them

BiodiverseCity Simulation

Narrative Cards: Displacement of Traditional Crops

Nobody was going to tell you that there are multiple varieties of kiwi, many of which are perfectly well adapted to this climate because New Zealand, where they come from is actually in the temperate zone. But it's true. Weird how you only see the one type in stores… Gain a fruit tree	The USDA is forced to reinstate a number of regulations originally put in place to protect major cash crops from pathogens which also infect and have a reservoir in unrelated hosts. The unrelated hosts are now illegal to grow in the US even though the cash crops population is big enough to support the pathogen on its own. Lose 1 shade tree, 1 fruit tree and a shrub.
Largescale dairy productions depend on alfalfa bees to pollinate the cow's main food plant. Alfalfa bees need better ecological resources than what they can find on dairy farms. You receive a $500 government grant to help push you toward completing the pollinator habitat, and freebie coupons from an Ice Cream company to incentivize 50 hours of volunteer work to the same end.	The Farmer's market installs a "select seasonal" stand where local crops with a narrow window of production are highlighted for the brief periods they can be guaranteed to be available. It's great for making little known fruits like Linden, hackberry, Pawpaw and native persimmon more prominent. Gain $200 from any Farmer's markets this round

BiodiverseCity Simulation

Narrative Cards: Lawn Uniformity

Fallen branches are carted off from people's lawns a little too quickly and without mulch piles or low woody cover, fireflies have no habitat for their larval stages, which like to tunnel under decaying wood. The adults also prefer short thick foliage for daytime shelter. Neighborhoods with less than 4 shrubs Lose 50 hours of community involvement as the familiar light show of summer evenings becomes sparser. Neighborhoods with less than 8 lose 25 hours	Overzealous mowing and weedwacking of taller spring plants cuts down on clover, spring violets and crocuses Lose 3 spring flowers
Walkable communities without car centric infrastructure demands are being incentivized through the department of transportation with tax rebates. receive $100 for each of the following present in your neighborhood • Trails connecting resident housing to businesses/public services • A Mass transit station • No dead end streets There is also a $400 rebate for successful implementation of multi-use Zoning. Collect this reward if you possess *a fully occupied* LEED building	Some basic outdoor games, occasional hosted events, and reliable visits from roving food trucks can turn a small central congregating location into a successful "third place" Neighborhoods with a pocket park gain 250 hours community involvement since everybody now knows each other and goes to hang out at least once a week

BiodiverseCity Simulation

Narrative Cards: Lawn Uniformity

Capturing rainwater from gutters and runoff, then focusing it into thicker forming foliage that also provides shade allows the moisture to infiltrate the soil and eliminates the need to put out a sprinkler on the lawn Save $300 on irrigation from common sense practices. Receive an additional $100 per Rain garden and porous pavement	A move away from lawn herbicides has unintended surprises. Aquatic plants in nearby bodies no longer affected by runoff flourish, providing habitat cover for dragonfly larva which in turn bring down the mosquito population and need for bug spray. That disappearance of runoff pesticides then allows a chorus of amphibians to return to the same said pond The neighborhood saves $300 when not spraying one kind of poison eliminates the need for another, and gets back some charming biodiversity
The urban seed bank includes crawling weeds like purslane, chickweed, and Persian speedwell. These actually end up loving the porous parking and form an attractive groundcover of mounding flowers in the nooks and crannies that doesn't need mowing. It's similar to, but wetter than, zero scaping. Place 2 spring and 1 summer flower around each porous lot including any placed this round	Some landscaping formerly thought to be elderberry by a homeowner turns out to actually be a variety of Asian baneberry planted as ornamentals. It's not particularly invasive but birds ignore the toxic berries and native pollinators aren't adapted to use the flower shape. It's also too short and open to provide shelter to wildlife. Basically a beautiful but ecologically useless alien. Replace 3 fruit trees with shrubs, incurring no other cost.

BiodiverseCity Simulation

Narrative Cards: Lawn Uniformity

Whoa, we maybe should have planned that better. Scan all parking lots on the map, porous or blacktop, for adjacent plants forming a bird garden. Where found, that neighborhood loses 50 hrs. to people cleaning bird droppings off their cars.	Cantankerous Hank runs for head of the homeowner's association on a platform of de-regulation and wins. Treehouses, tire swings, basketball hoops, kiddie pools and trampolines are allowed back in. Sounds of shrieking laughter and juvenile shenanigans slowly reclaim the neighborhood. Parents watching from the porches strike up conversations. 500 hours of community involvement results
Rather than buying mulch and compost the park decides to take and process the neighborhood's lawn refuse, sending the larger branches through their chipper. Everyone in the neighborhood can pick up the transformed material from the big piles in the maintenance area as needed Benefit from giant night crawlers to go fishing with and the occasional displays of funky 70s looking mushrooms from time to time, but more importantly Save $300 recycling your own biomass in a self-sufficient loop that improves the soil.	The dropping fruit from several flowering crabapples are going uncollected and coating nearby sidewalks with sticky "crabapple sauce" coatings under the foot traffic. Spend 25 hours trimming the overhanging branches away from the path **Or** Lose 3 fruit trees