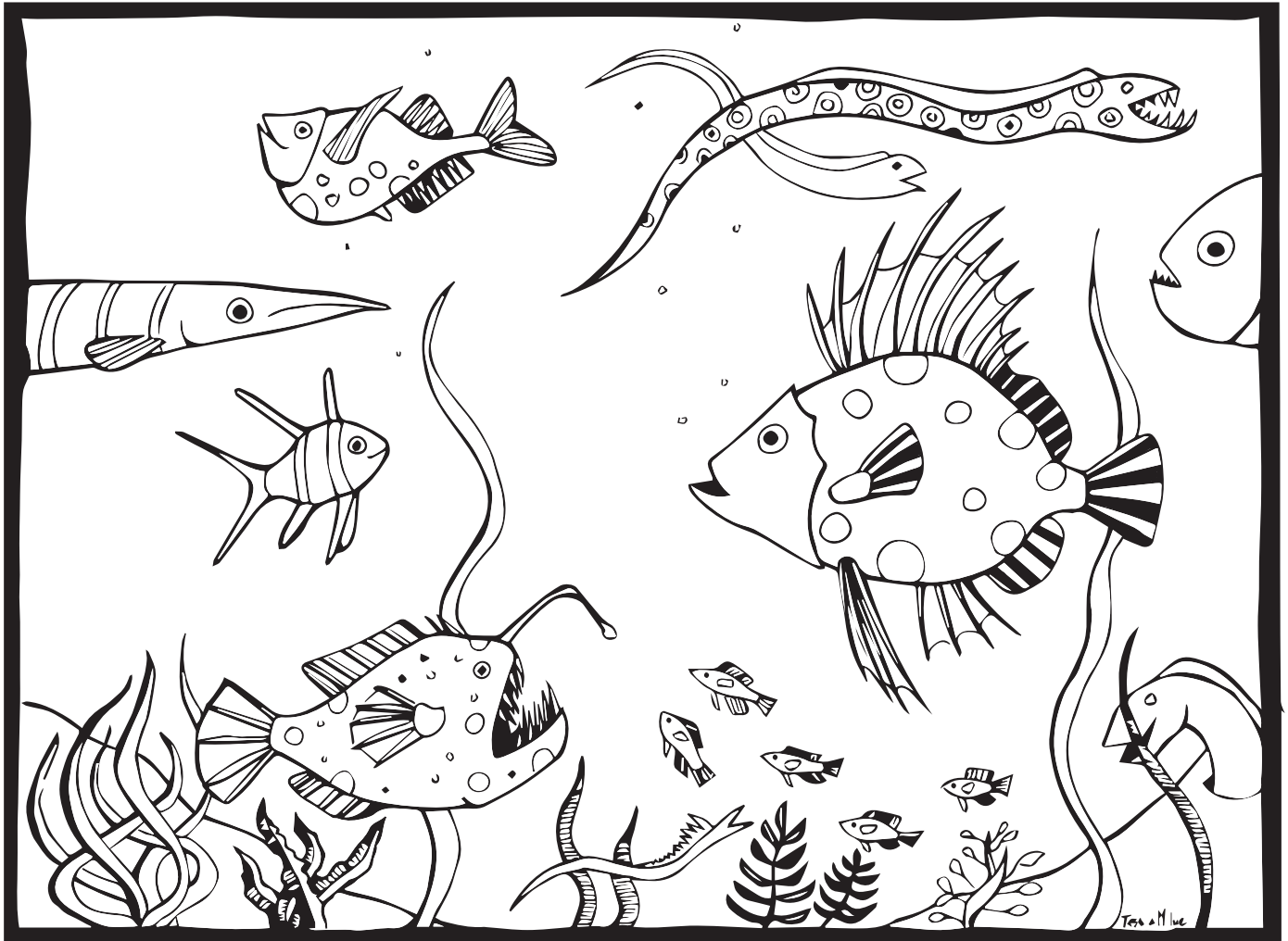


Sea Creatures & Dots Counting Strategy Booklet



EDCI 405 Assignment #1

By Jessica Smith

Feb 3/2020

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Assignment 1: A Mathematical Learning Object Sea Creatures and Dots Counting Strategy Booklet

The dots and sea creature counting images created in this Sea Creatures and Dots Counting Strategy Booklet focus on math content for kindergarten by teaching students to count using subitizing. To support students to recognize a small group of objects without counting, dot or sea creature images are placed on shapes to represent amounts of numbers using patterns and grids. As the students become more comfortable recognizing groups of similar objects, there are a few sea creature sets with different attributes for the teacher to begin class discussions on seriating and ratios. I have also included a variety of games that students can play that encourage subitizing. Two sets of cards will be created; one larger set for the teacher to use in number talks with the class and a smaller set of images for the students to use and play games with. To further counting skills and understandings of attributes, students are encouraged to create their own sea creature drawings to illustrate the concepts they learn.

As we are starting in kindergarten I have supplied number cards, with just the numbers 1, 2, 3... to make sure that students are able to recognize what the number looks like as well as the concepts of how many each number represents. These cards are created for the teacher to use throughout class discussions and game ideas when they see fit. My initial idea came from the webinar "*How to Teach Addition Facts That Stick*"¹ by Kate Snow, which teaches students how to count using a grid of ten with groups of five, which I have incorporated into the counting dots and sea creatures. The intention is that the teacher will use the dot images supplied on grids in a discussion similar to the video on "*K 1 Ten Frames and Dot cards*"² where the teacher uses number talks to encourage students to figure out how to count. The teacher can use the images supplied to promote class discussions, leading students to discover answers for themselves. When the students understand the concepts, the teacher can move into using the sea creatures instead of dots. Blank grids in lines of tens, and groups of fives, with counter sea creature shapes are included for students to play with to better understand how to count. One idea would be to ask students to see if they can represent a number from one to ten using the counters and the grids supplied. As they gain more confidence they could move from the ten square grid to the twenty square grid. Please note that the grids supplied can be used with any counters or manipulatives that teacher has.

In this set I have also included dot images and sea creatures on cards in the same pattern as numbers on dice or a deck of cards for the teacher and students. The sea creatures only have numbers up to six. The extra numbers included in dot patterns are for students who would like a challenge. For future development, depending on how the students react to this learning

¹ Snow, Kate. (2017). *How to Teach Addition Facts That Stick*. Retrieved 2020-01-31, from <https://www.youtube.com/watch?v=vyGhPDraRrw>

² Egzitt. (2013). *K 1 Ten Frames and Dot Cards*. Retrieved 2020-01-31, from <https://www.youtube.com/watch?v=EWyDGUUDJE>

object idea, I could continue to make sea creature image patterns and extend the numbers past six all the way up to twelve for the sea creatures, not just dots.

Game Ideas:

Matching Game: This game is designed to help students practice counting, understanding what the numbers look like and for subitizing. Use the sea creature or dot cards with a set of number cards that have a “1, 2, 3...” on them from pages 48 - 55. Print on to 65 lb card stock and cut out enough square shapes for students to work in small groups. Students in groups will match the sea creature cards with its’ matching number card. This game helps students recognize and know what the number “5” looks like and be able to match it to an image that represents “5”, building subitizing skills. This game would work in MathTappers: MultiMatch.

The following three games are designed for a deck of sea creature cards. Eventually there will be six sea creatures in the set of cards to make the games more exciting, but so far, there are only two sets of images included: a fish and a turtle. To make the deck of sea creature cards, begin by printing pages 52-55 onto 65 lb card stock paper and cut out the square shapes. Please note that I have included a sea creature image that can be used to glue on the back of the cards on page 56. A tip for gluing the back images of to the card is to use a light table or window to line up the images. Make enough decks so that students can work in groups. Page 57 is blank to represent zero or for students to create their own images.

Memory Game: Work in small groups and play a memory game with set of sea creature cards that includes pairs of each image. To begin the game, all cards are to be placed randomly down on the table. Students must take turns flipping over two cards. When the cards are flipped the student must say what number it represents. When a student flips over two matching cards they get to keep them. If the cards do not match, the student must flip the cards back over in the same spot and try and remember where they were in case they flip up a matching card somewhere else. Whoever ends up with the most cards after all the cards are flipped wins the game. This game builds subitizing counting skills for quickly recognizing patterns, matching those patterns, and naming the number out loud. The beginner level is to have sea creature images that are all the same on each card. As students become more confident, they can add in the cards that represent sea creatures with different attributes as well. Only two images with attributes have been added to this set so far. As this strategy booklet is developed, more attributes could be included in the set of cards.

Go Fish: Students play “Go fish!” with a set of sea creature cards that includes pairs of each image. After the deck is shuffled, students each receive five cards and leave the rest of the cards in a pile to be picked up. Students put down any matching cards they may have. As the game progresses, students ask the other students if they have a matching image. For instance they would ask, “Do you have four fish?” If the other student does, they must give the card to the student who asked. If they don’t have a card with four fish they say, “Go fish” and the student must pick up another card. If the student runs out of cards, they pick up another card

from the deck until there are no cards left. The student that ends up with the most pairs wins the game.

Peace game: Pairs of students receive half a deck of shuffled sea creature cards each, placed face down in front of them. Each student flips over a card and the students say how many sea creatures are on their card. The student that has the card with the most sea creatures gets to keep both cards. If both students end up with the same number on their cards, they must each flip a new card and the student with the highest number wins. The student who ends up with the most cards at the end wins the game. The idea is that as the game progresses, students will become faster at subitizing.

The final project idea is for the students to create their own sea creatures, incorporating the concepts they have learned about counting or attributes. The images could be realistic or imaginary and created on a sheet of paper for future card decks. As they draw, students can think about how many sea creatures they want to create and what kind of patterns or attributes their sea creatures will have. The teacher could bring in aspects of the art and science curriculum by introducing different aspects of how to draw fish, turtles, eels, or anything else to inspire imagination.

Big Ideas:

- Numbers represent quantities that can be decomposed into smaller parts
- One-to-one correspondence and a sense of 5 and 10 are essential for fluency with numbers
- Objects have attributes that can be described, measured, and compared

Curricular Competences:

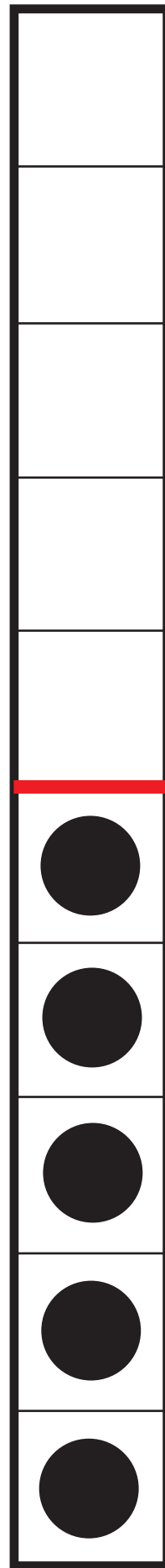
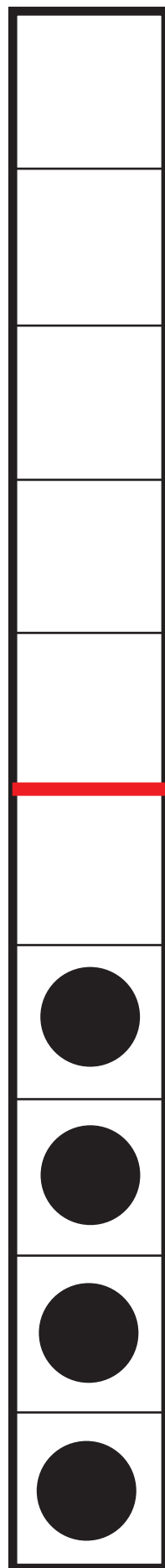
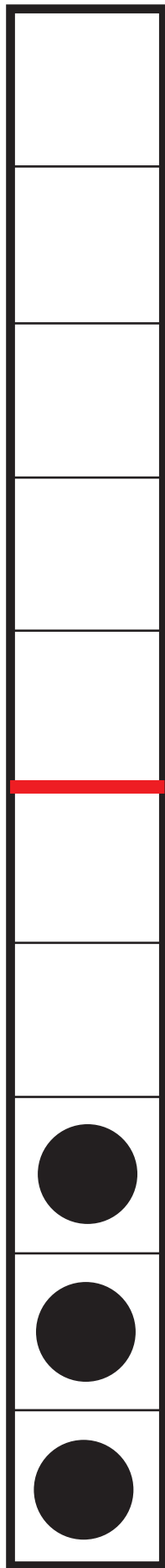
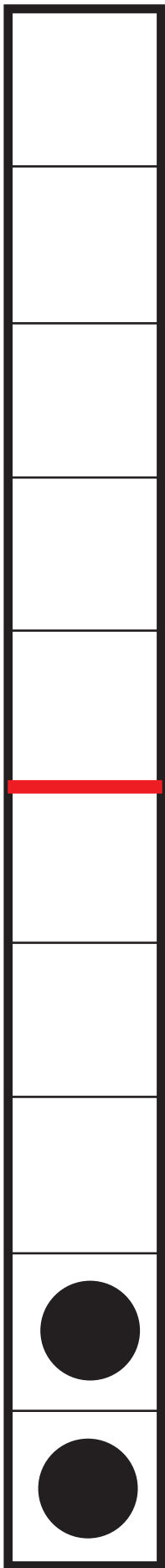
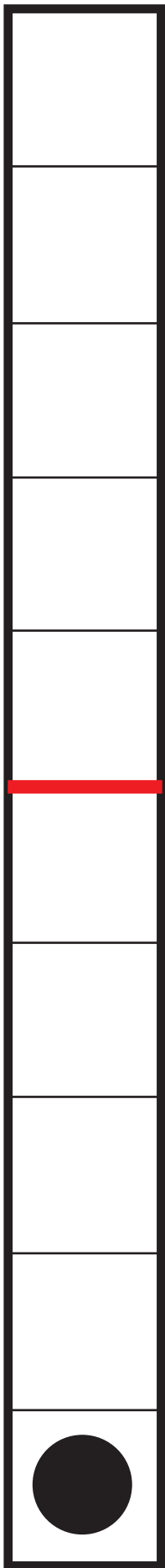
- Understanding and solving to develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving
- Reasoning and analyzing to develop mental math strategies and abilities to make sense of quantities
- Use mathematical vocabulary and language to contribute to mathematical discussions
- Represent mathematical ideas in concrete, pictorial, and symbolic forms

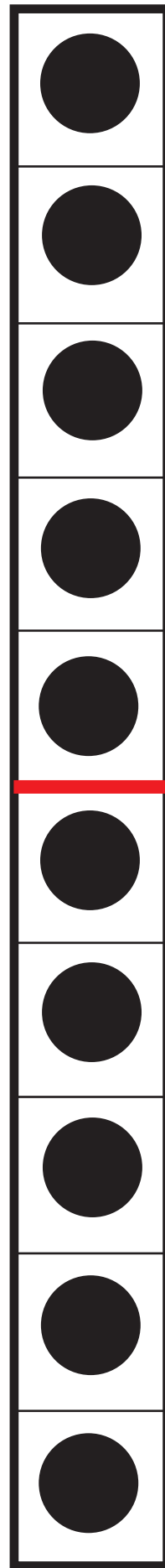
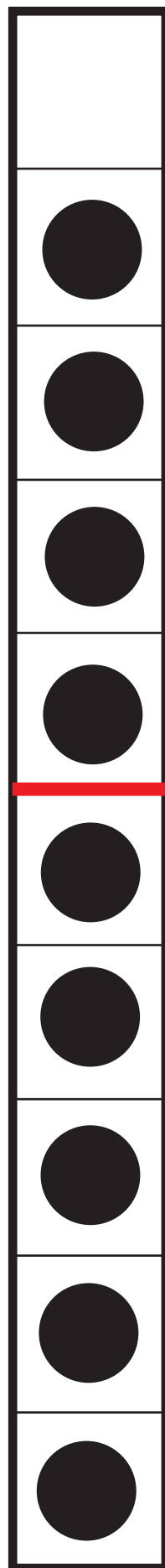
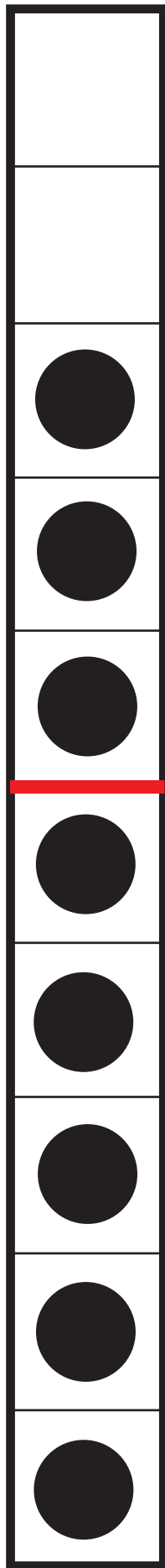
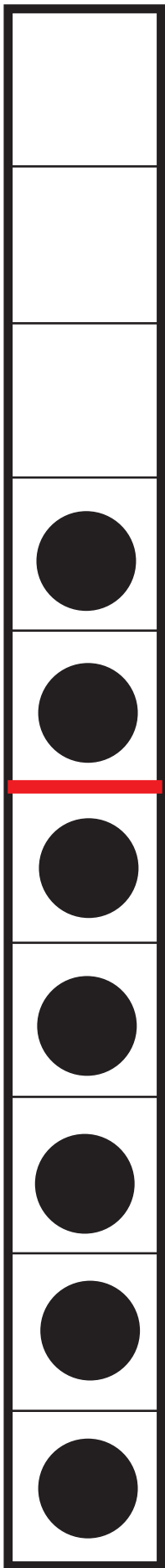
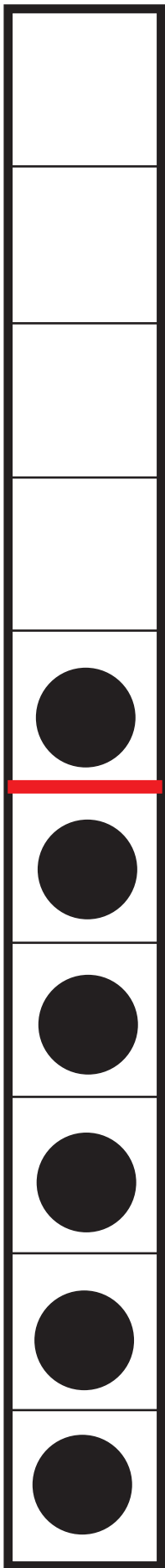
Curricular Content

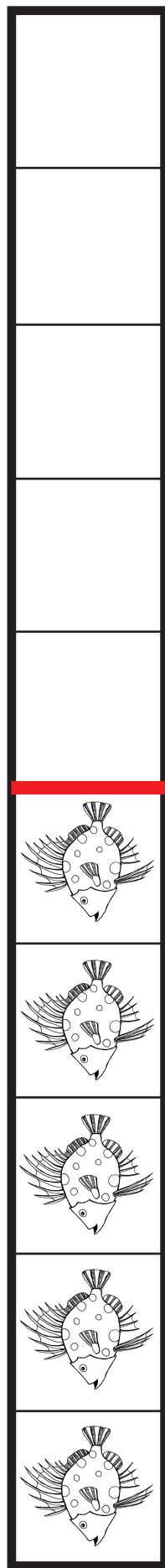
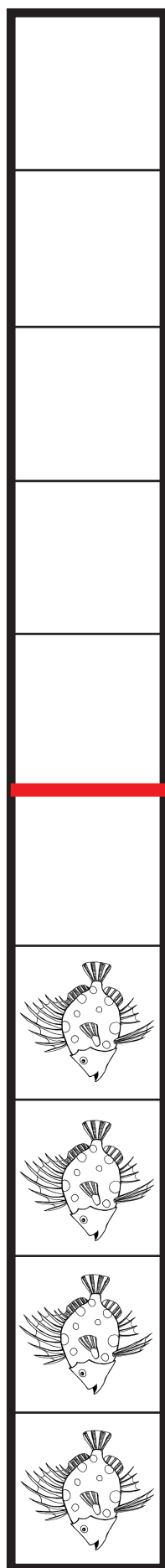
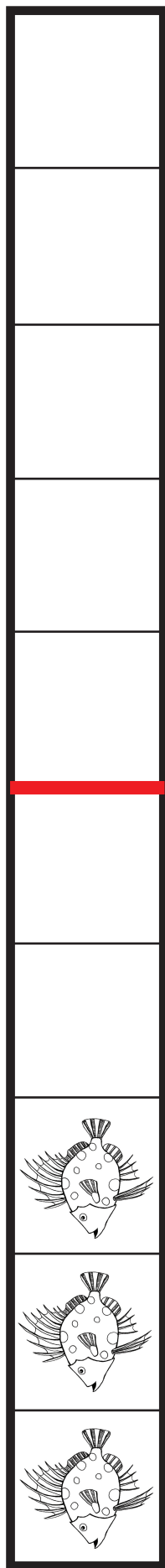
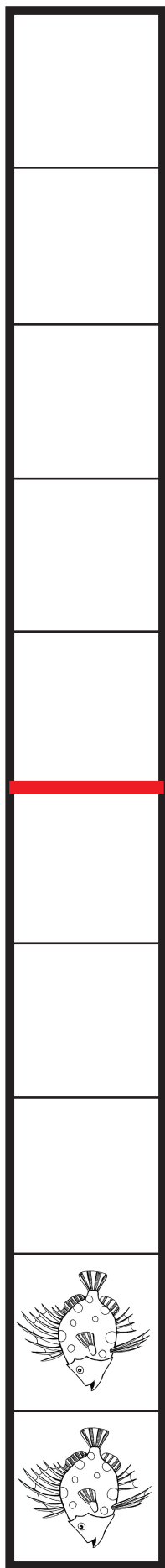
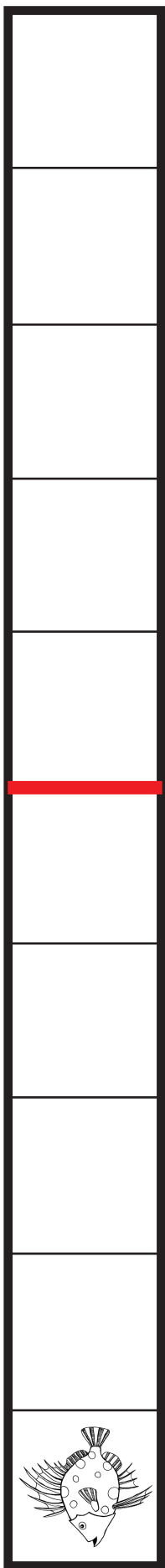
- Number concepts to 10 and ways to make 5
- Decomposition of numbers to 10

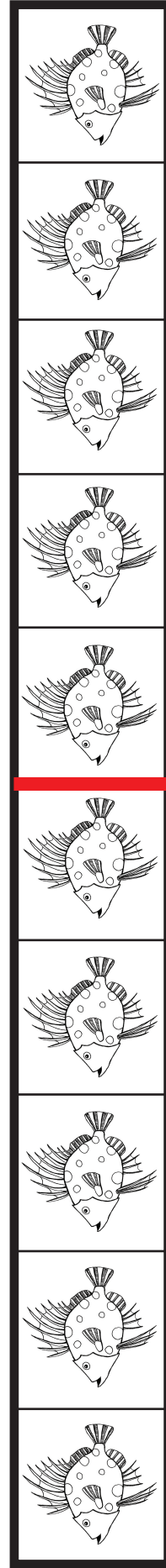
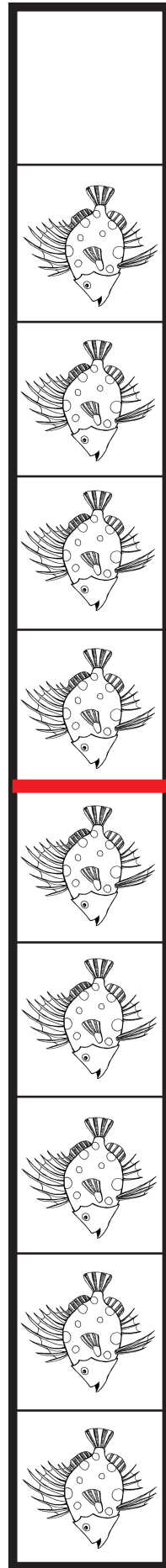
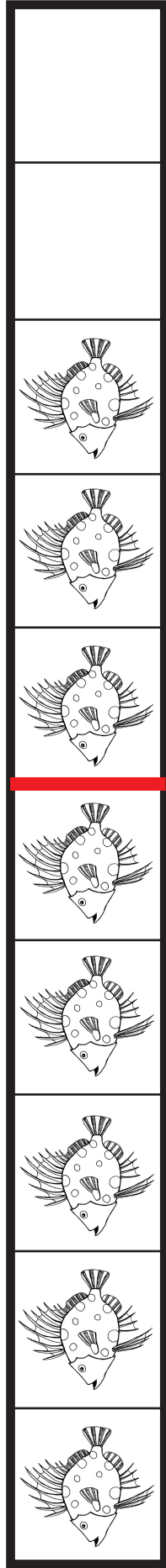
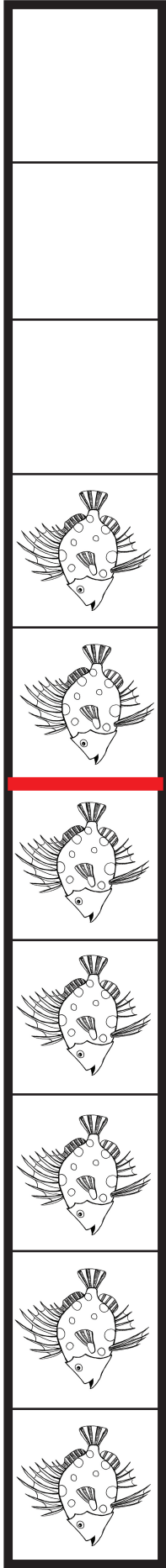
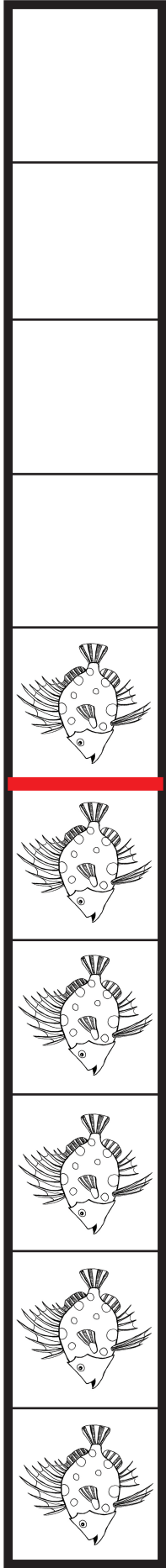
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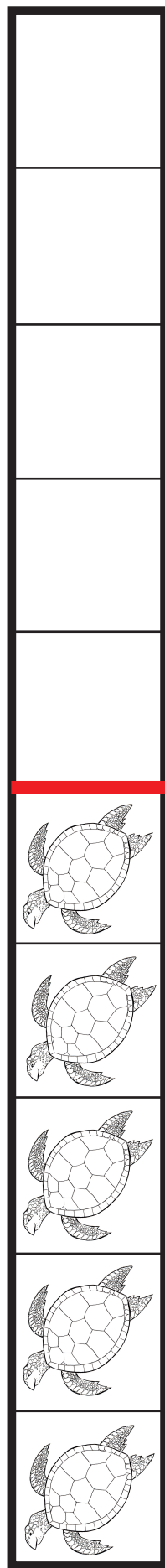
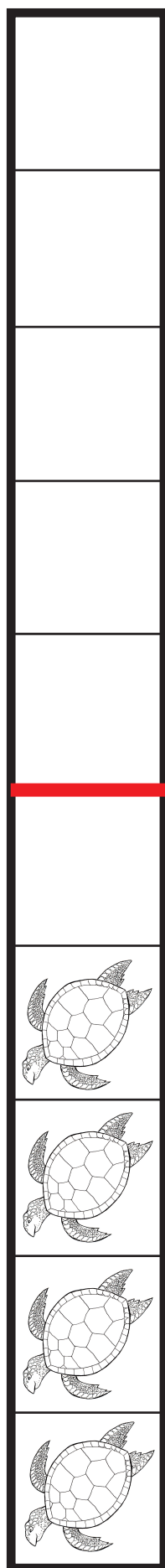
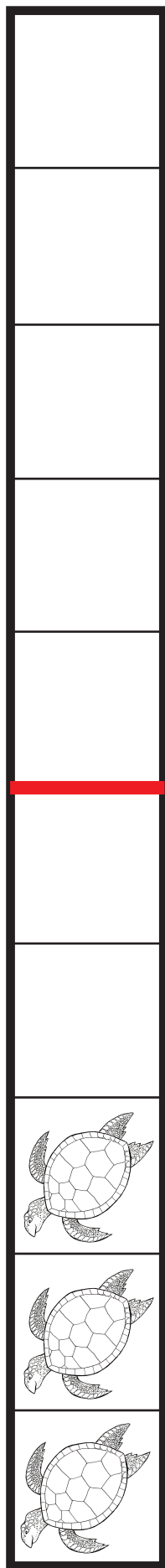
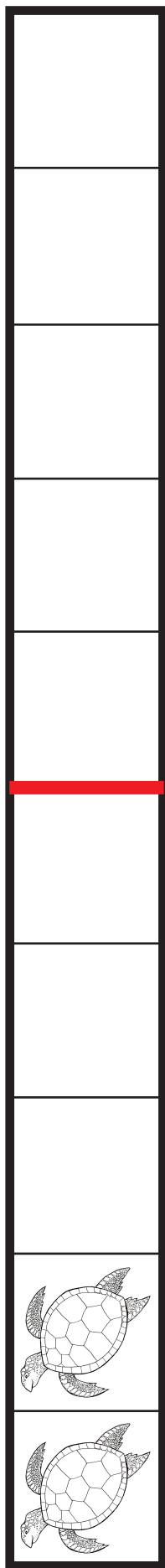
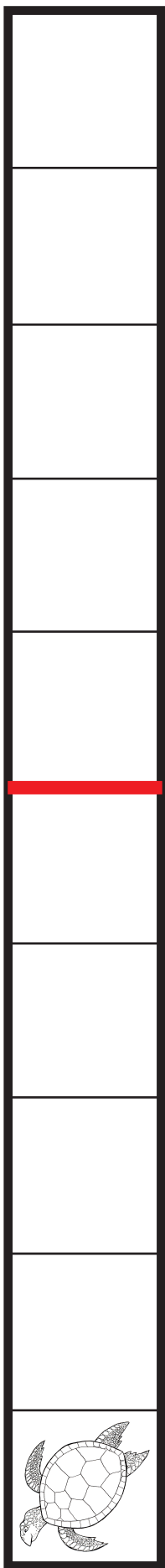
During number talks and class discussions, students will be encouraged to model their thinking and how they came up with their answers. Teacher will not judge the answers, but rather inquire as to the process and make observational notes about how they came up with their answers. All students will be encouraged to participate and discuss during number talks. Thumbs up or down can be used during discussions for understanding. Teacher will make observations and ask questions to students during math games to check understanding. The final sea creature drawings can be used as evidence of learning for their portfolio.

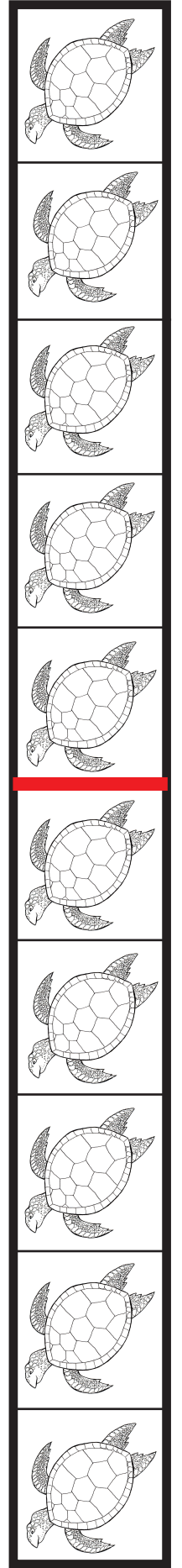
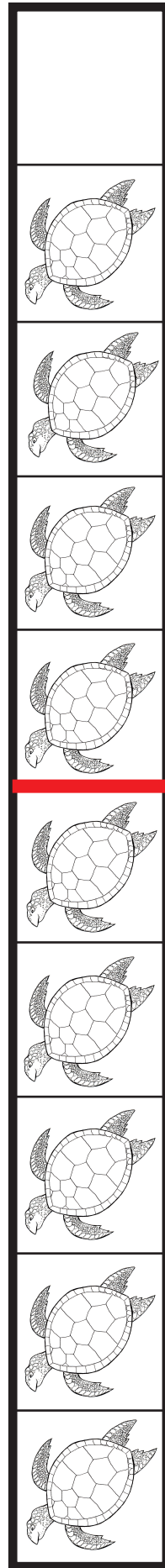
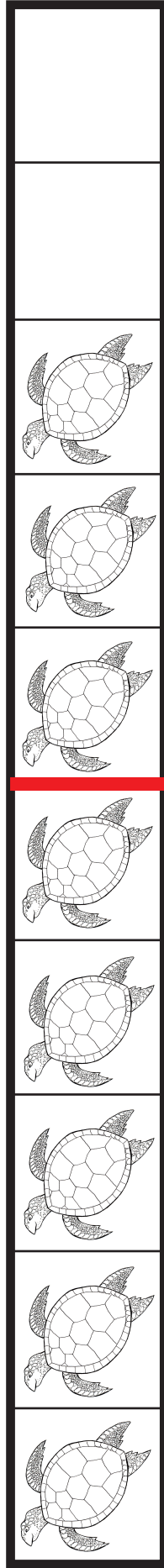
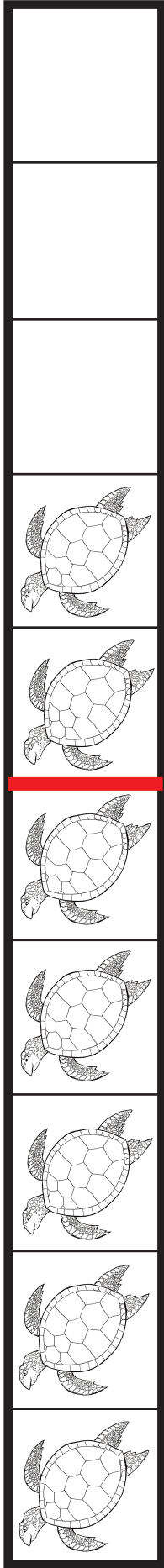
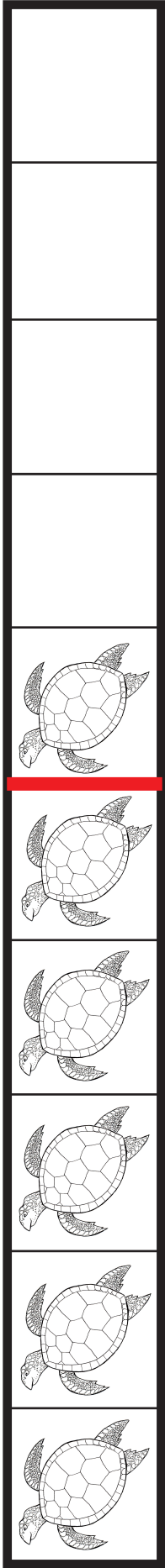


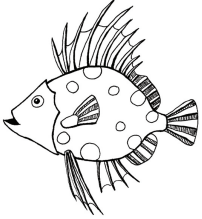


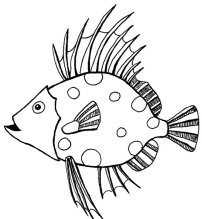
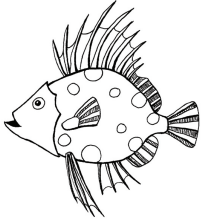


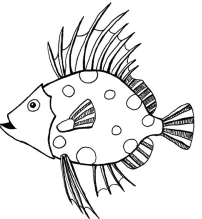
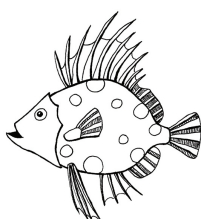
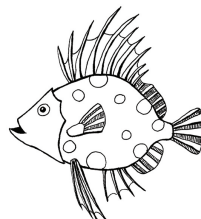


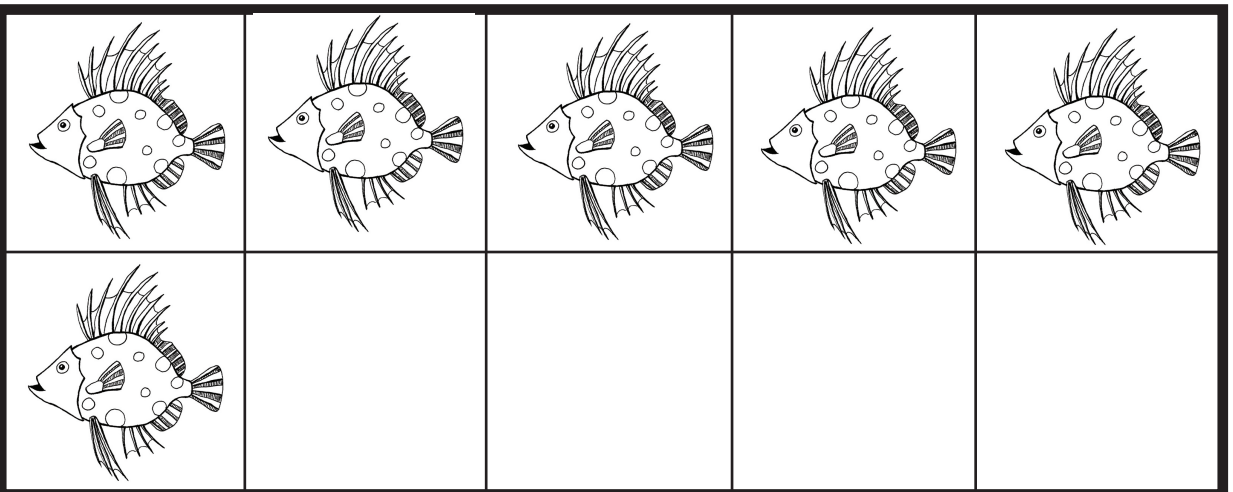
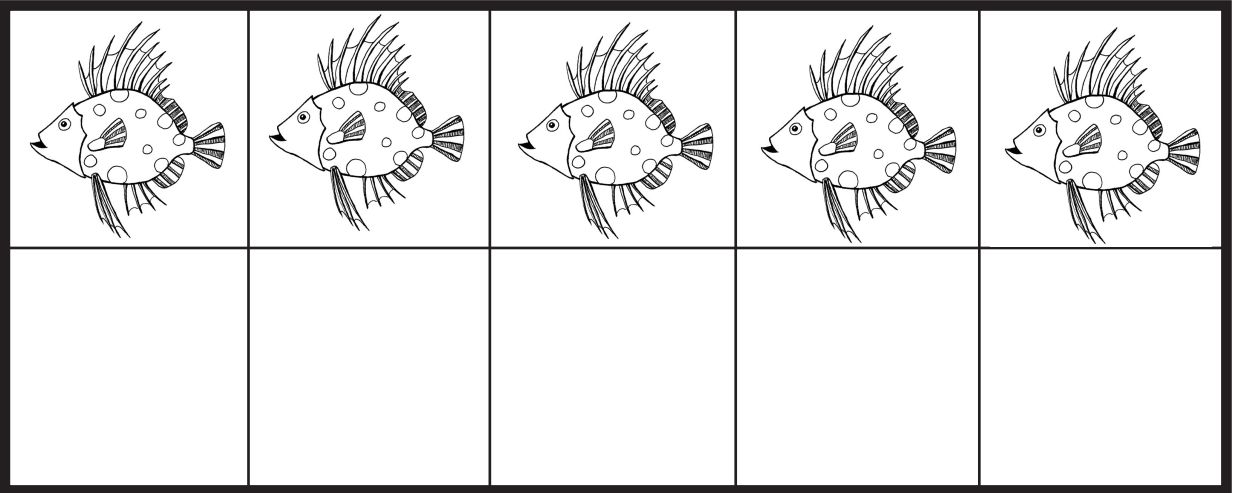
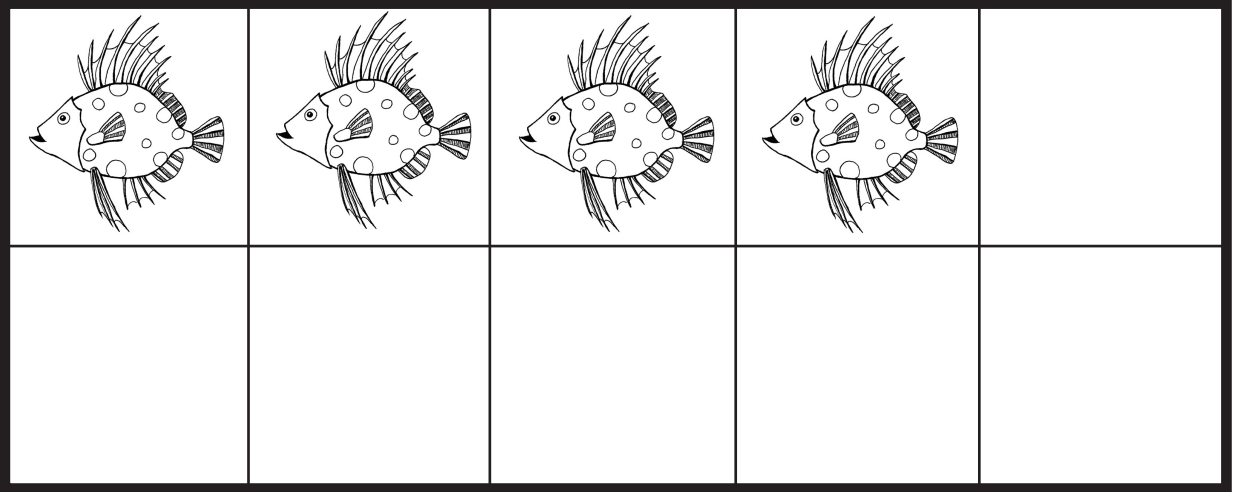


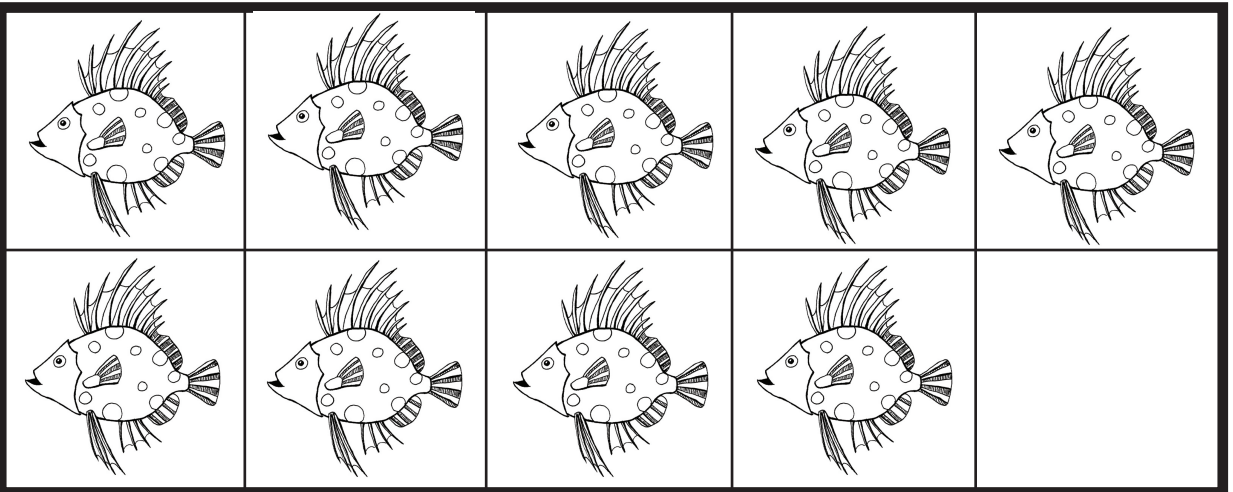
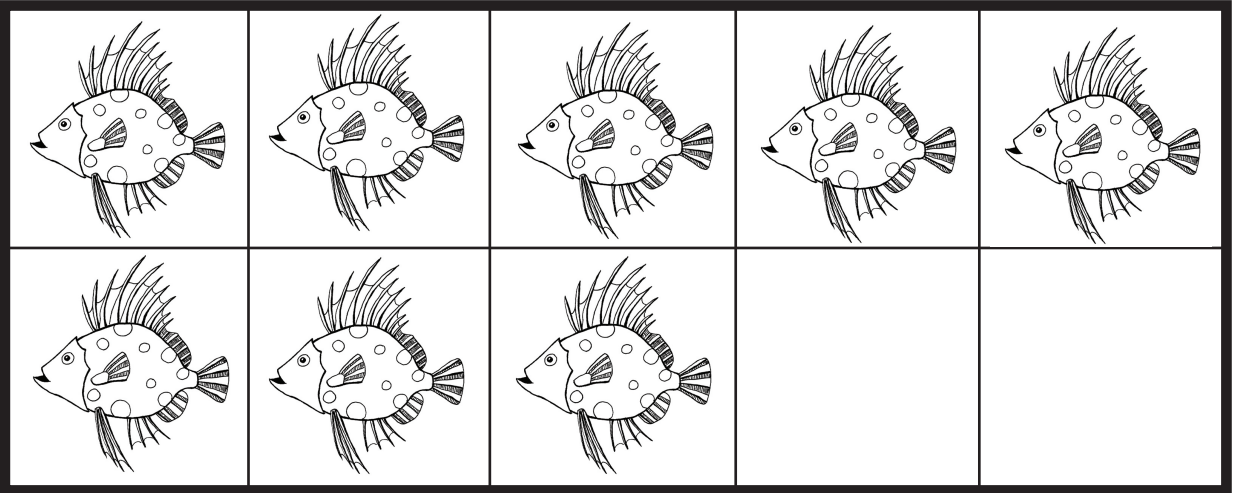
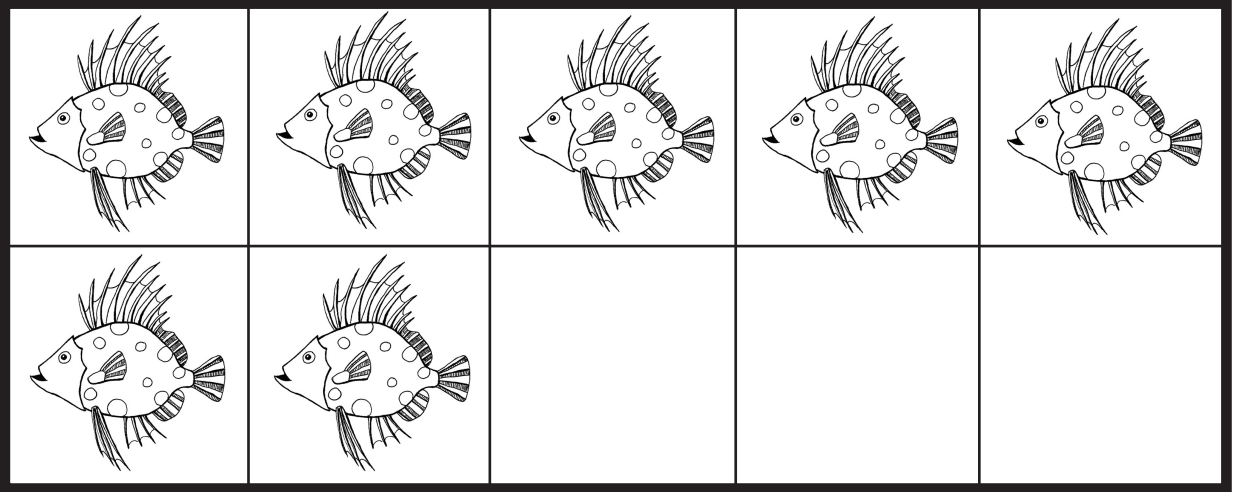


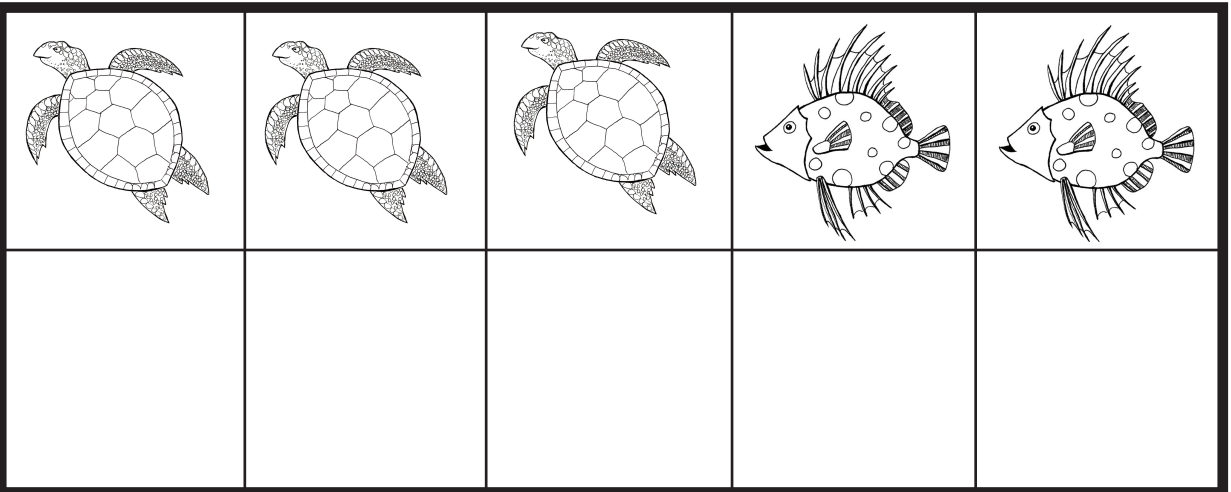
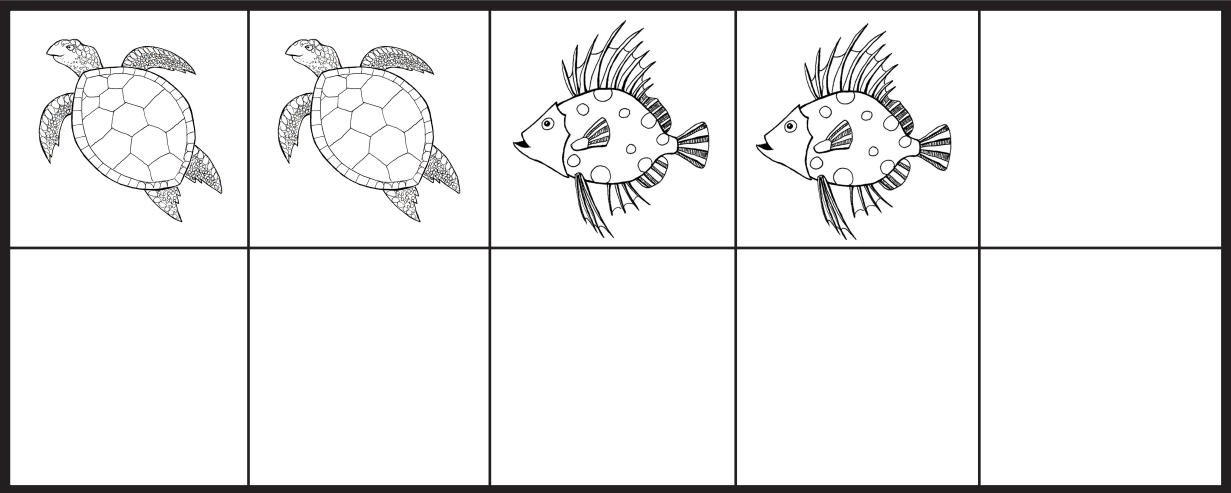
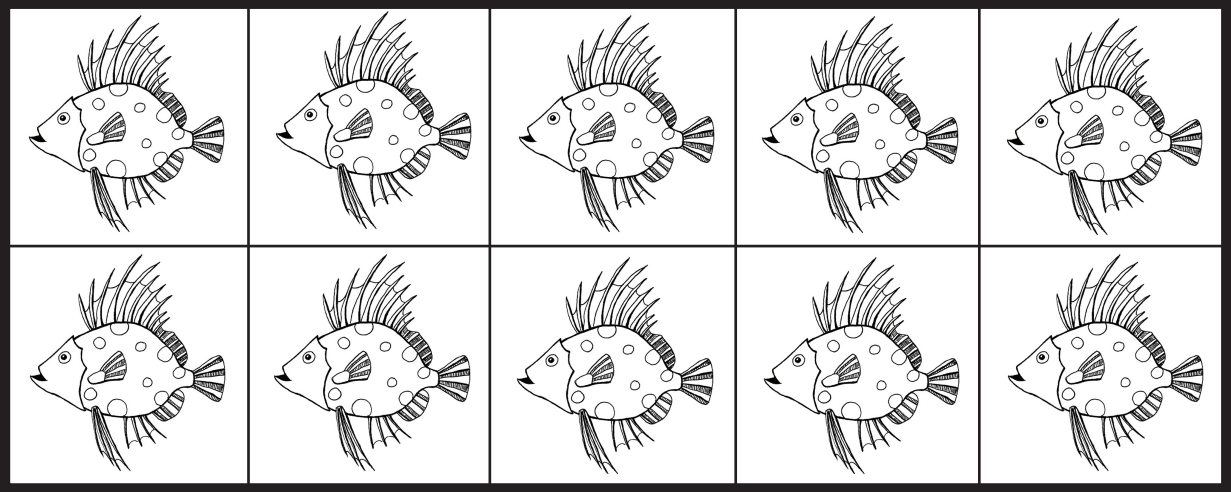
				

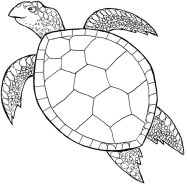
				

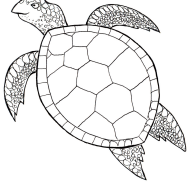
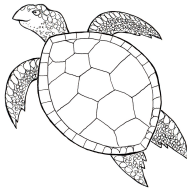
				

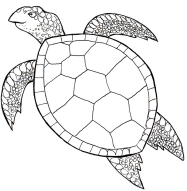
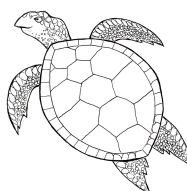
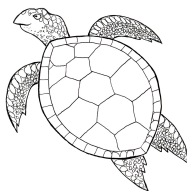


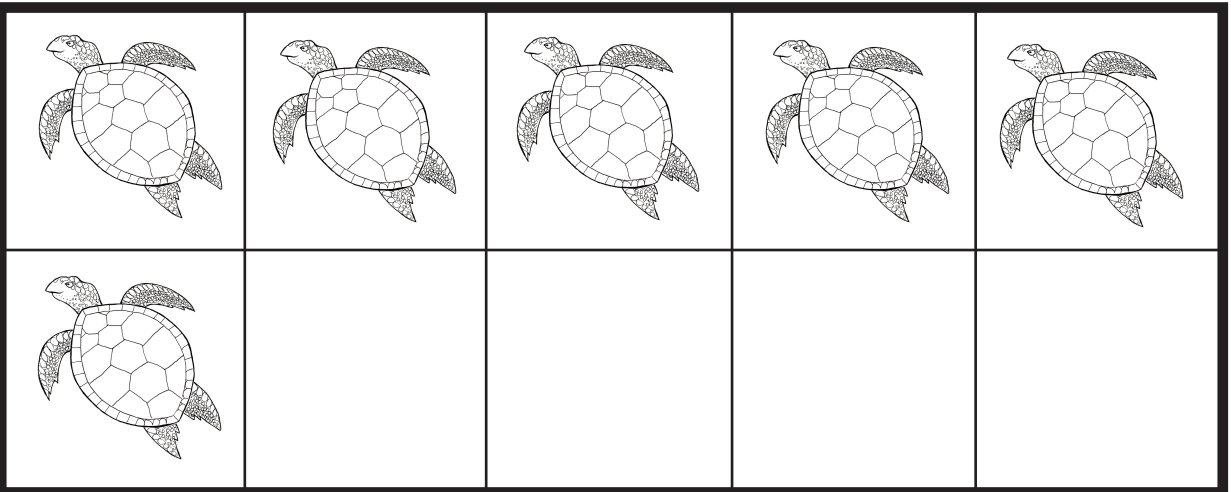
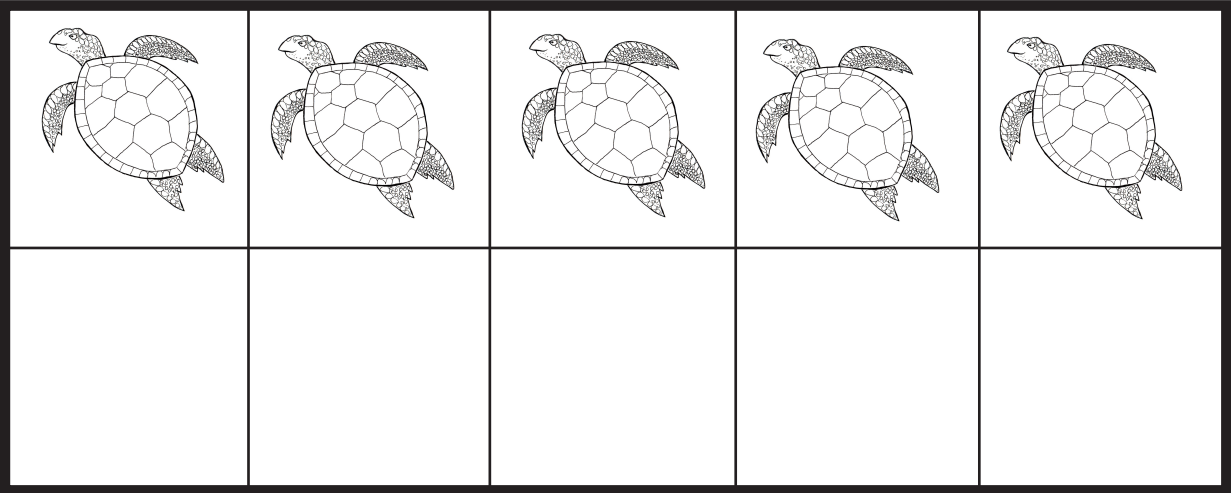
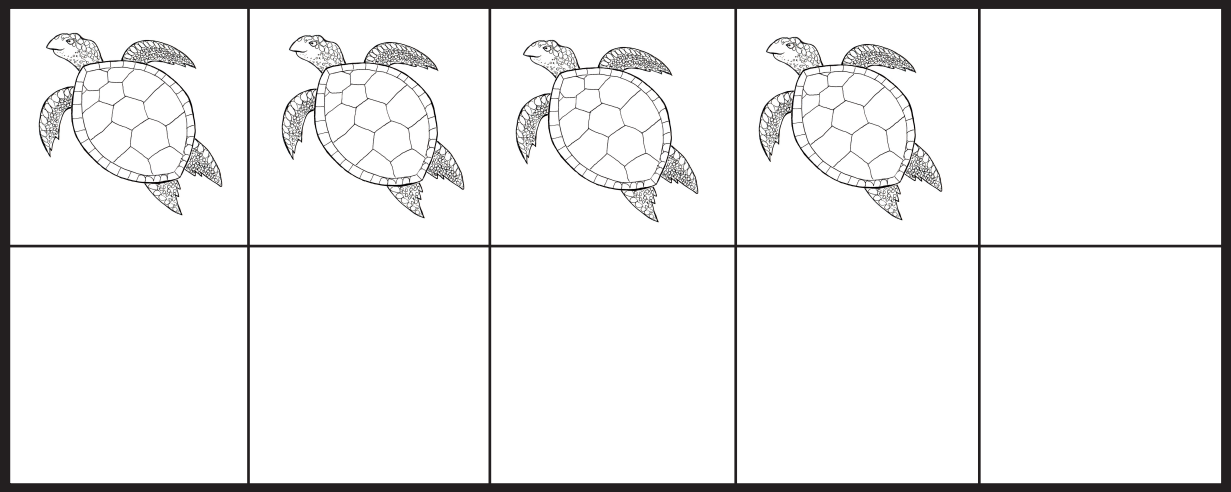


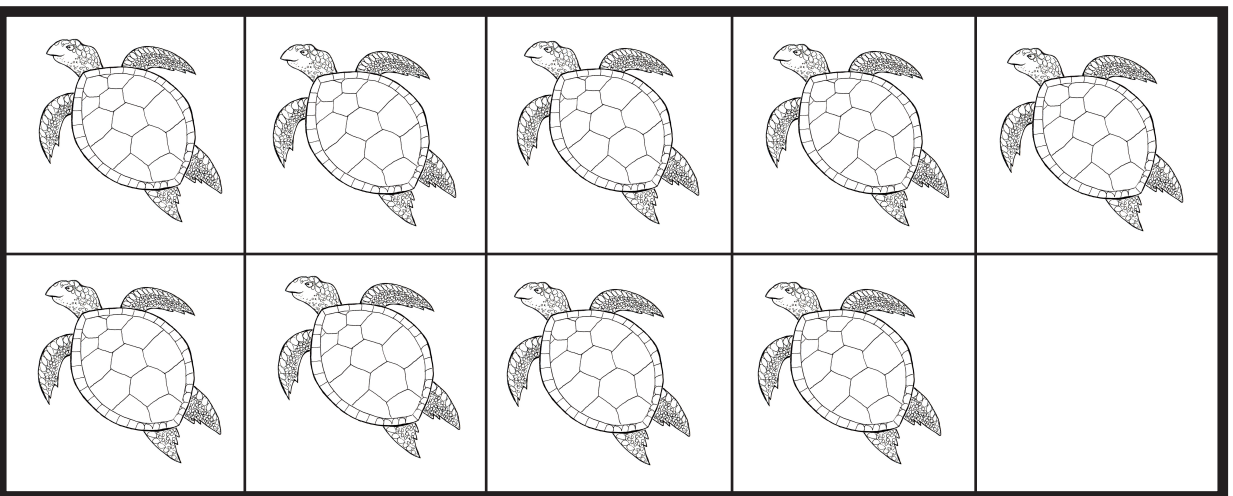
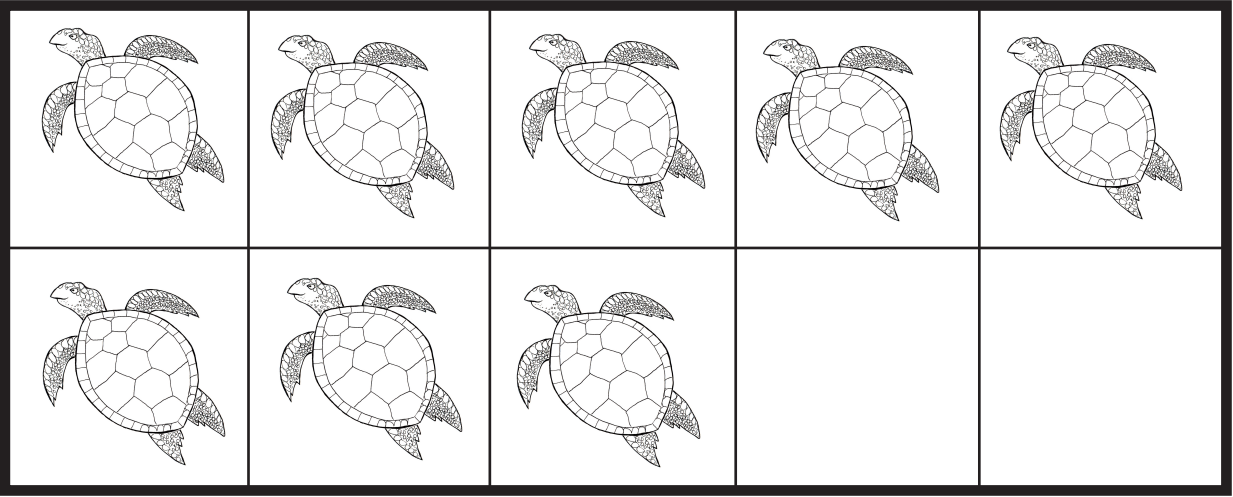
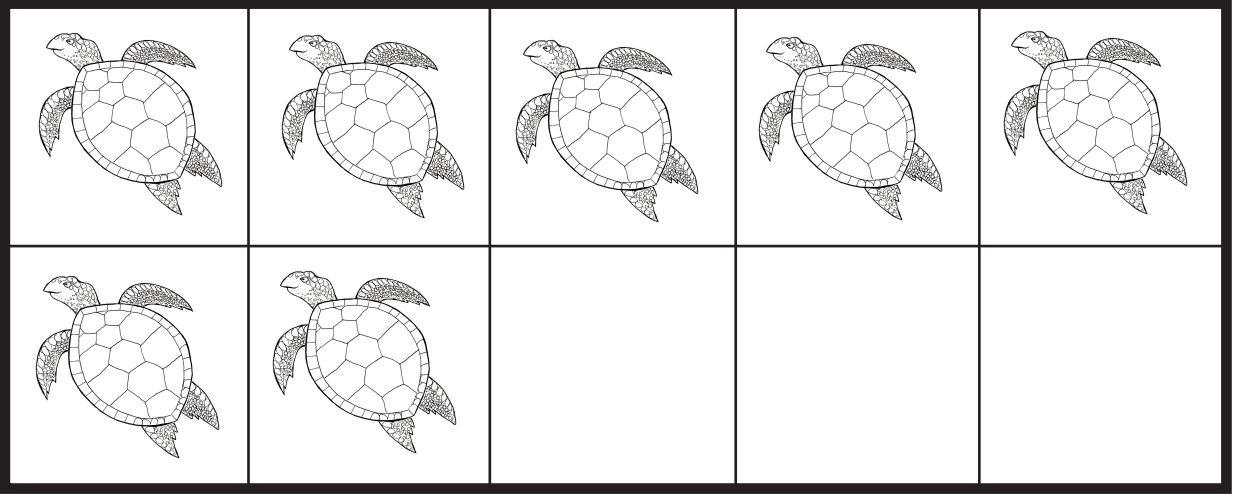


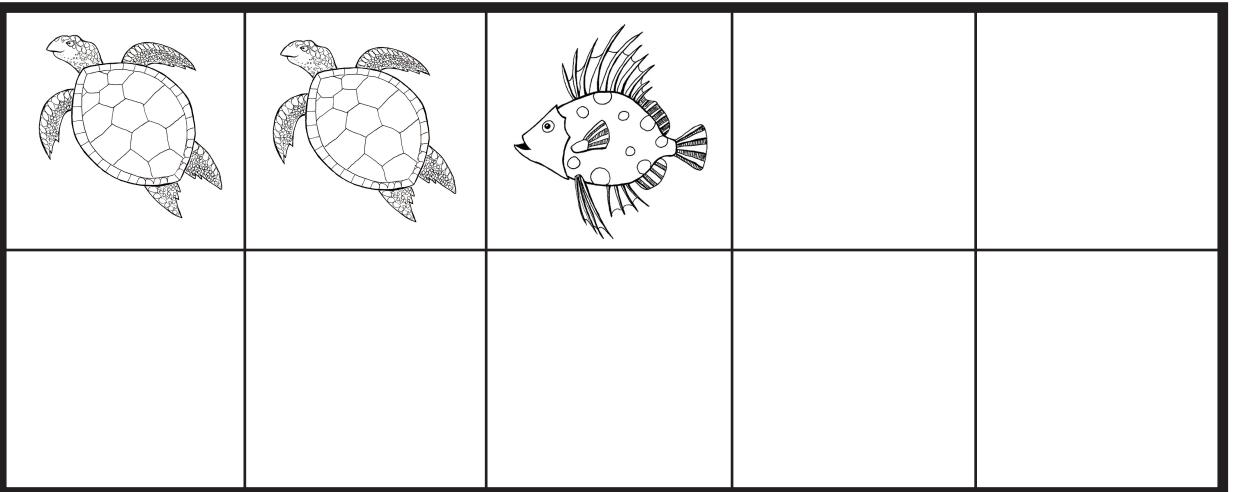
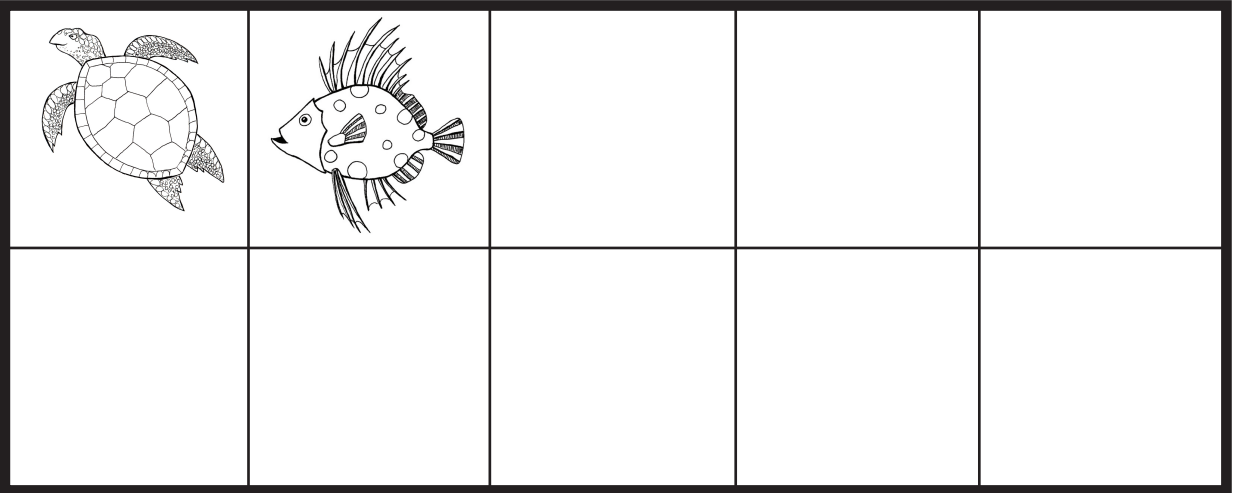
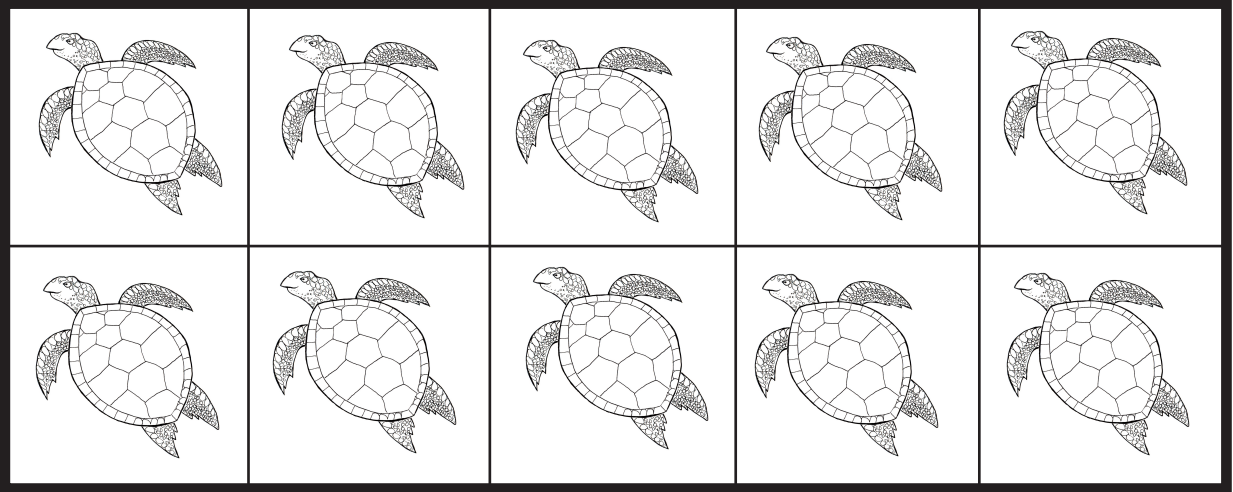
				

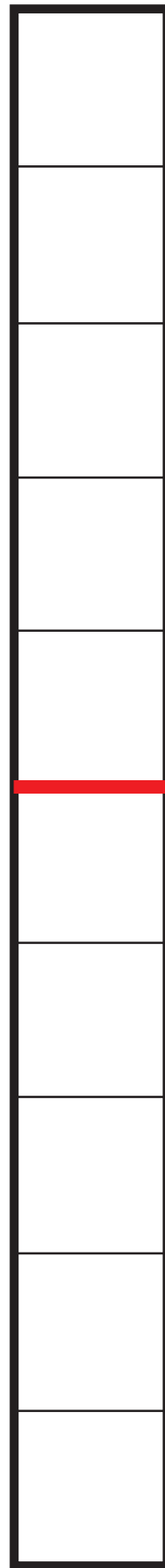
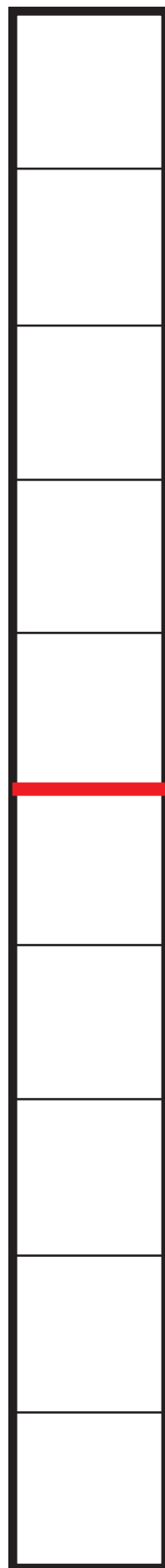
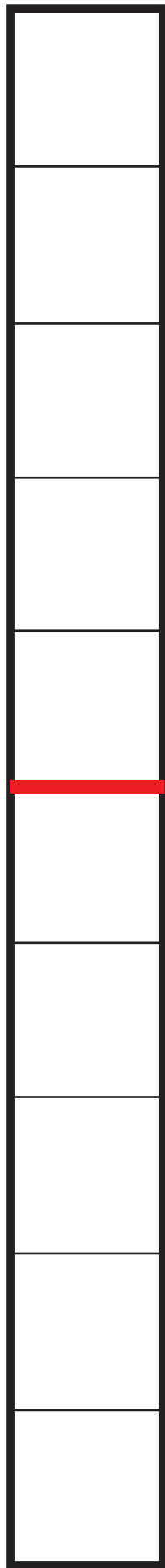
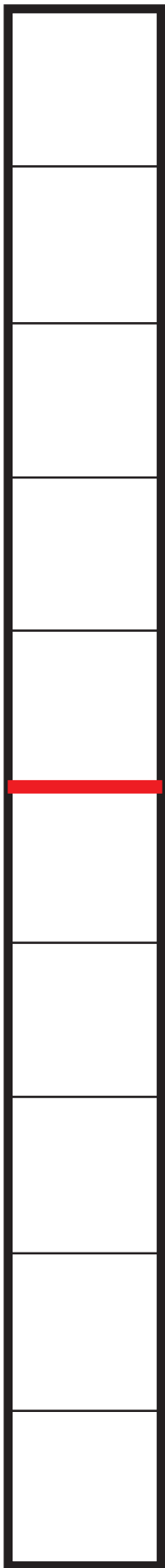
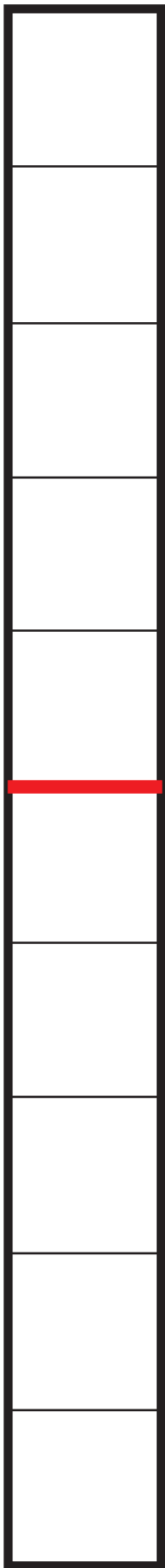
				

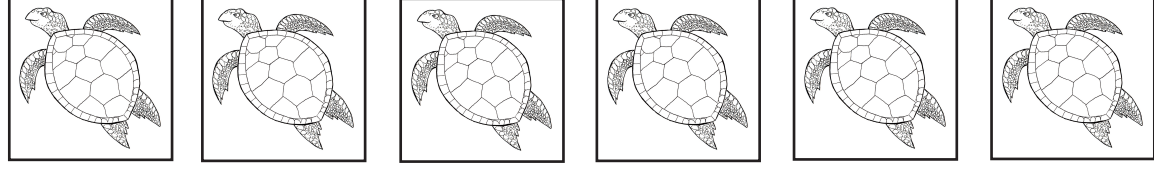
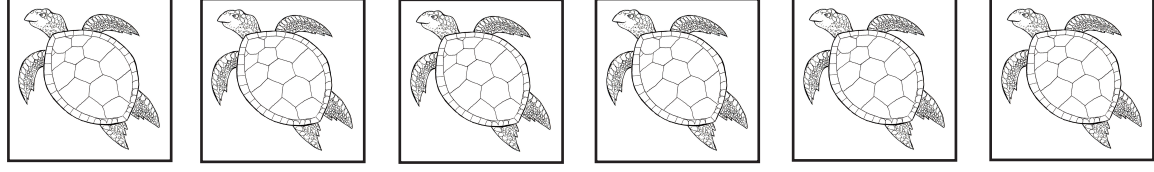
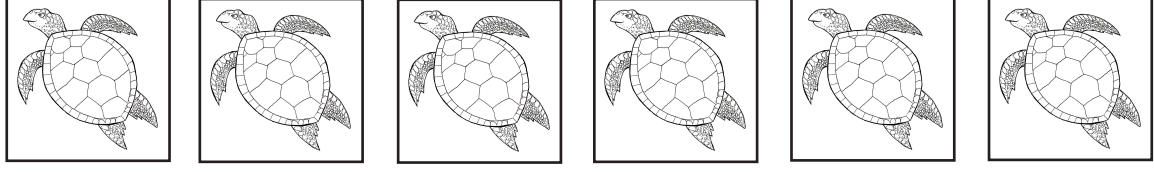
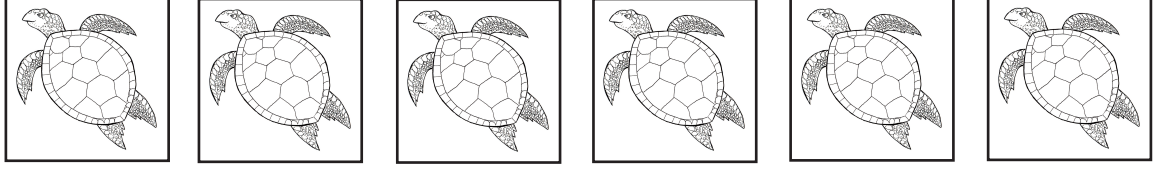
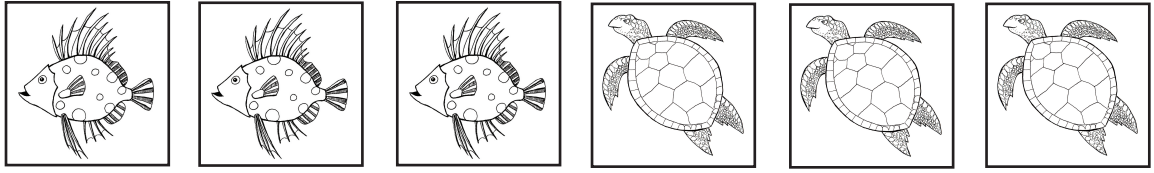
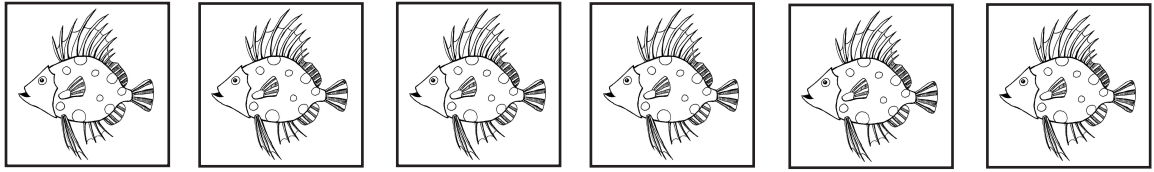
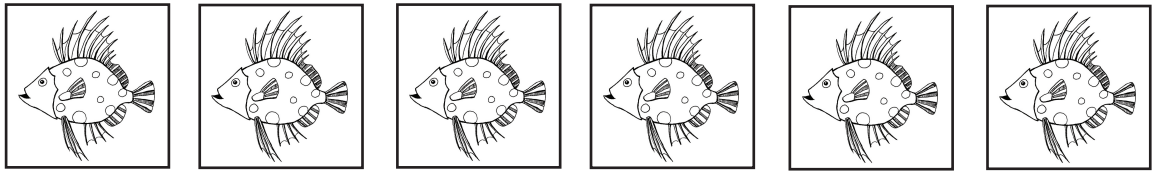
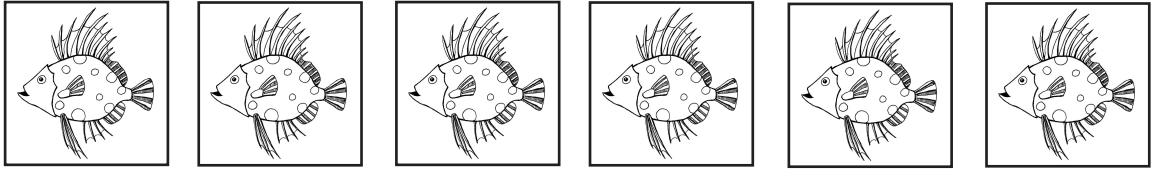
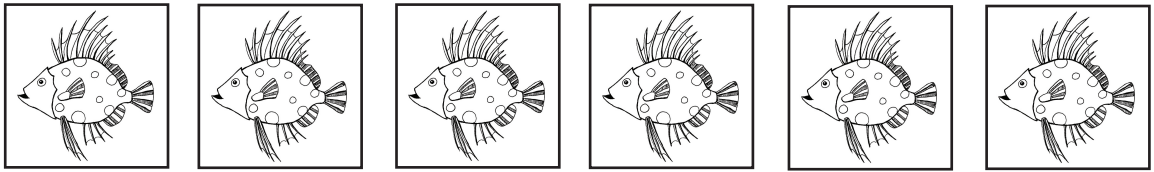
				

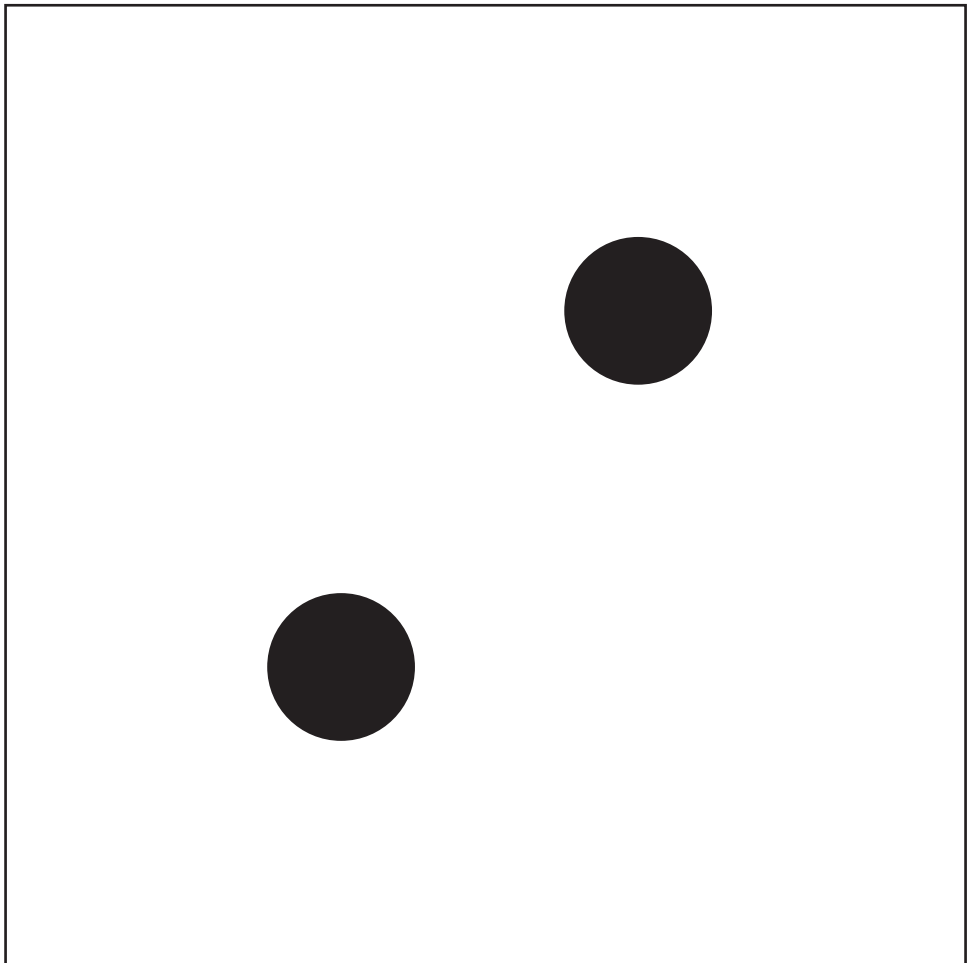
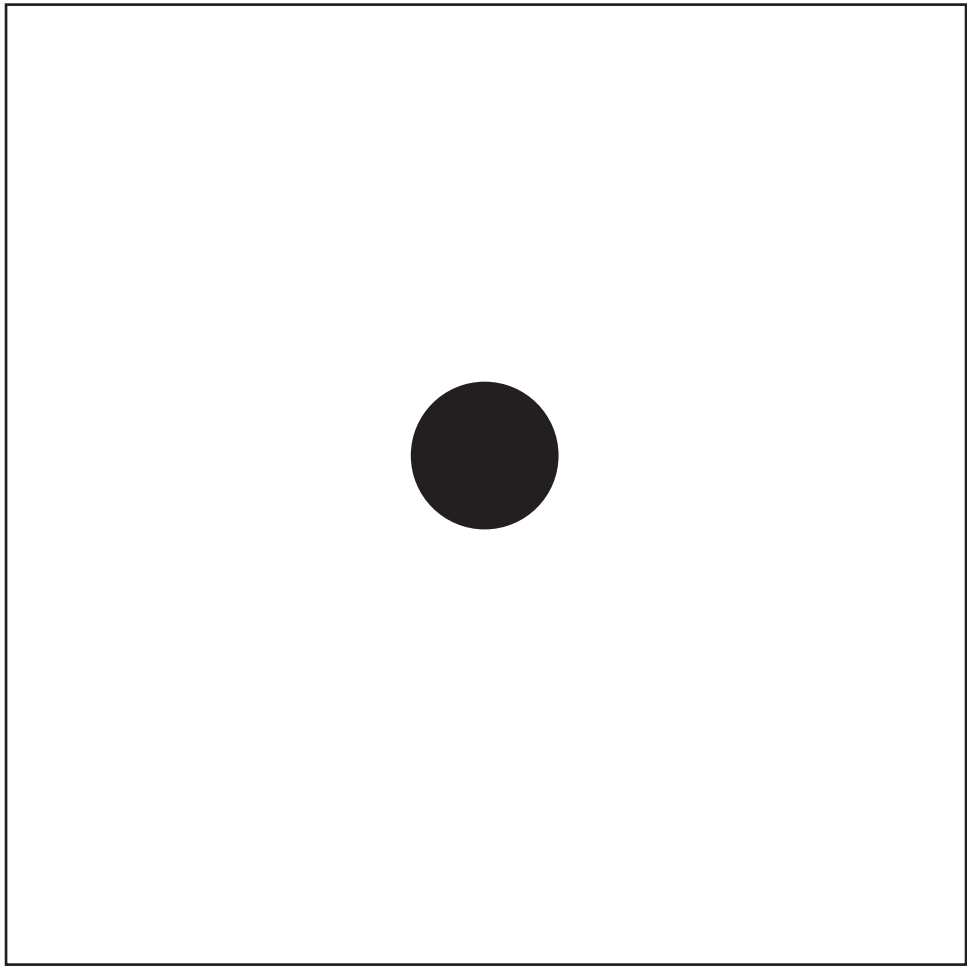


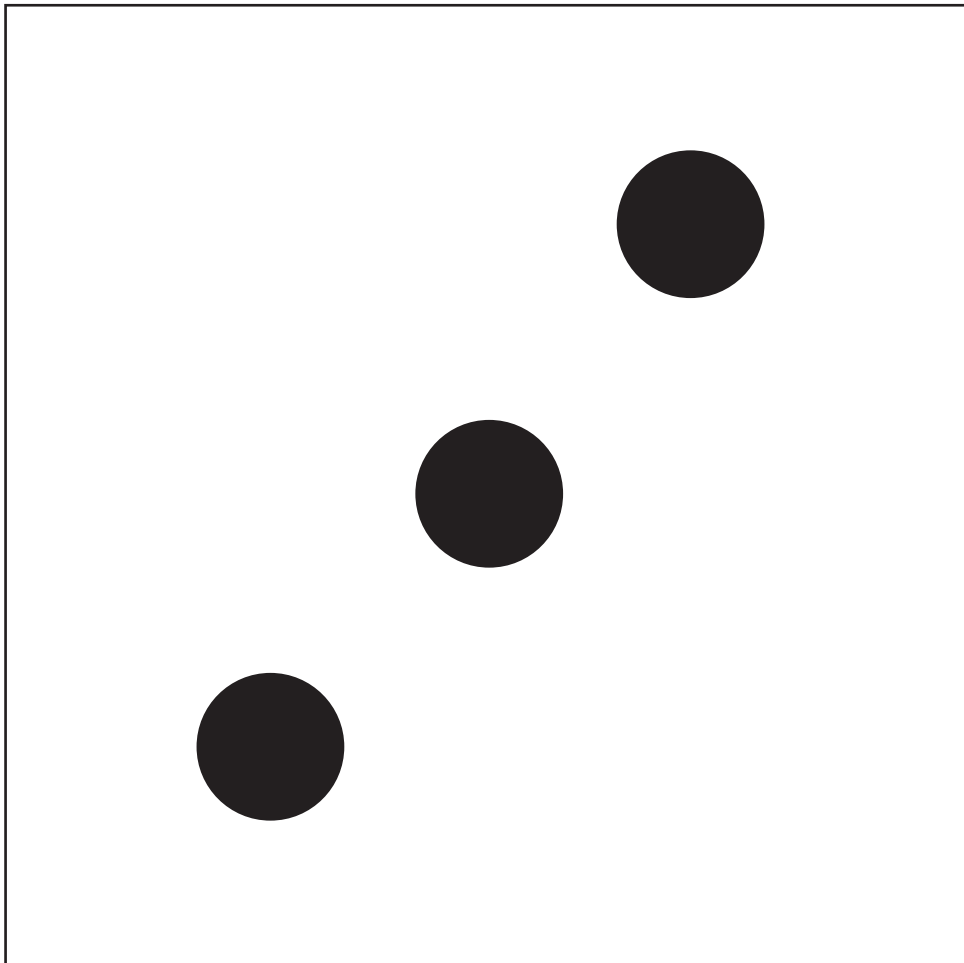
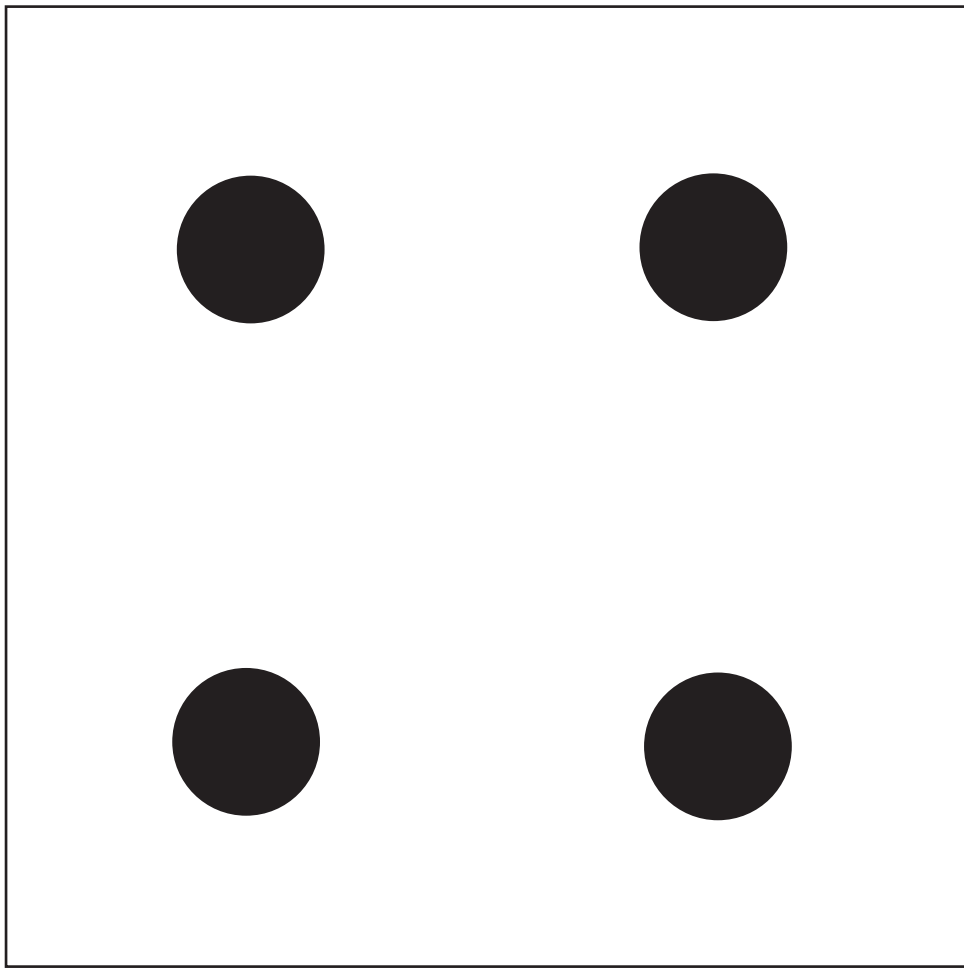


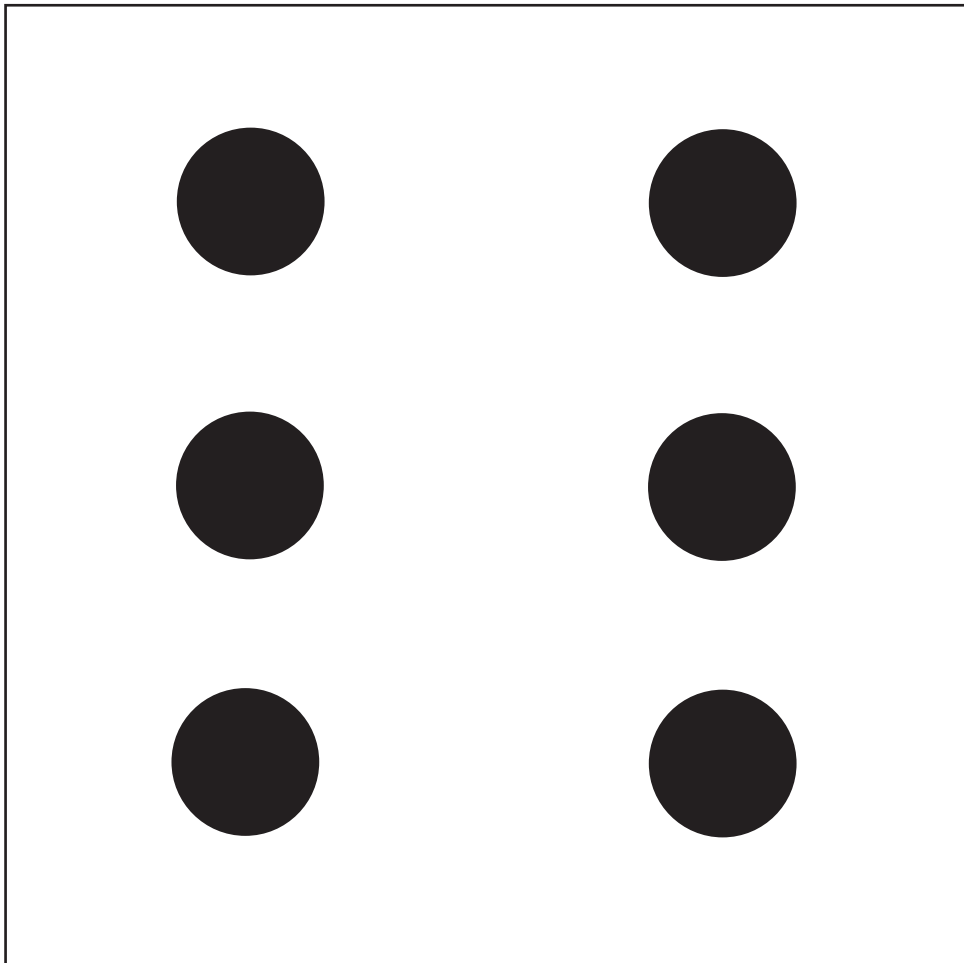
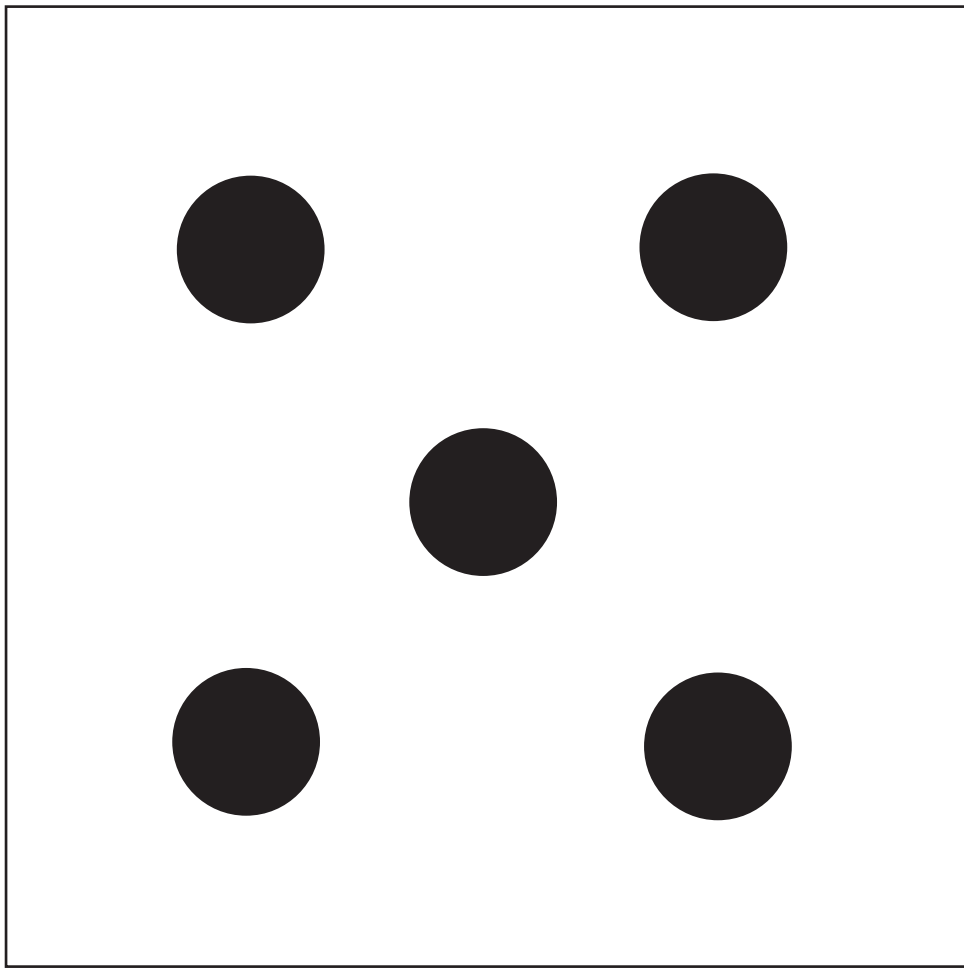


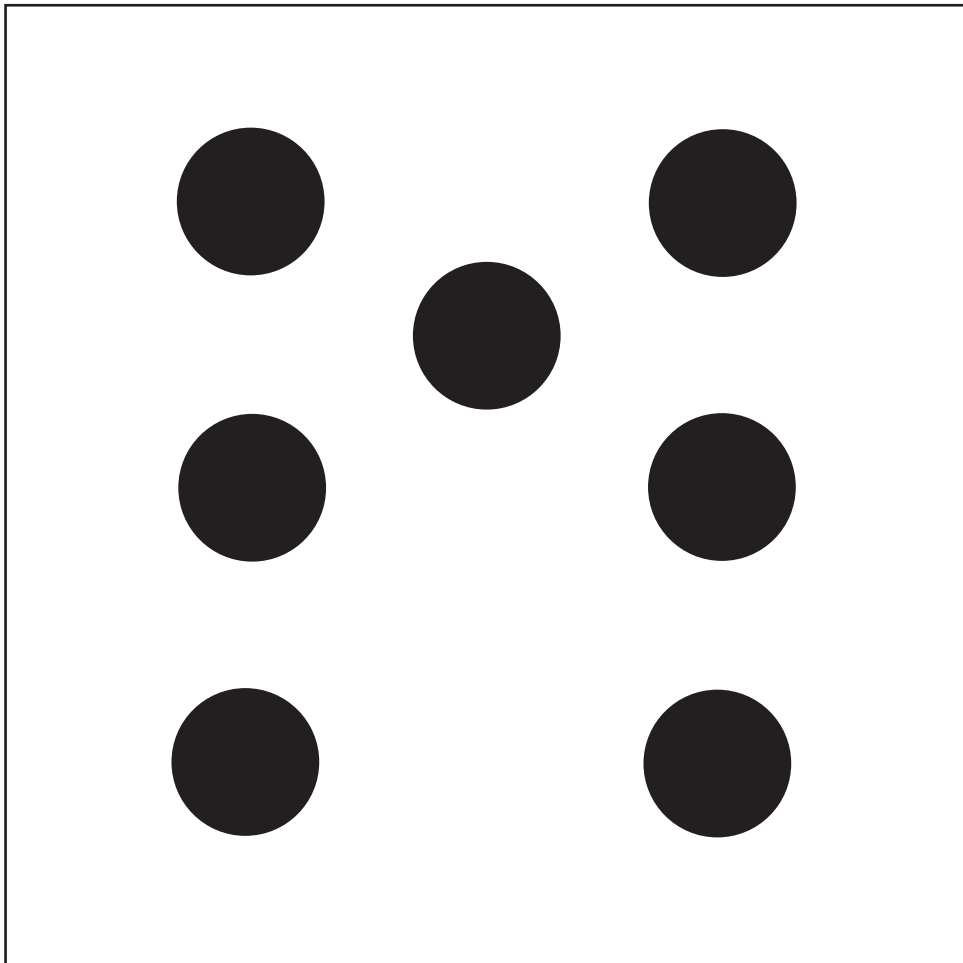
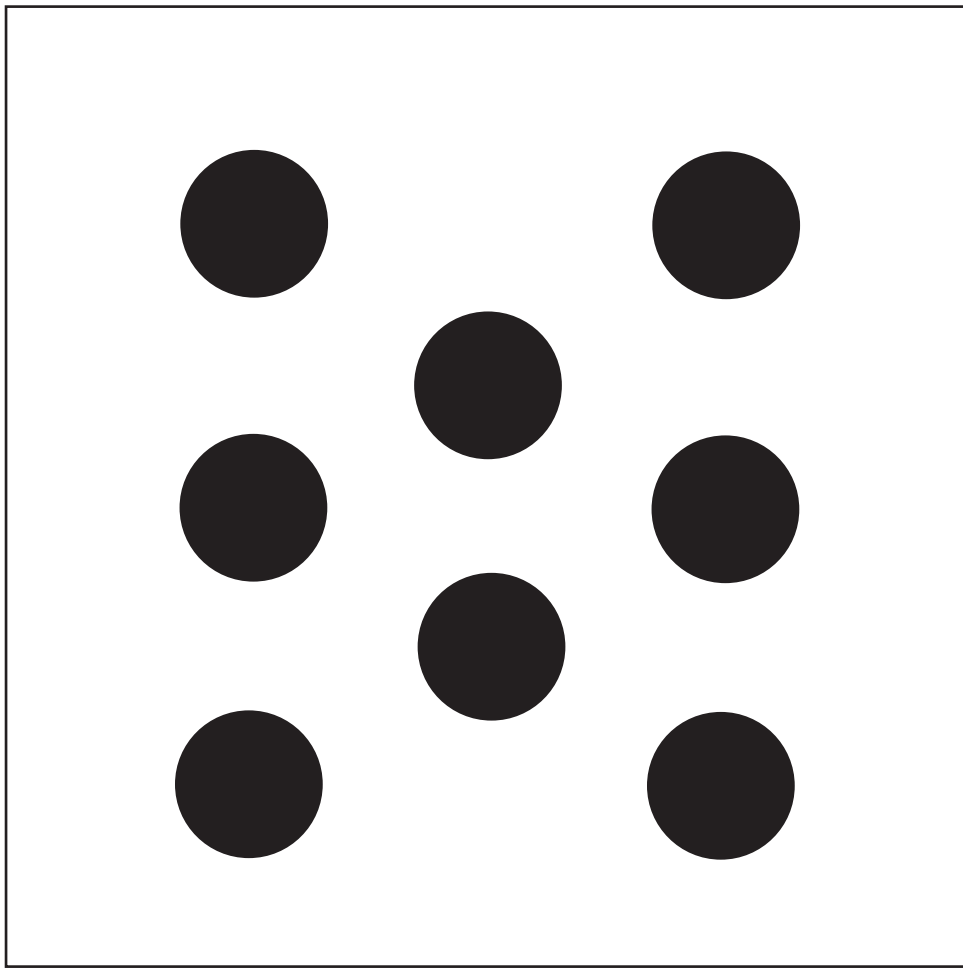


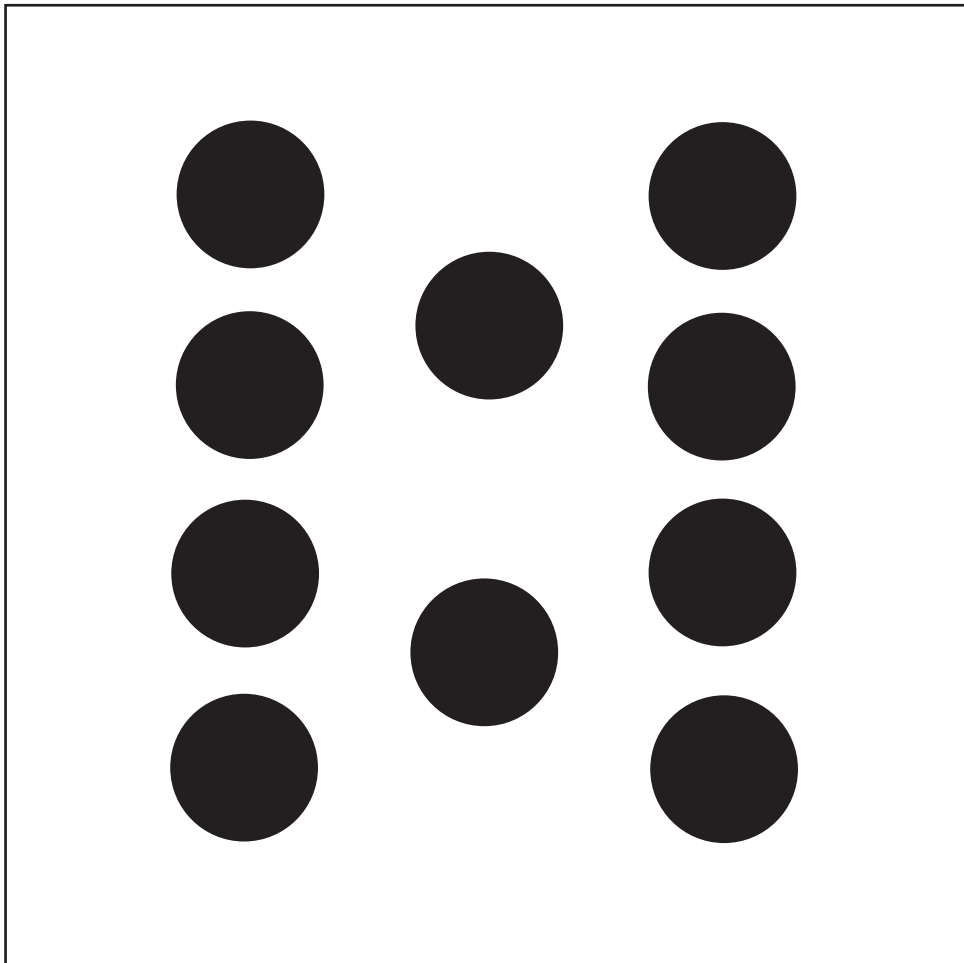
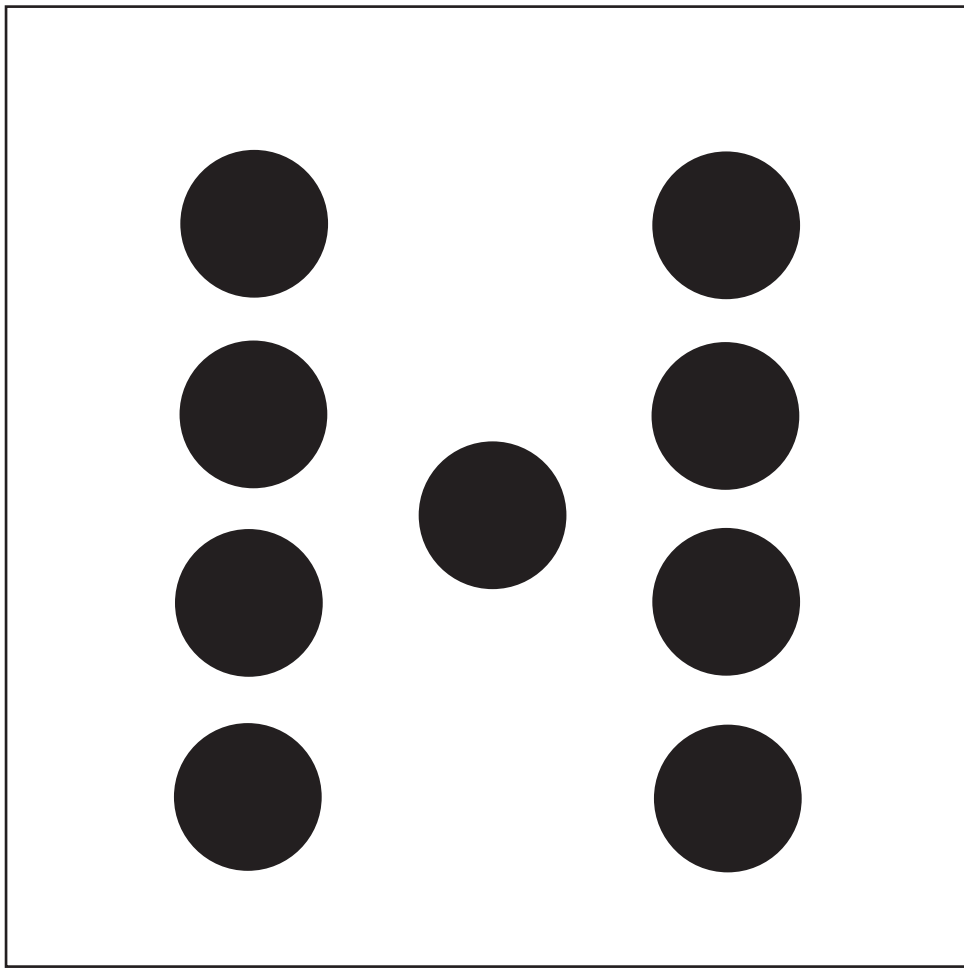


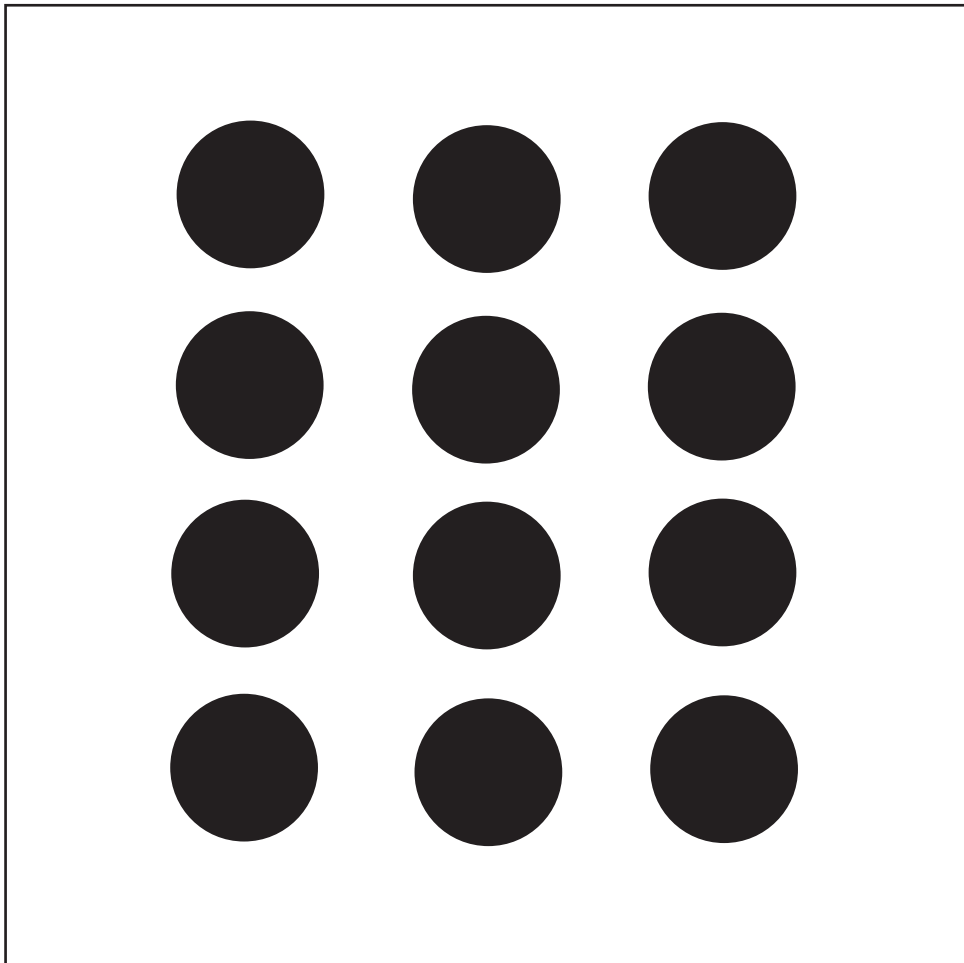
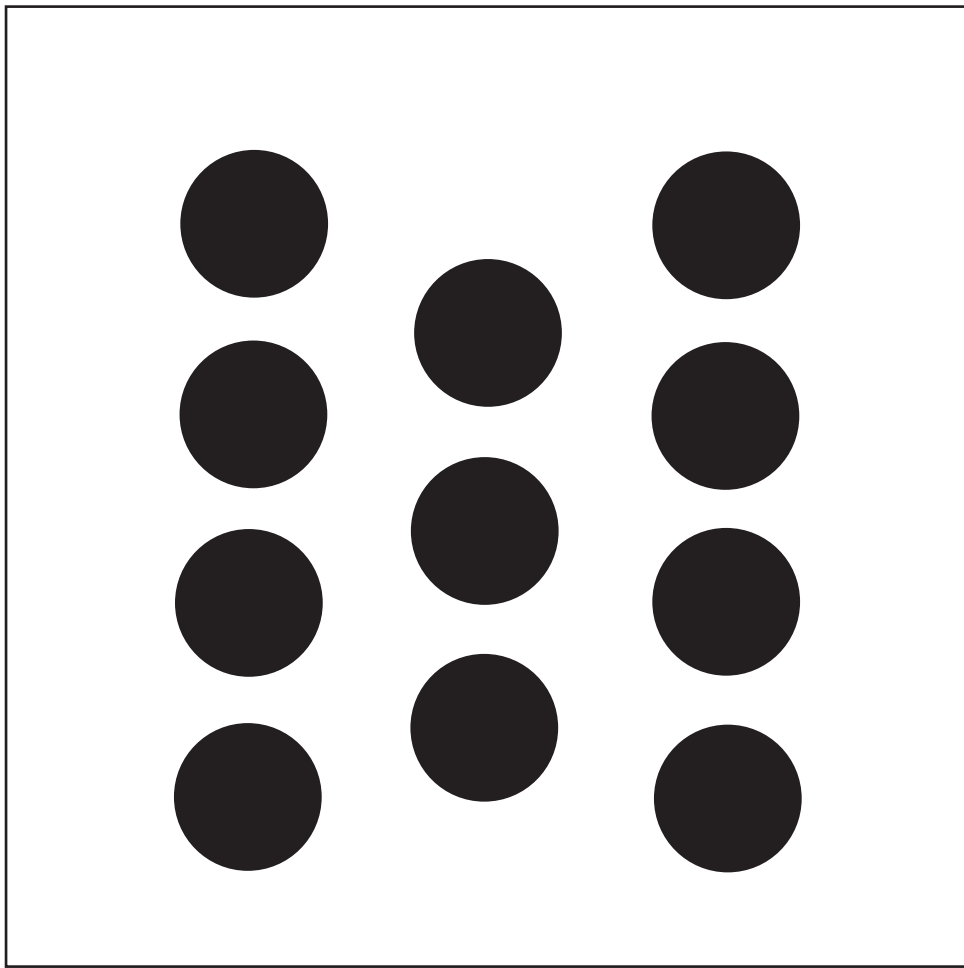












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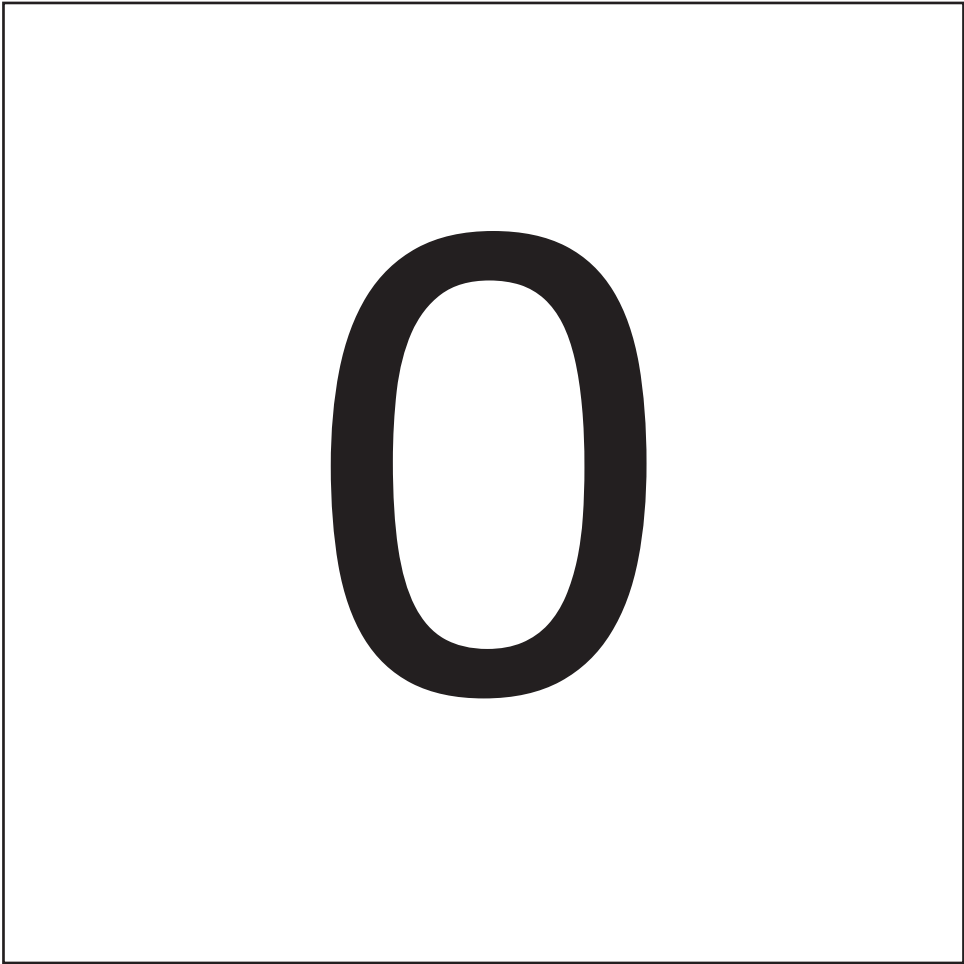
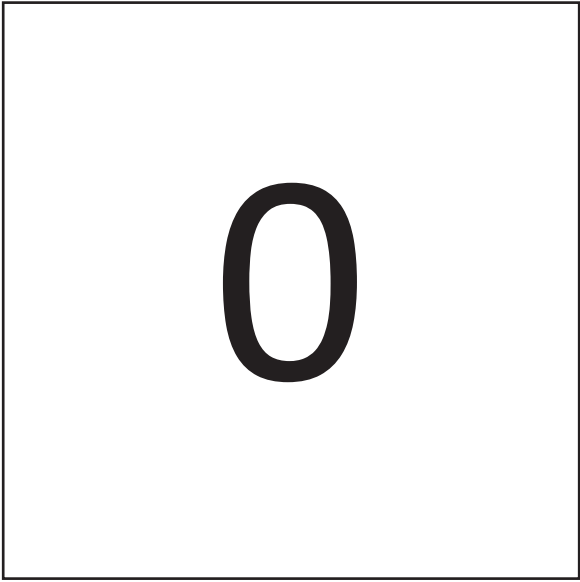
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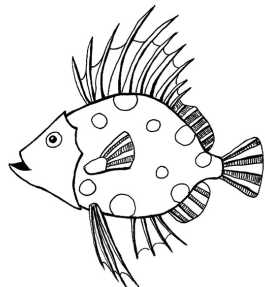
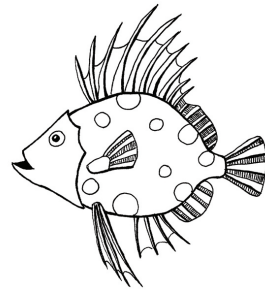
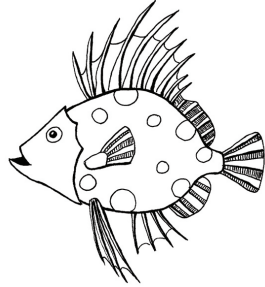
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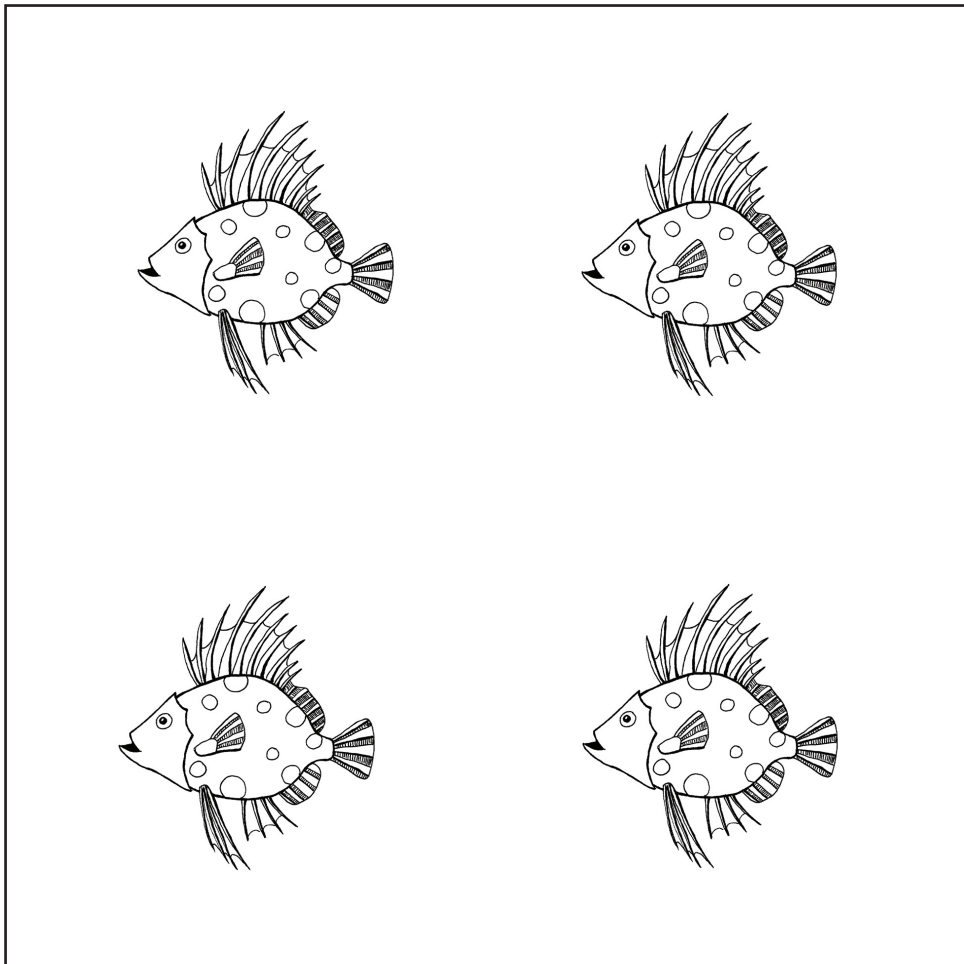
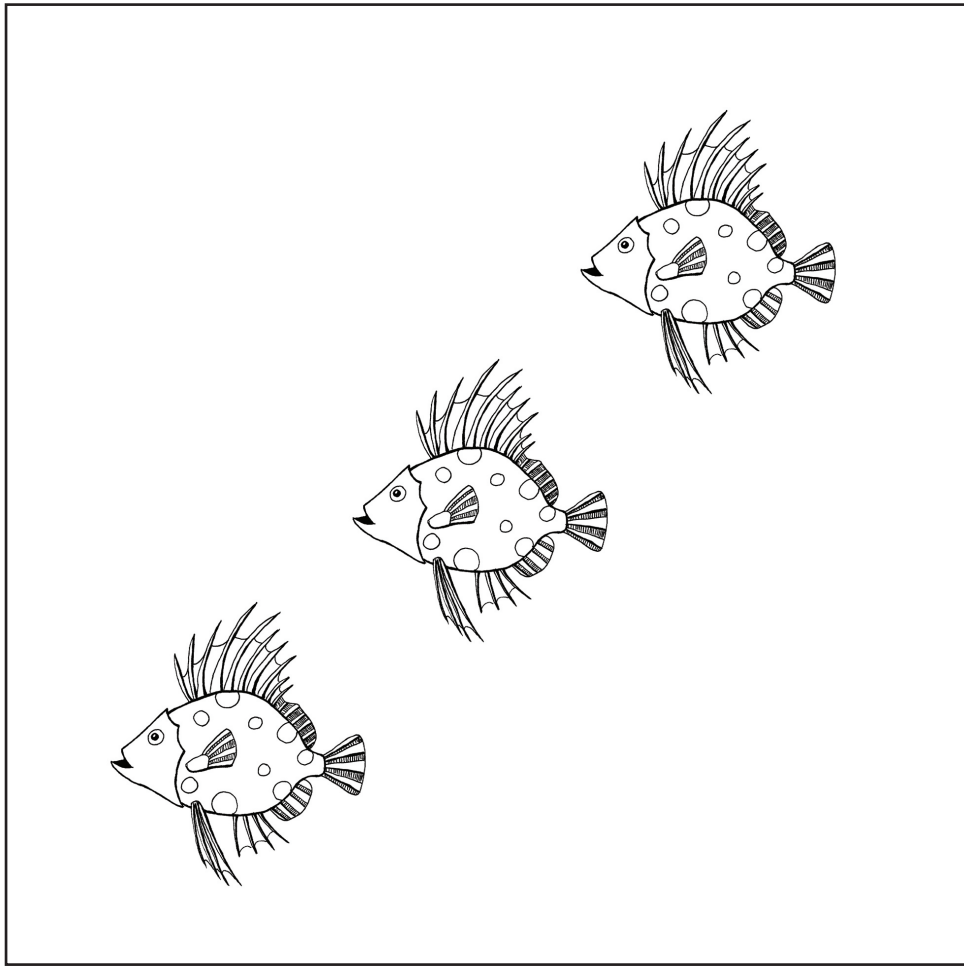
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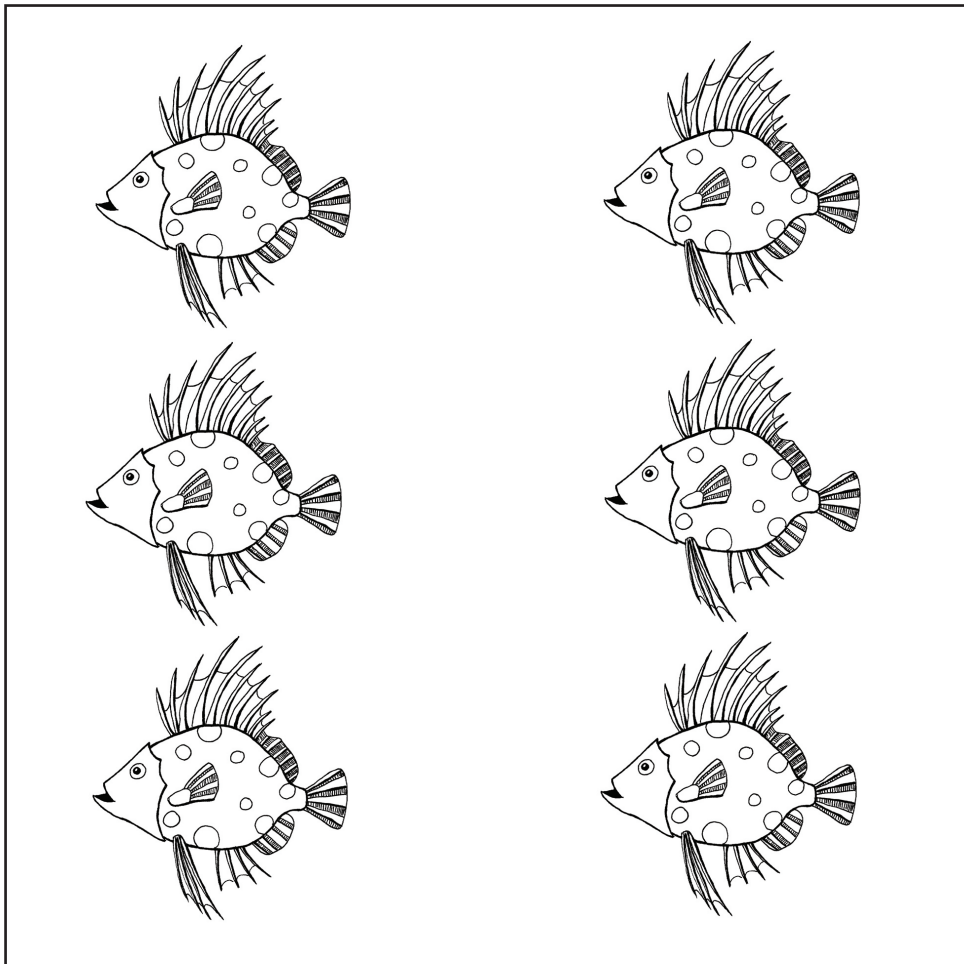
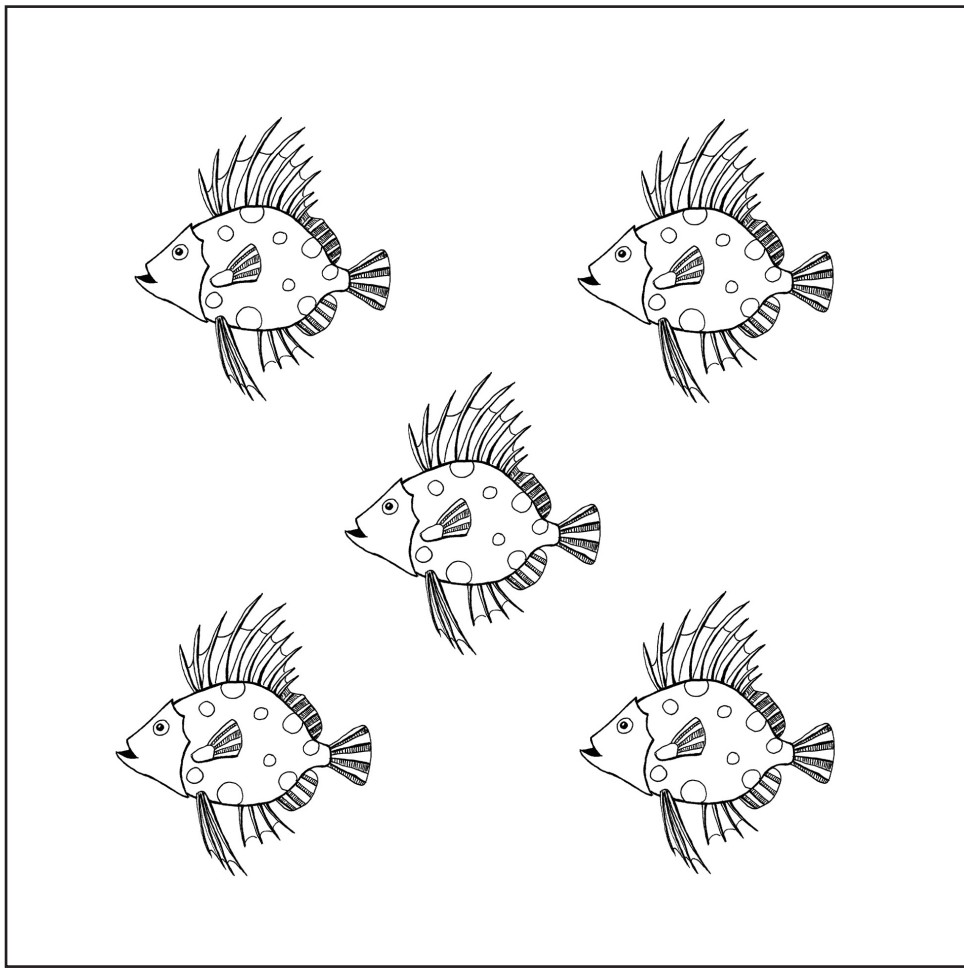
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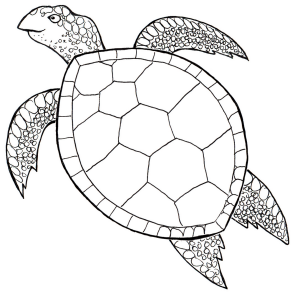
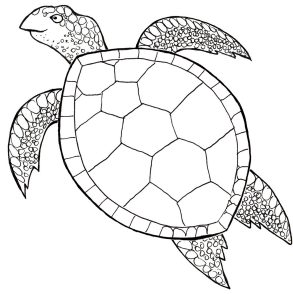
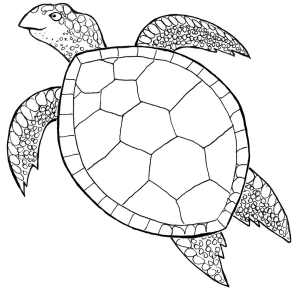
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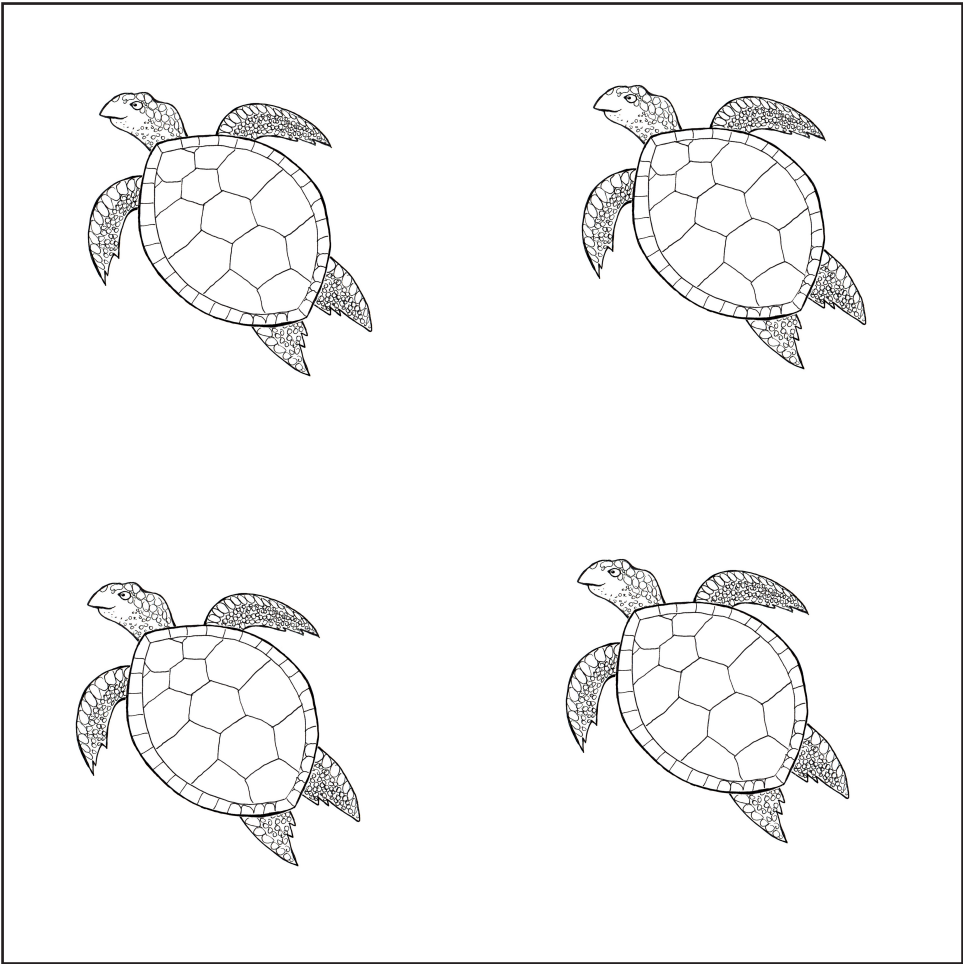
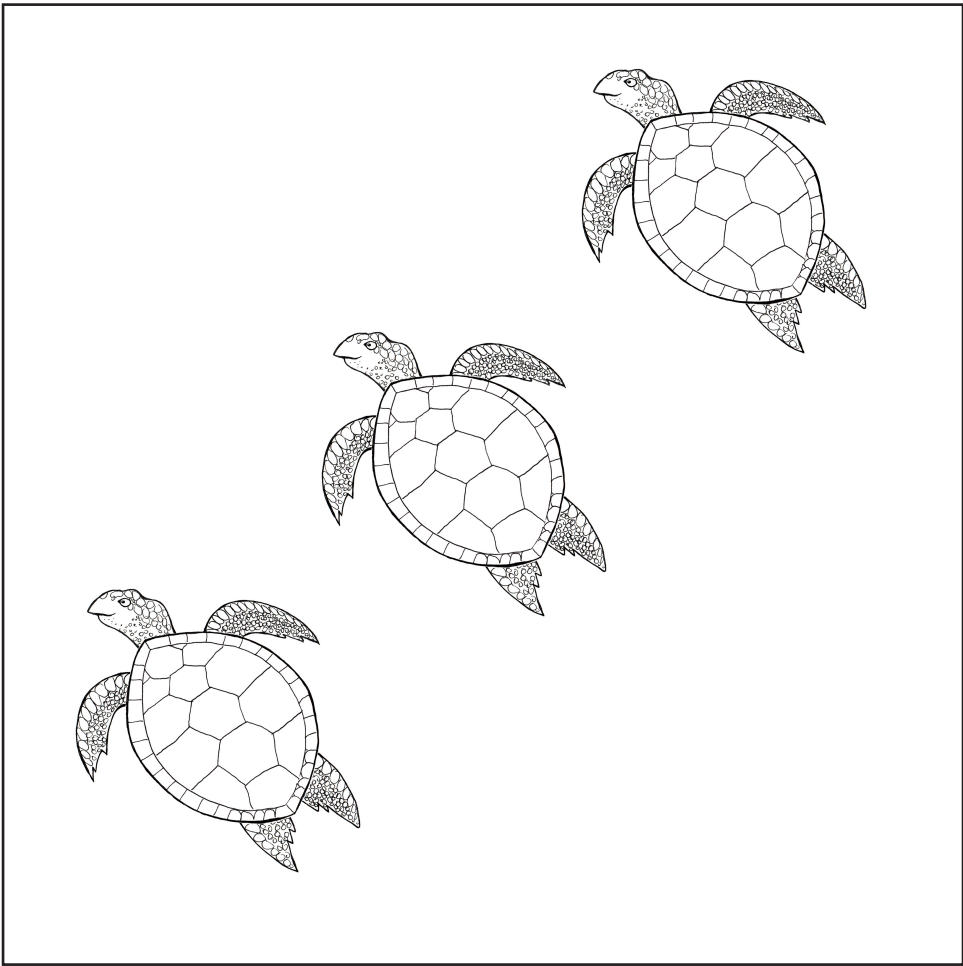


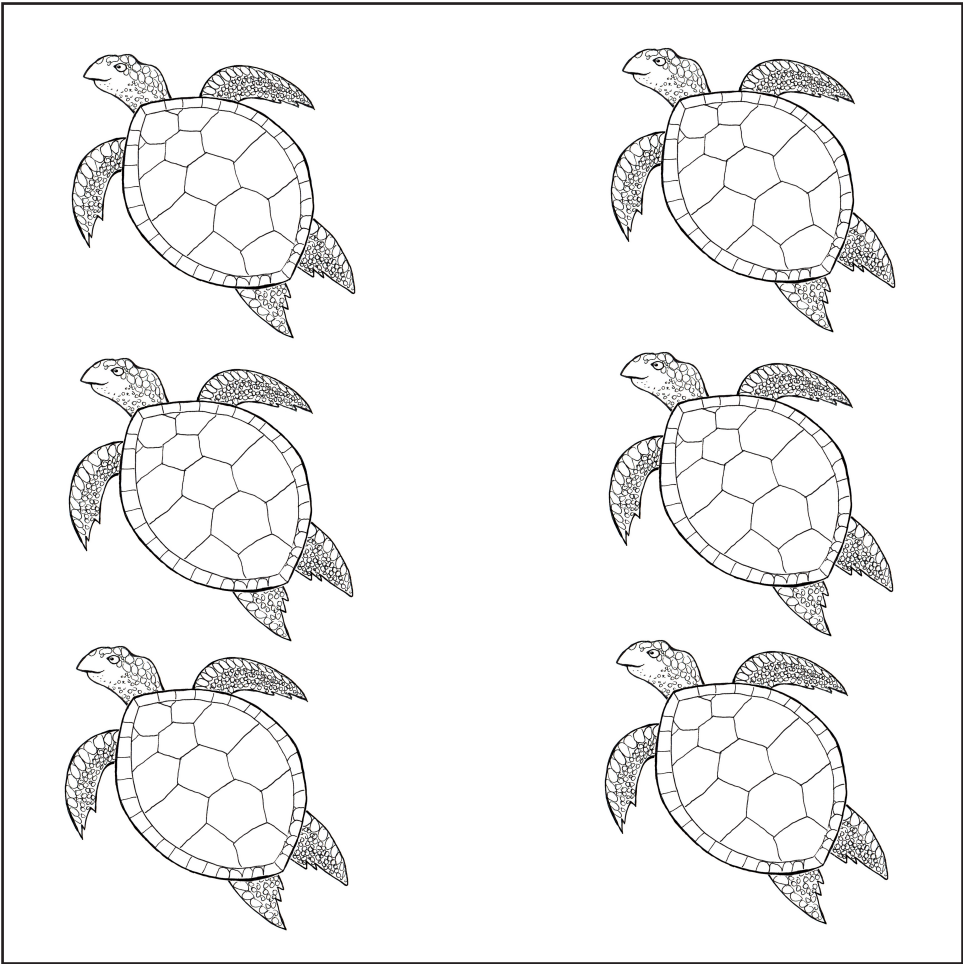
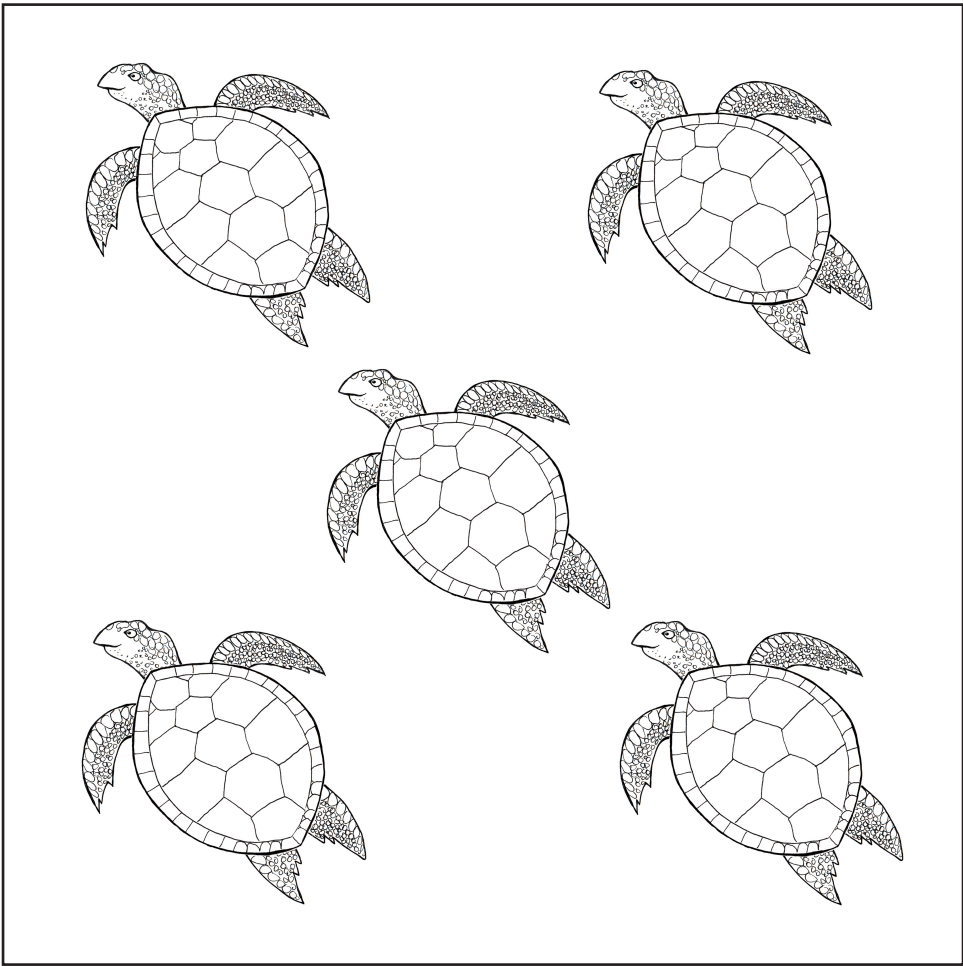


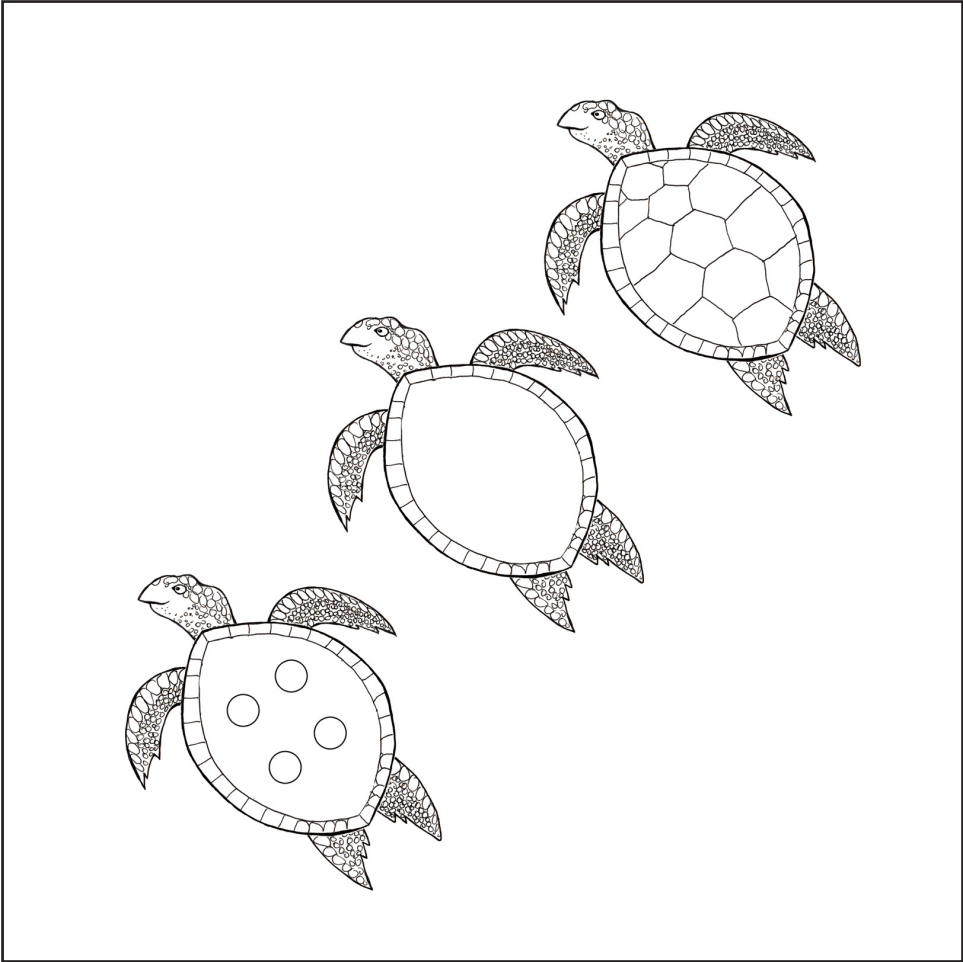
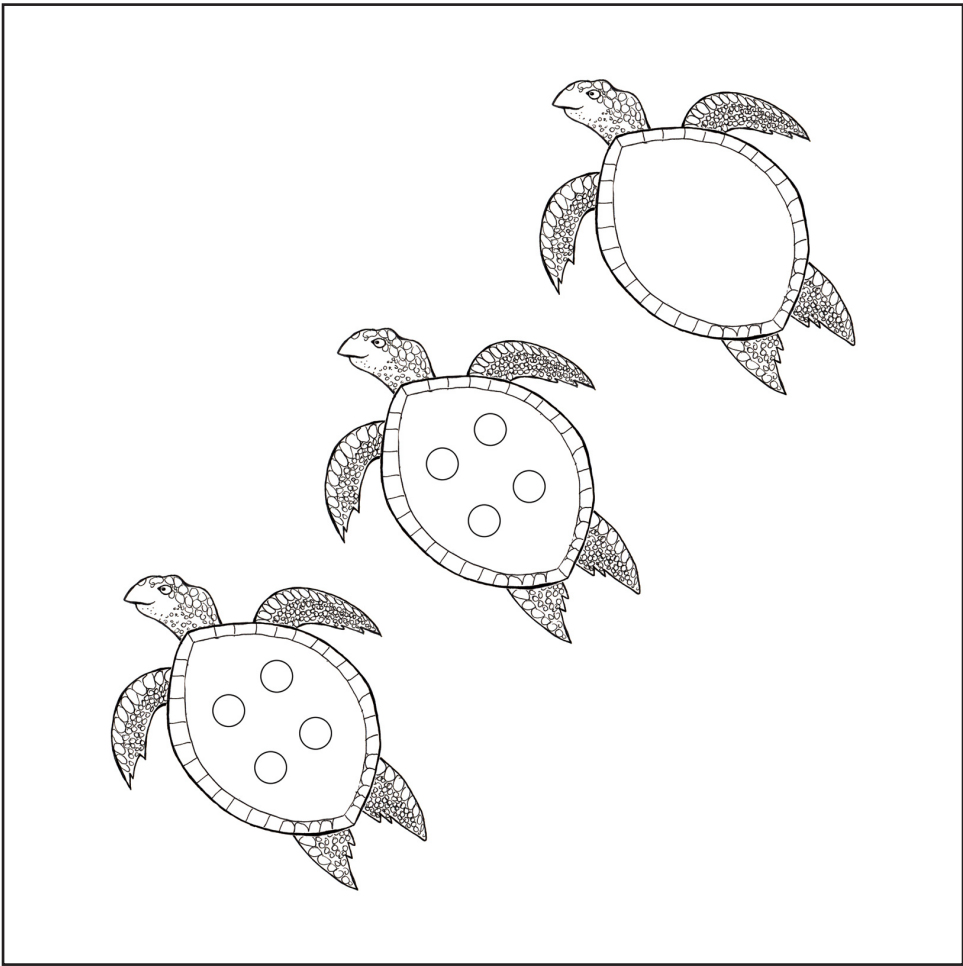


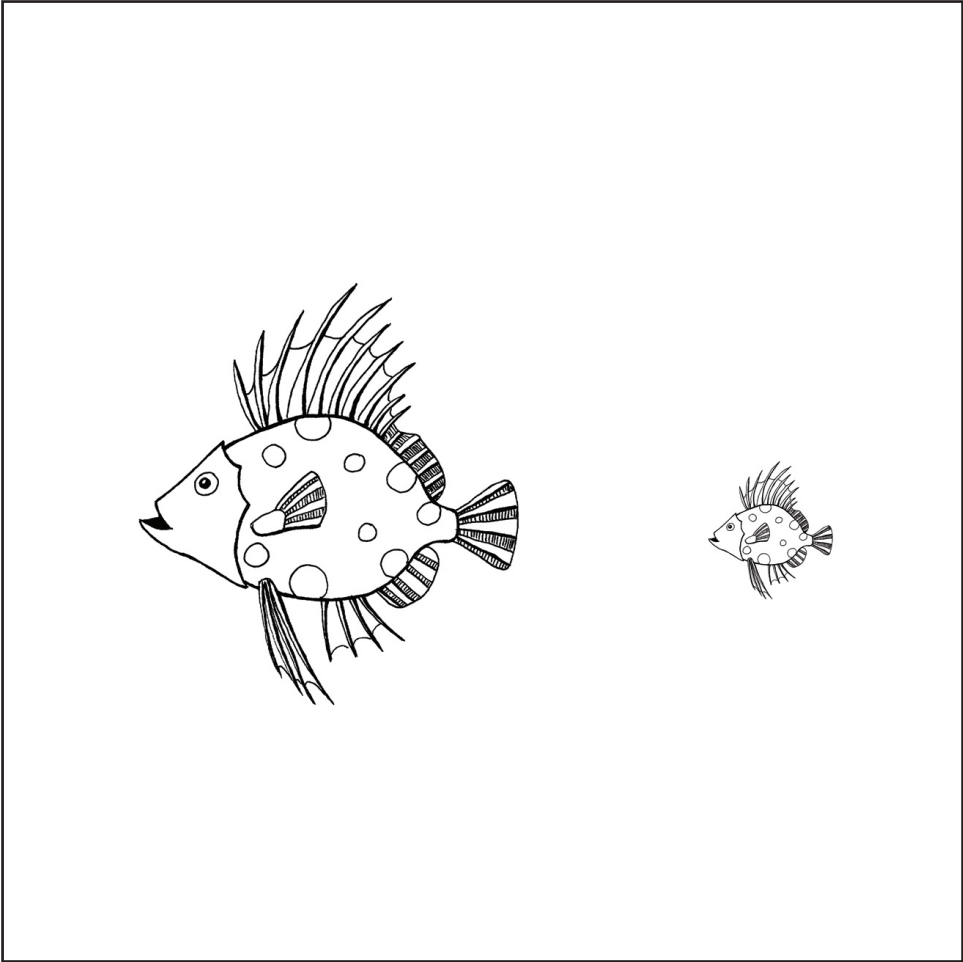
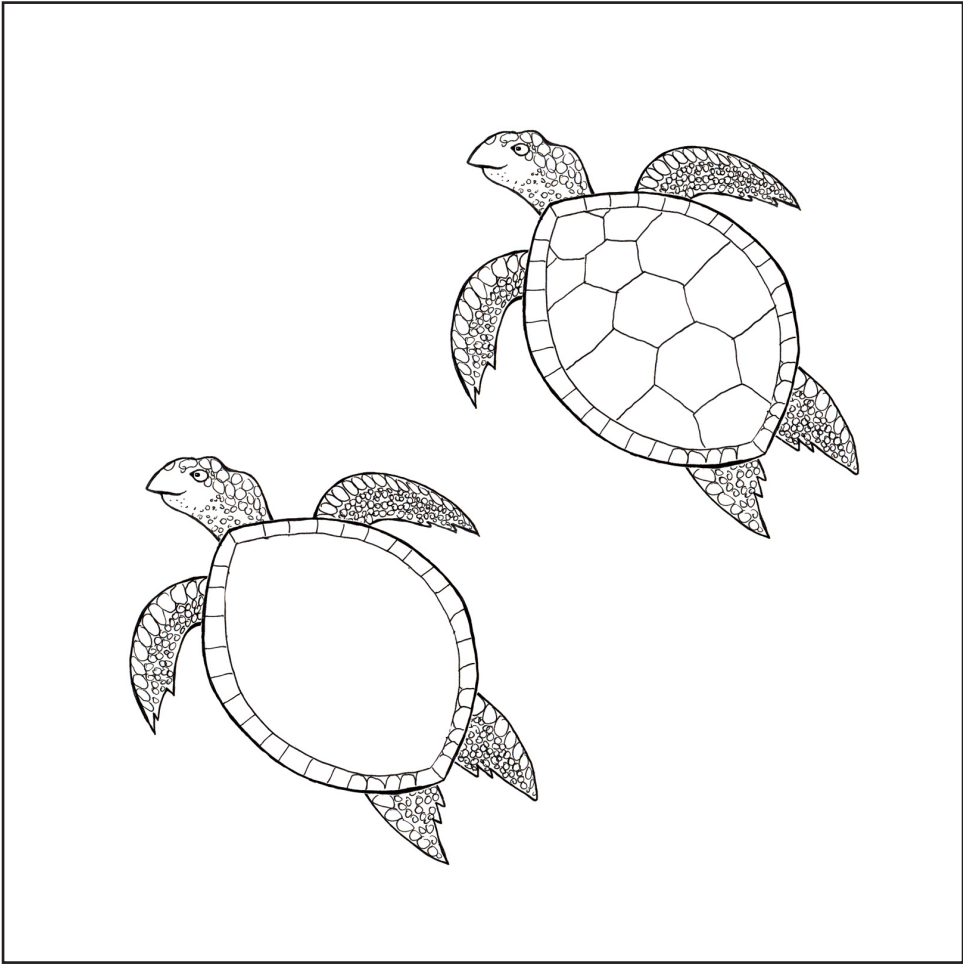


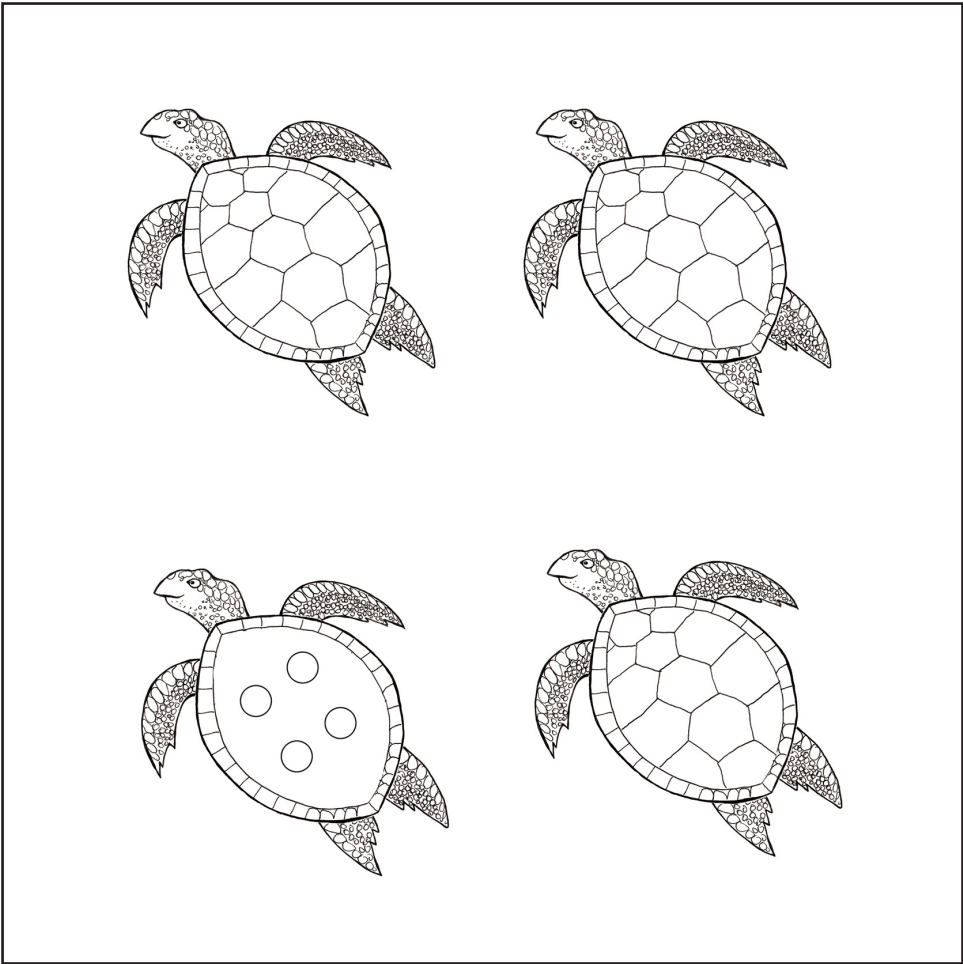
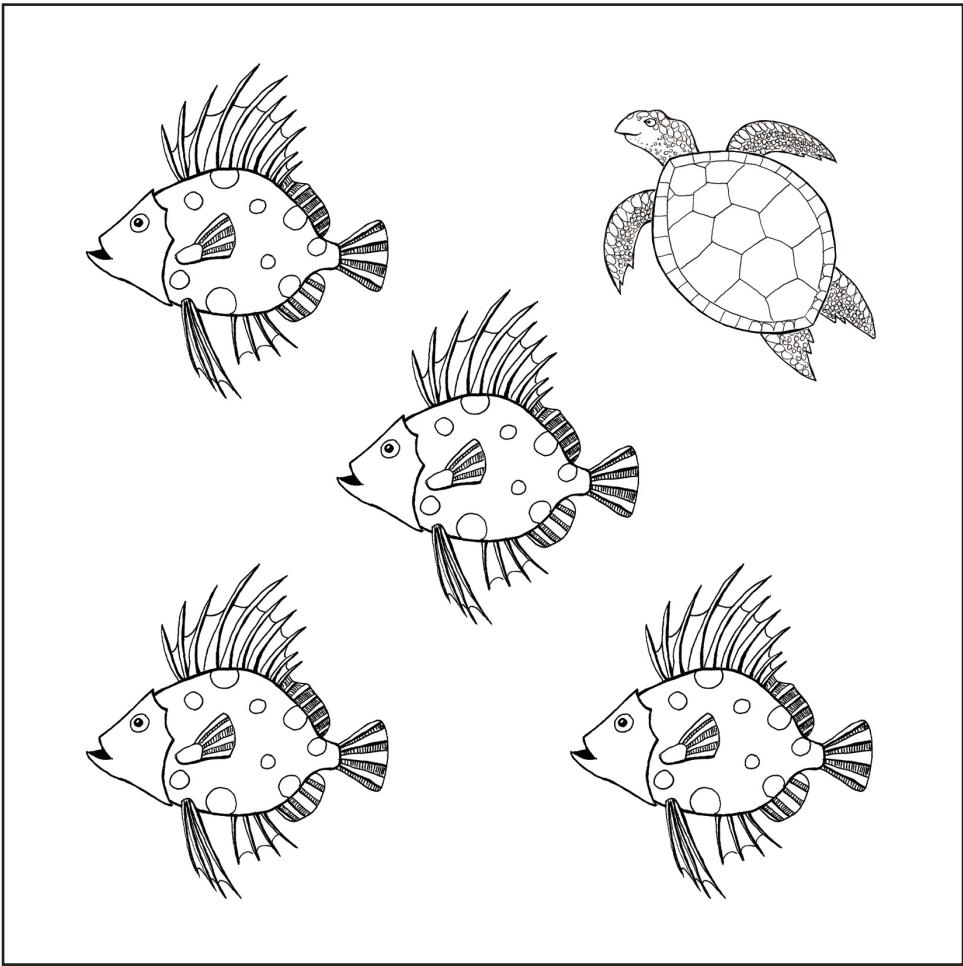


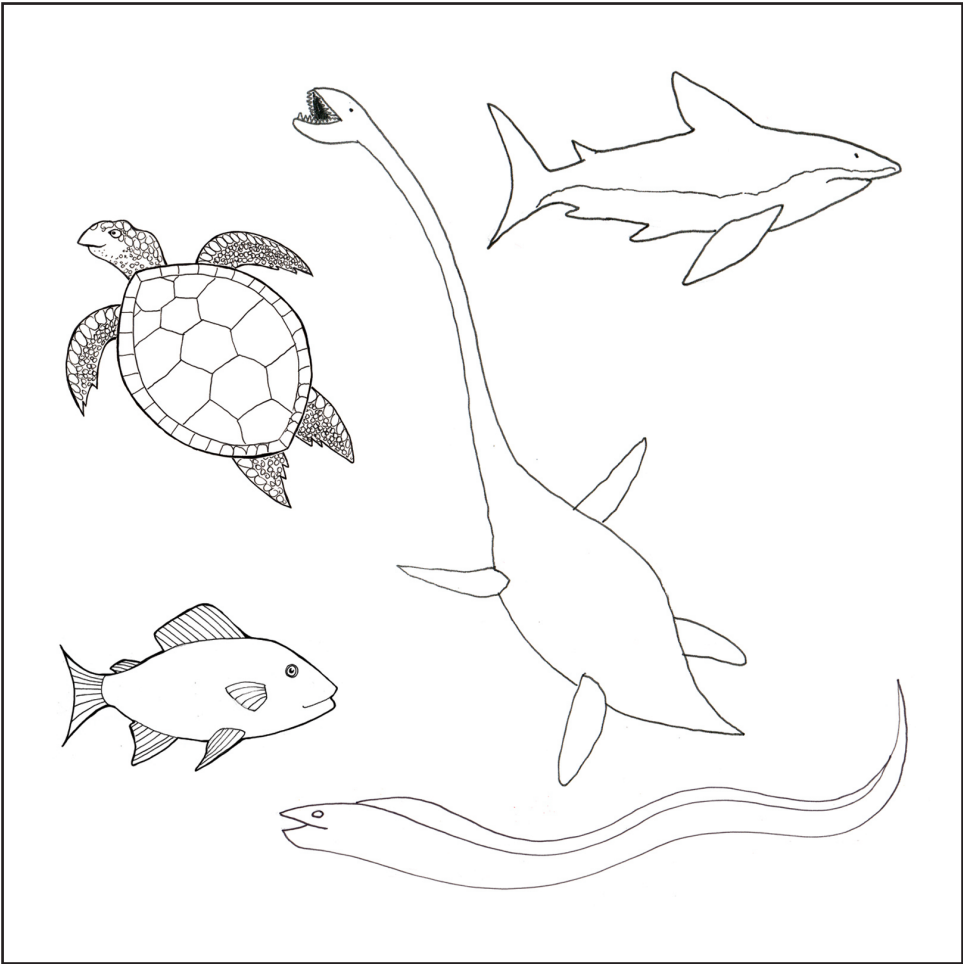
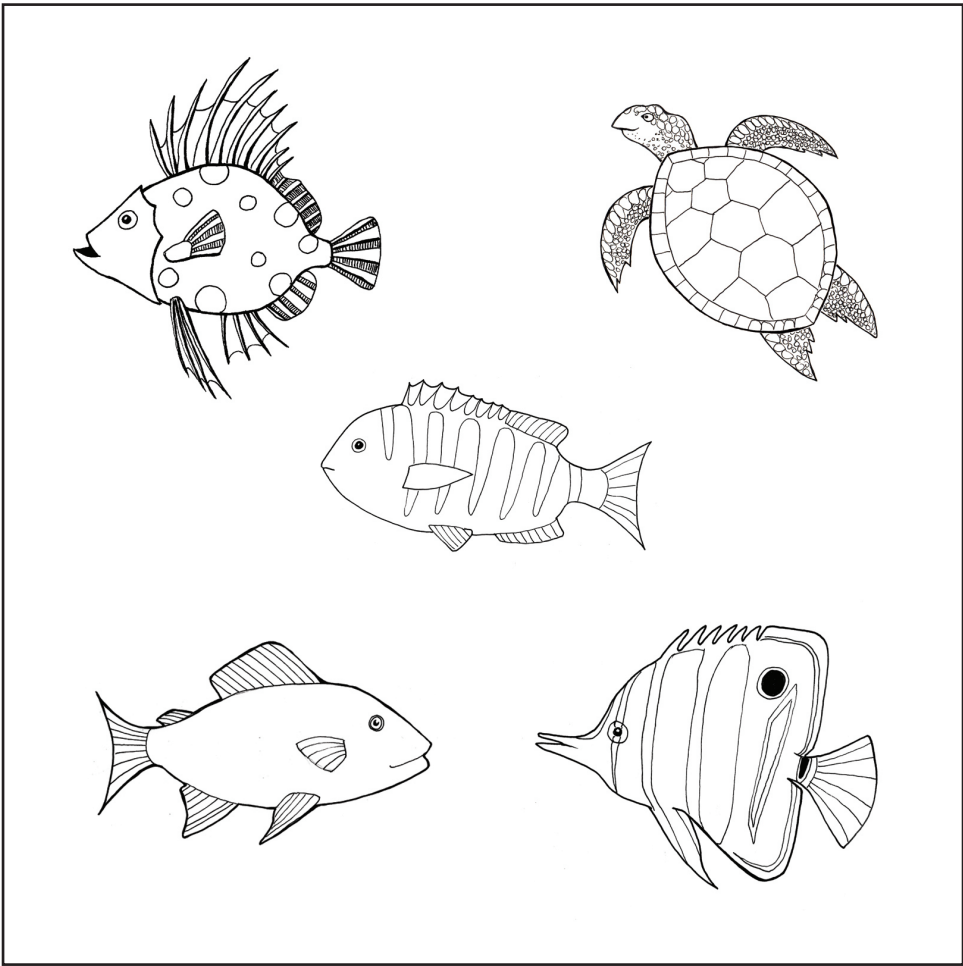


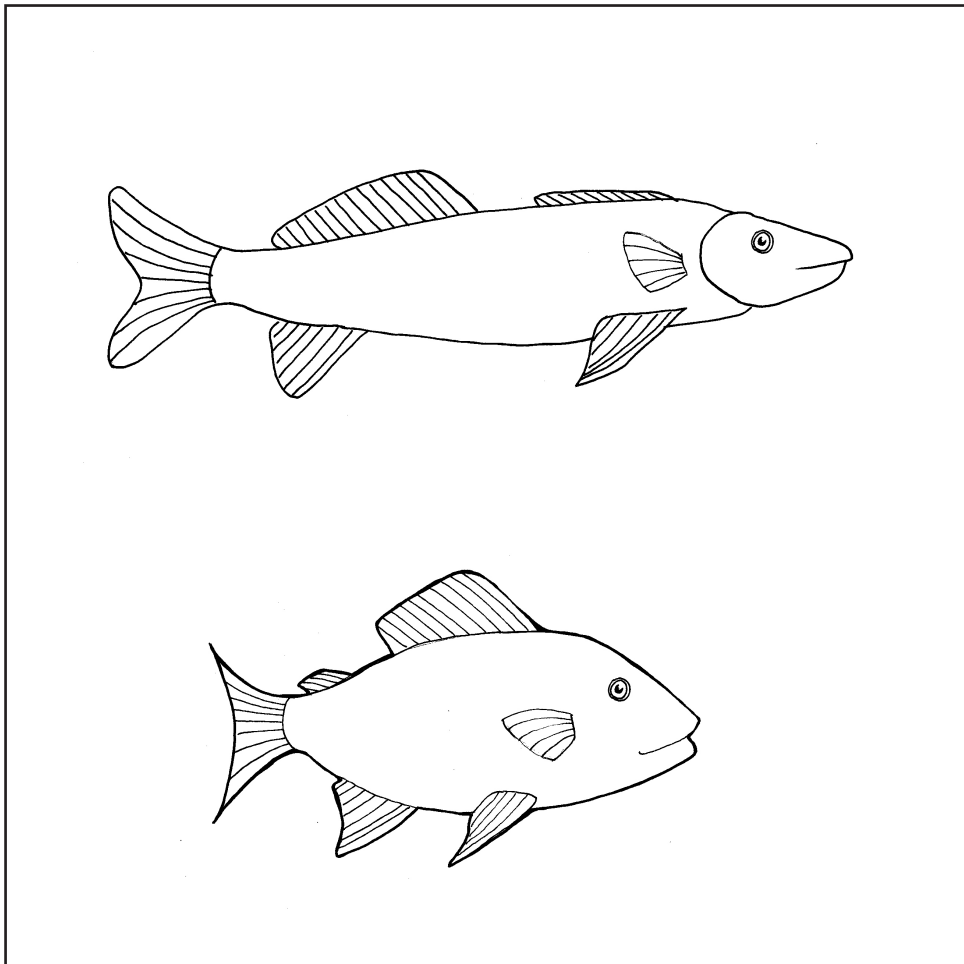
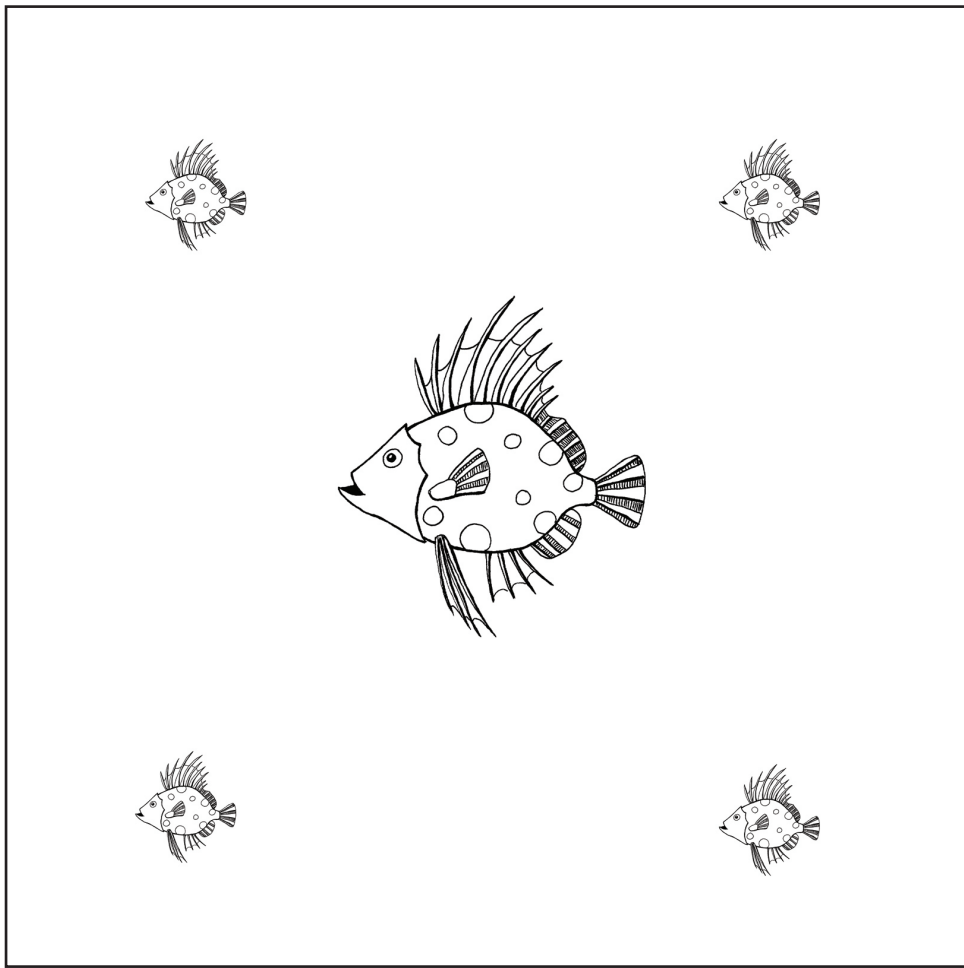


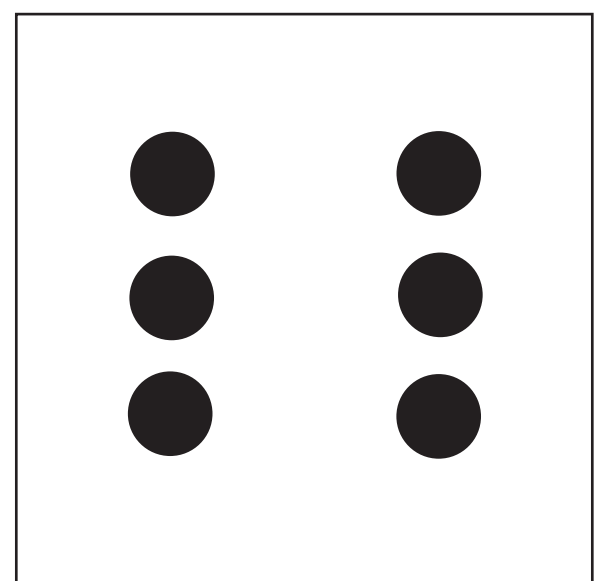
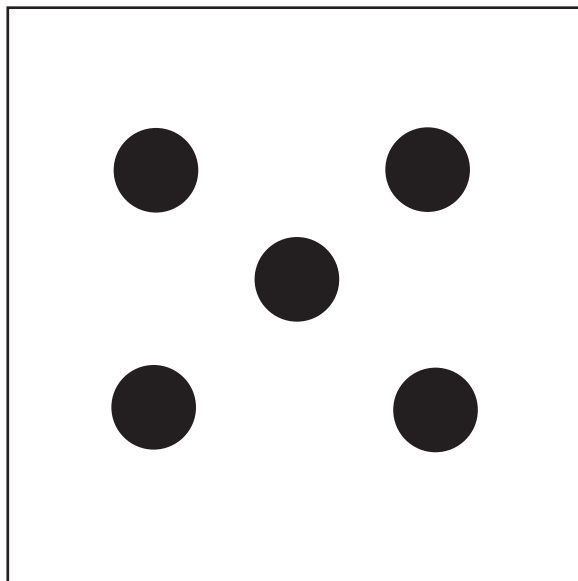
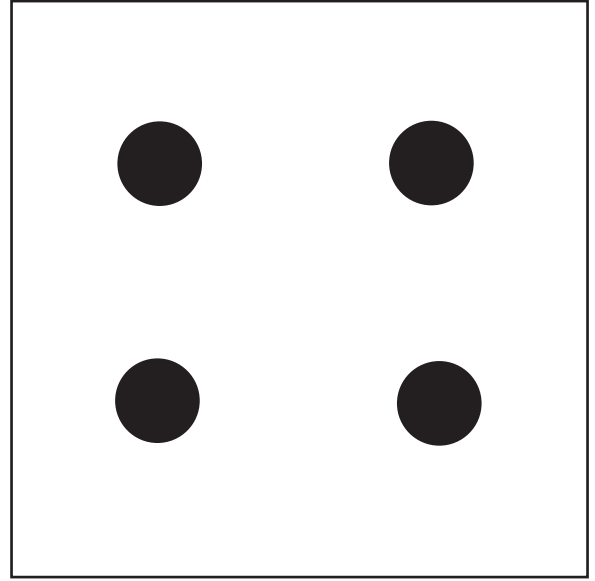
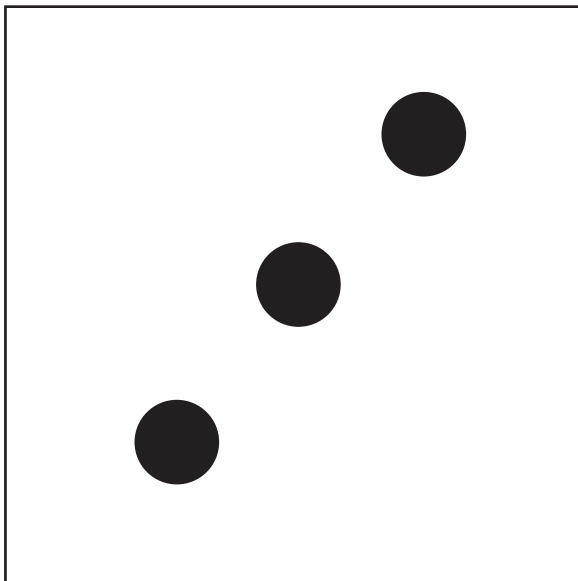
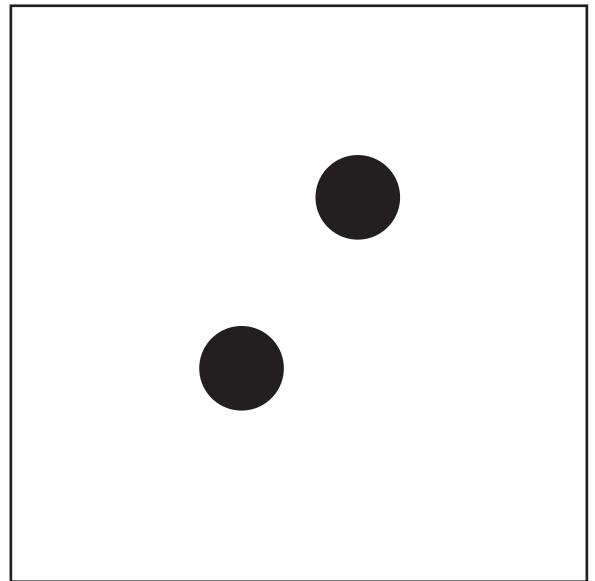
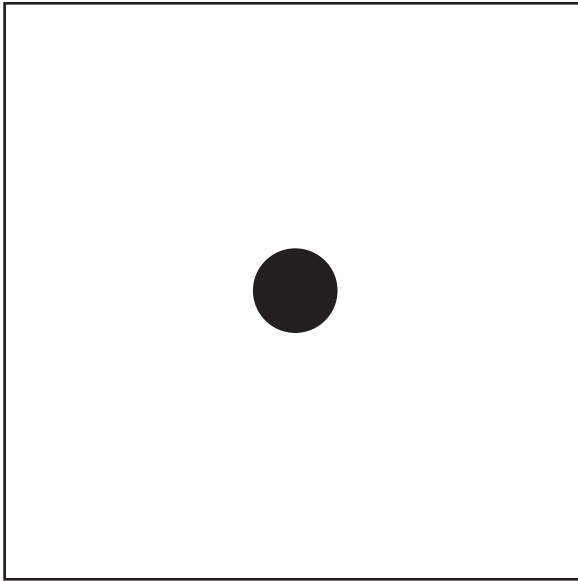


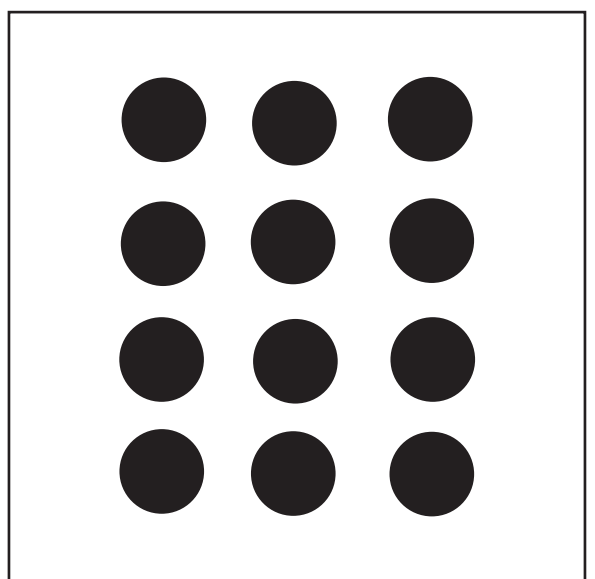
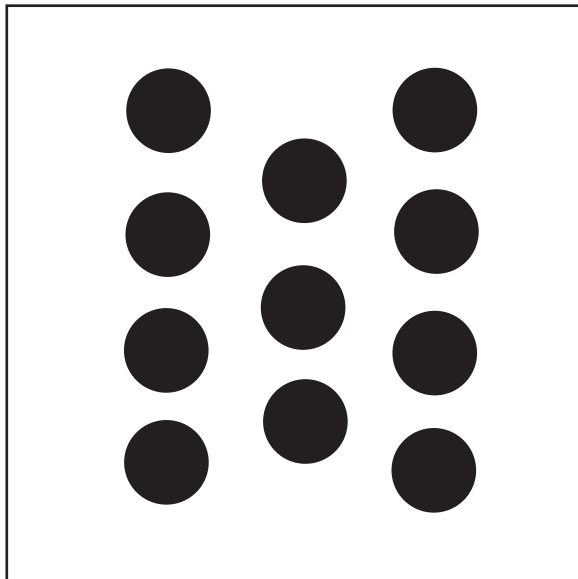
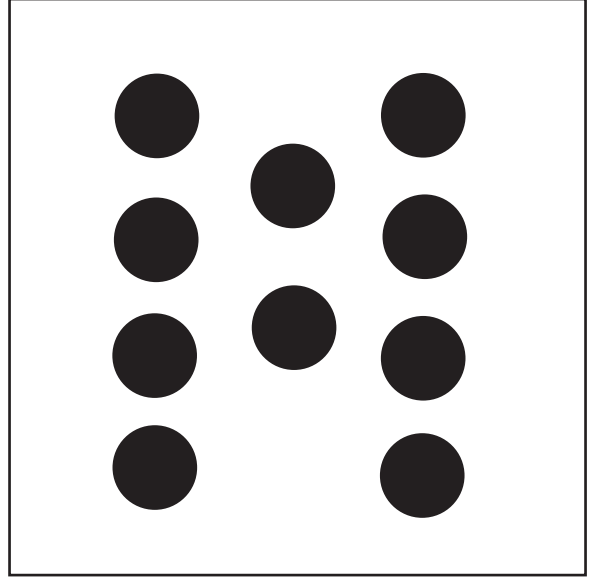
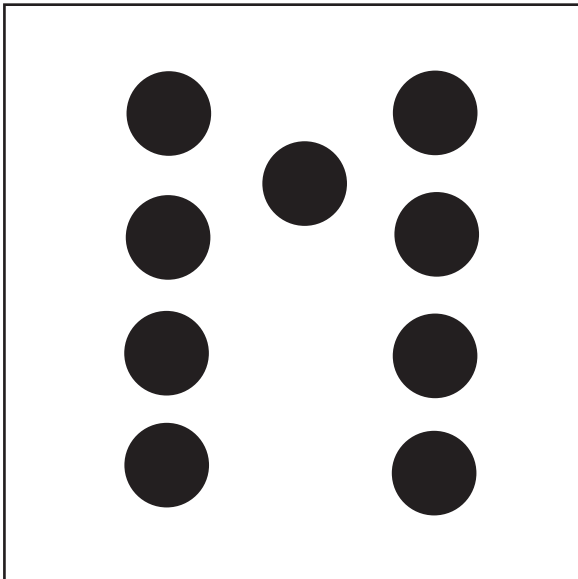
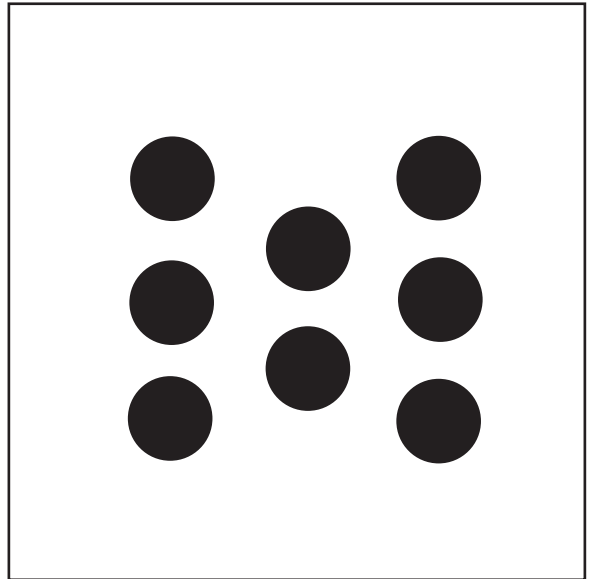
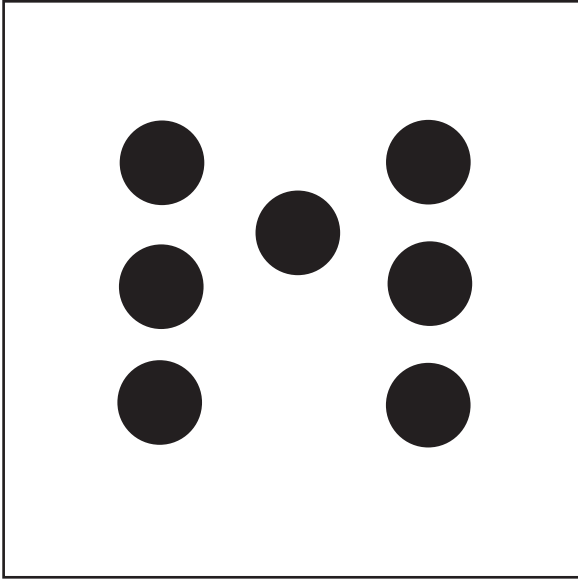












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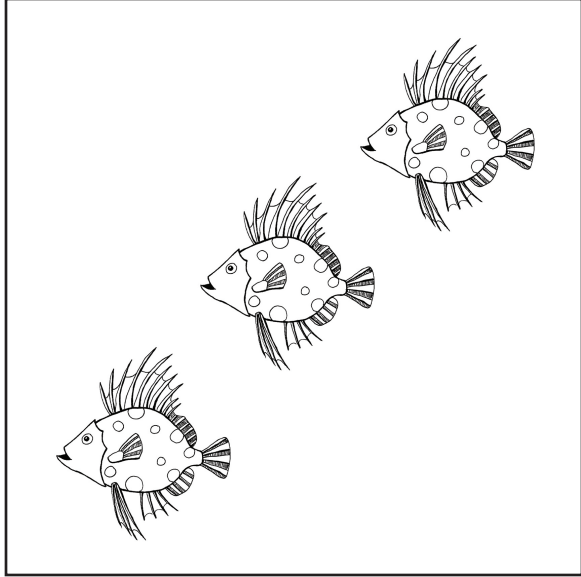
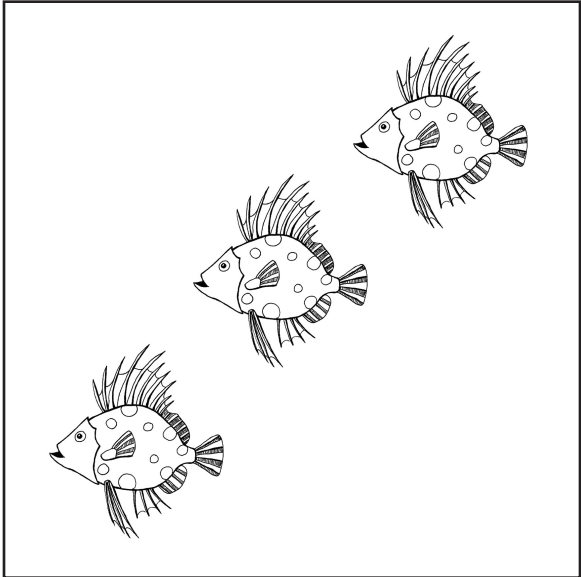
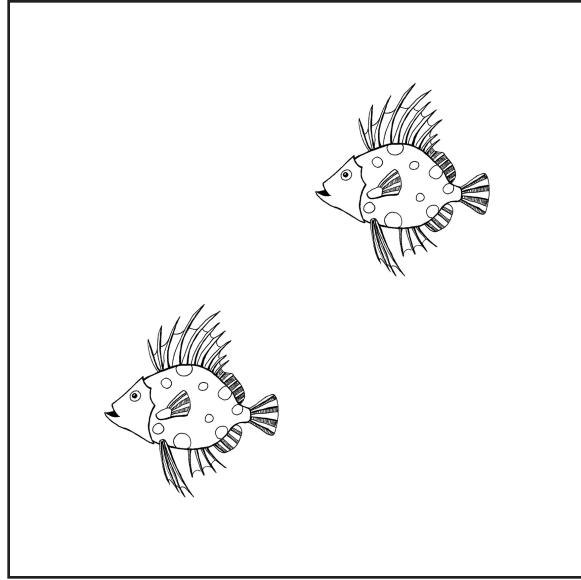
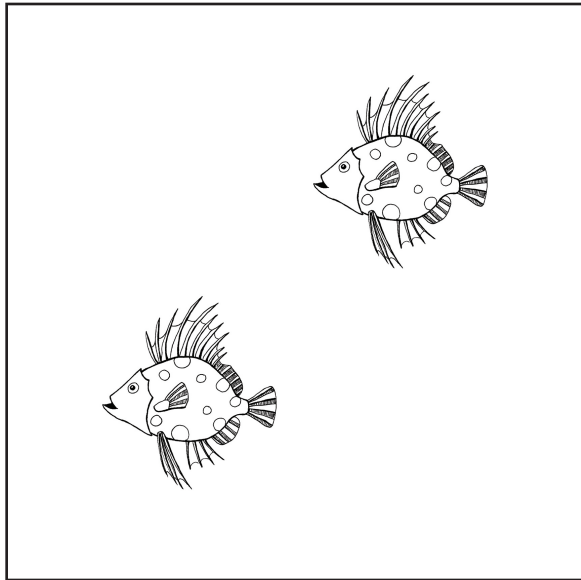
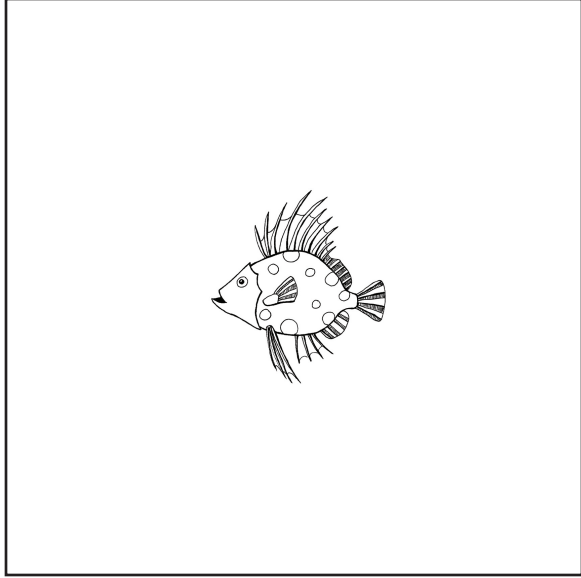
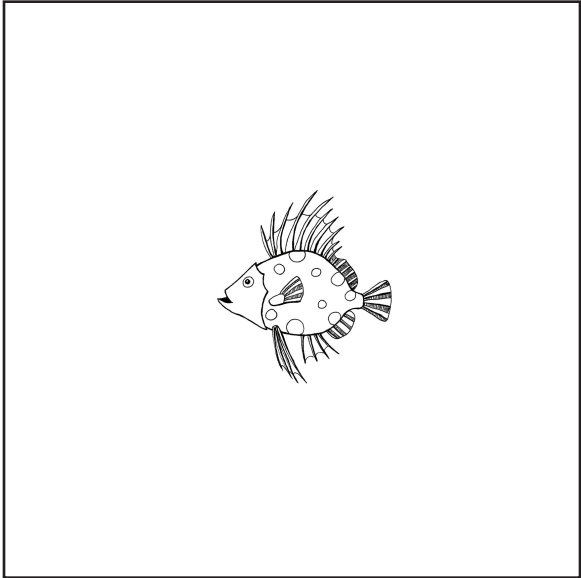
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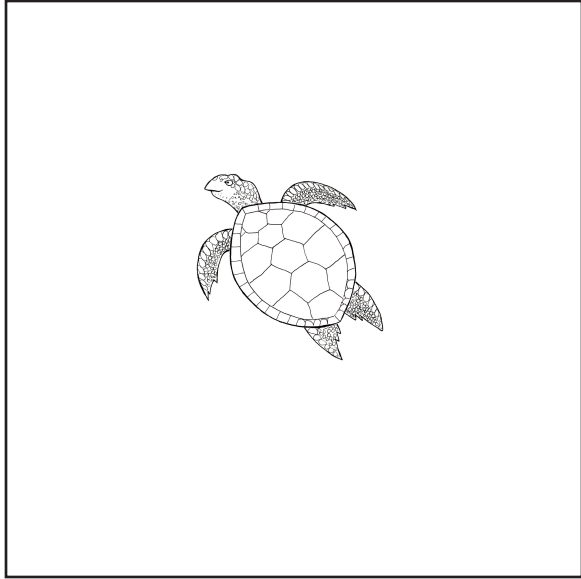
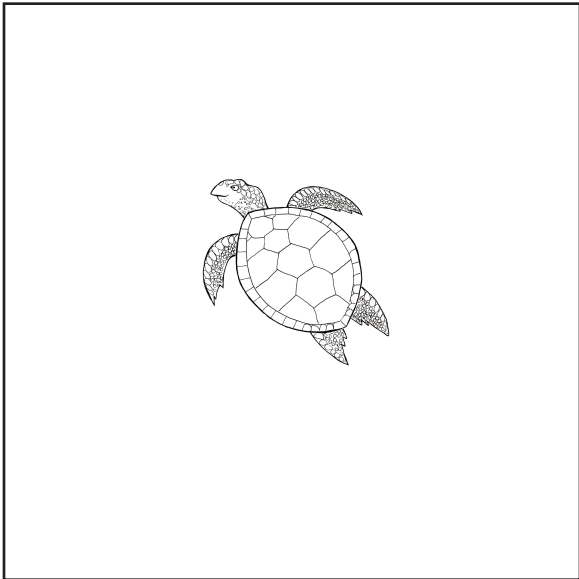
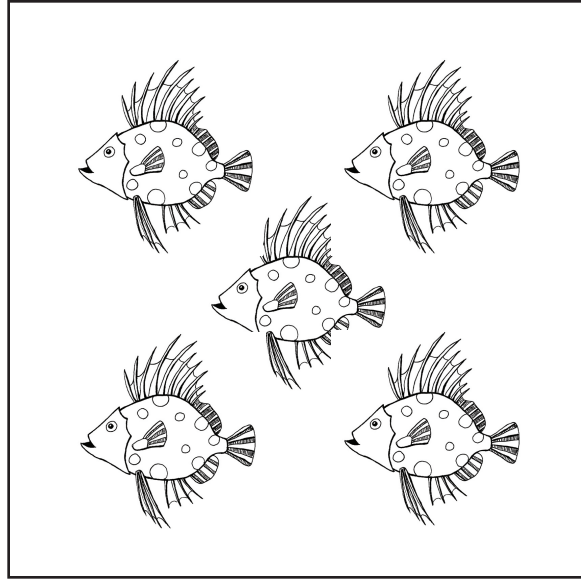
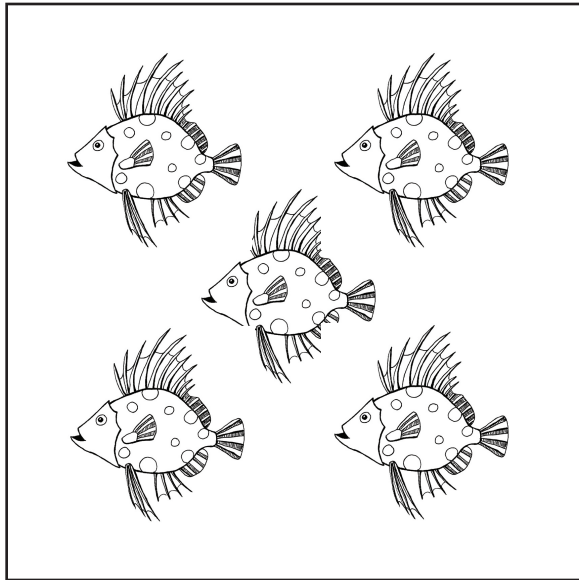
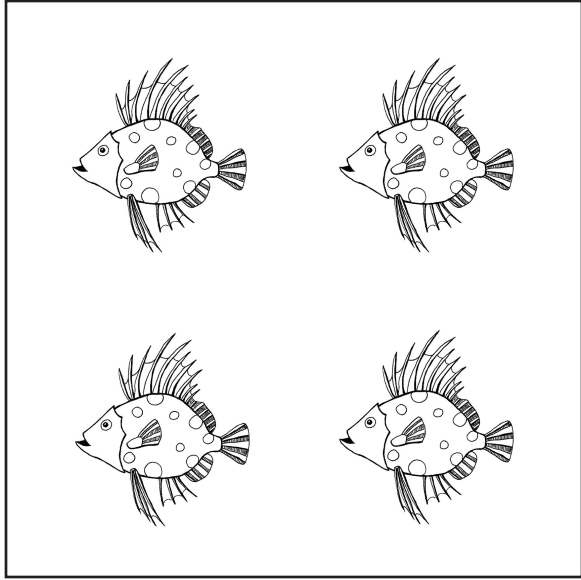
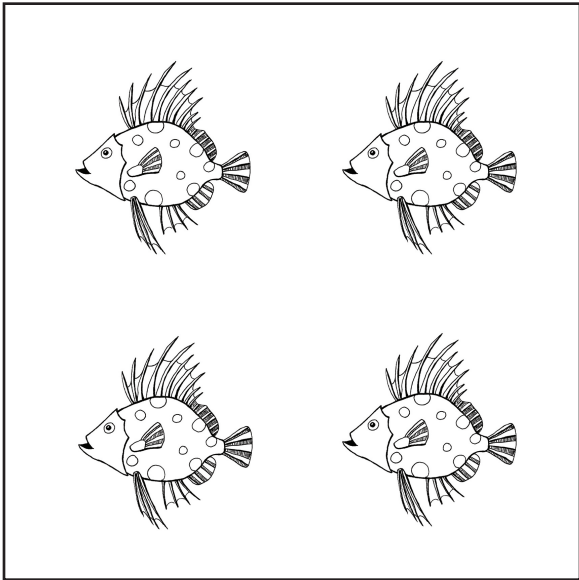
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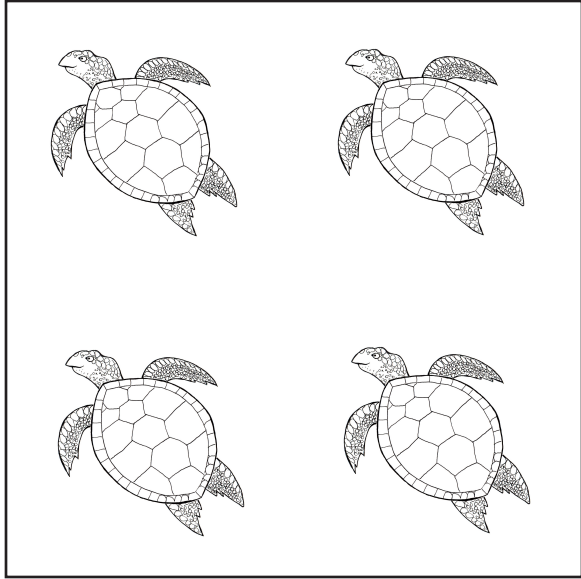
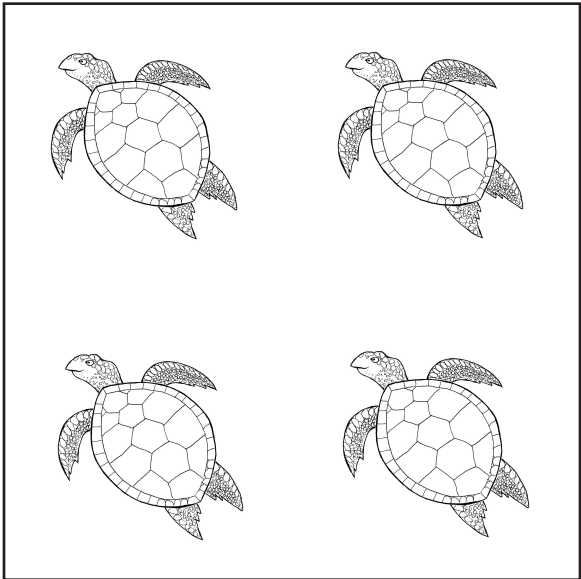
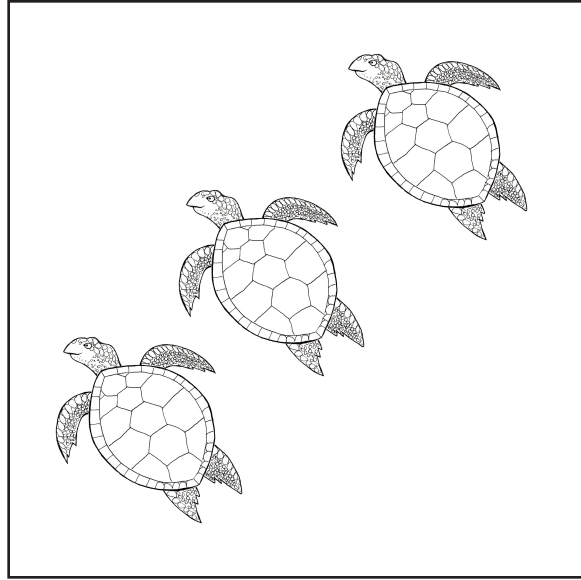
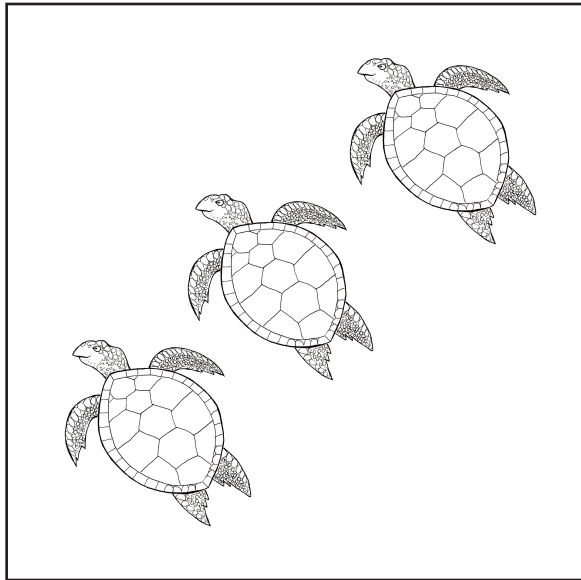
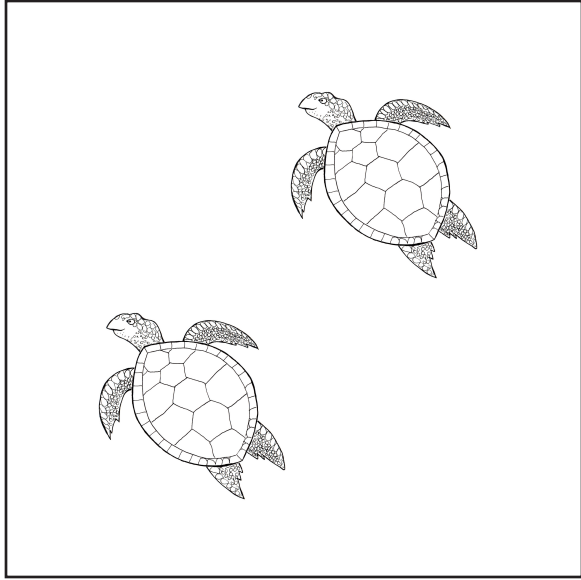
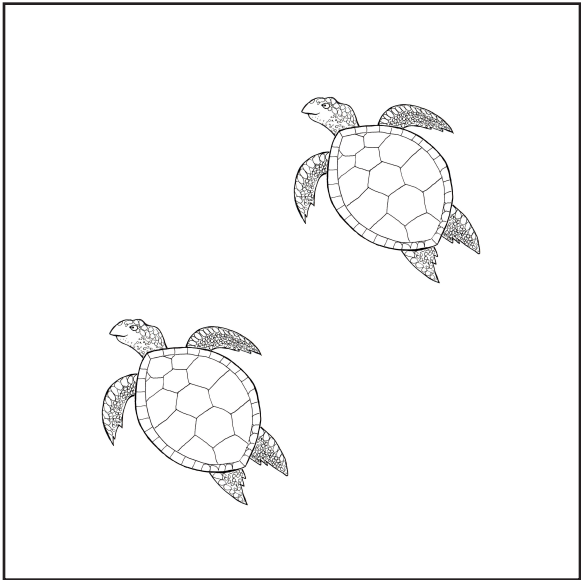
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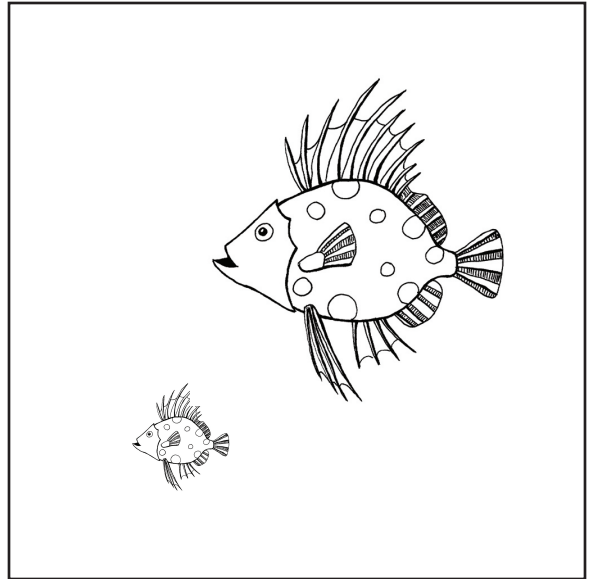
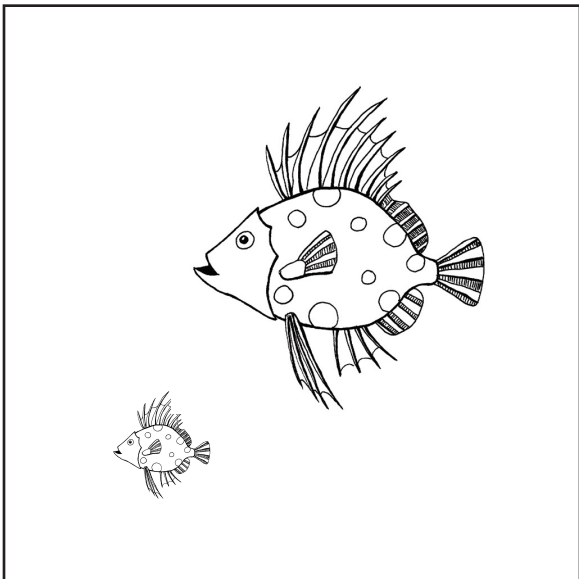
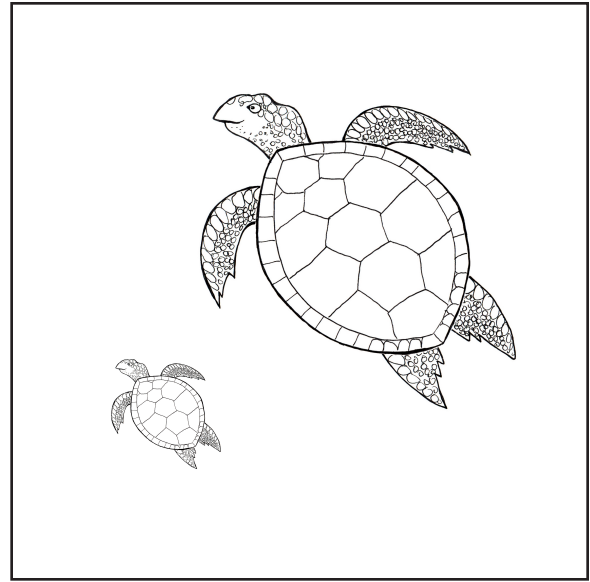
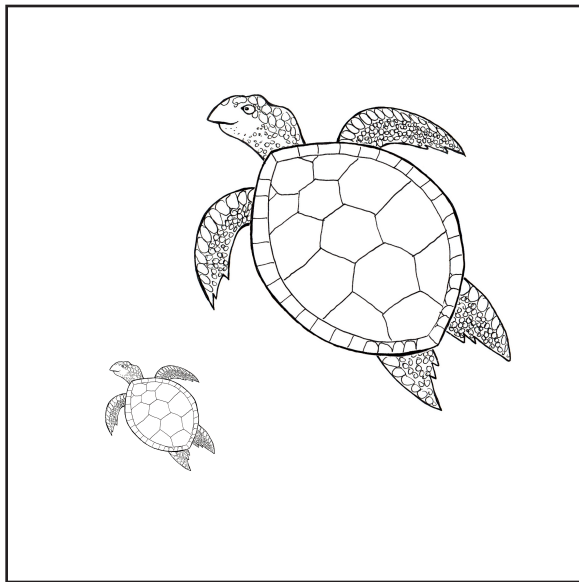
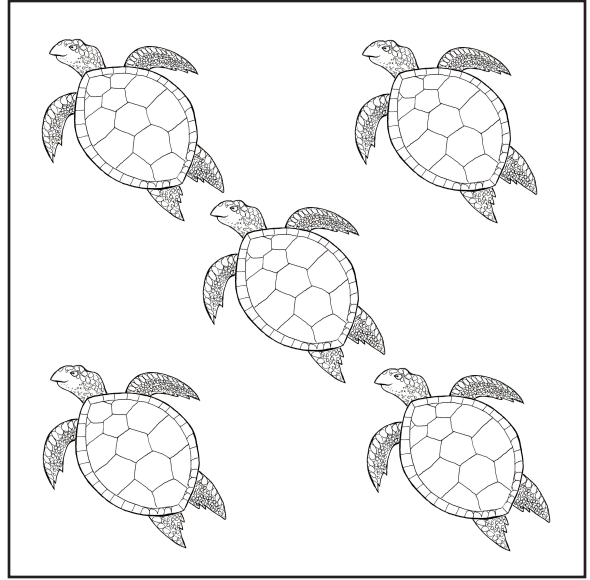
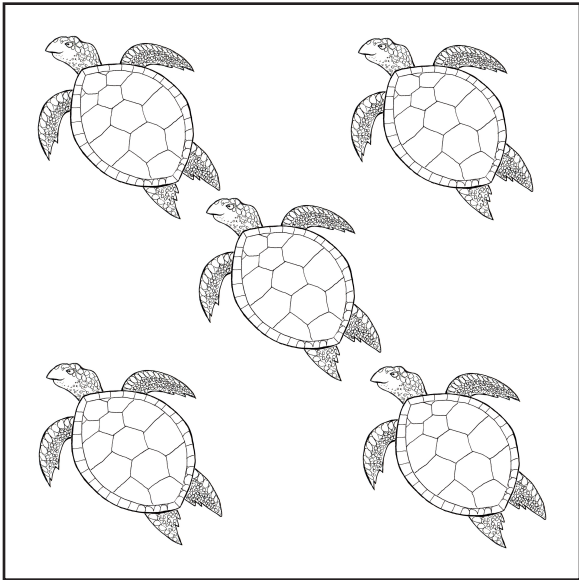
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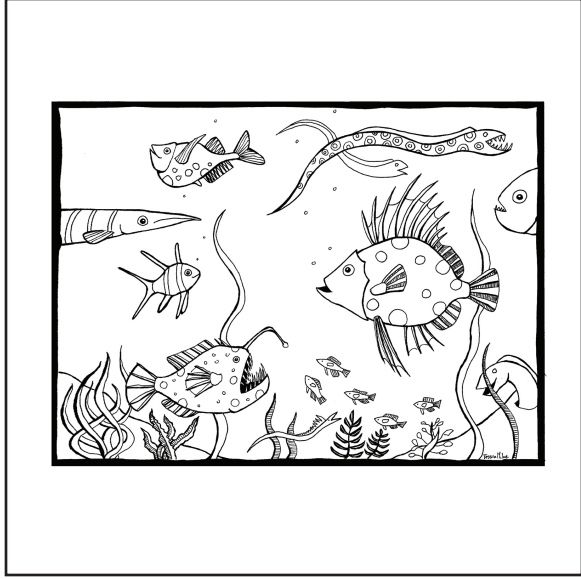
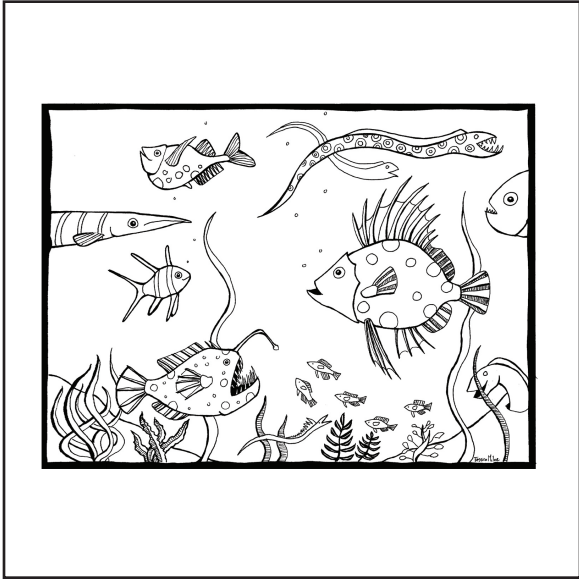
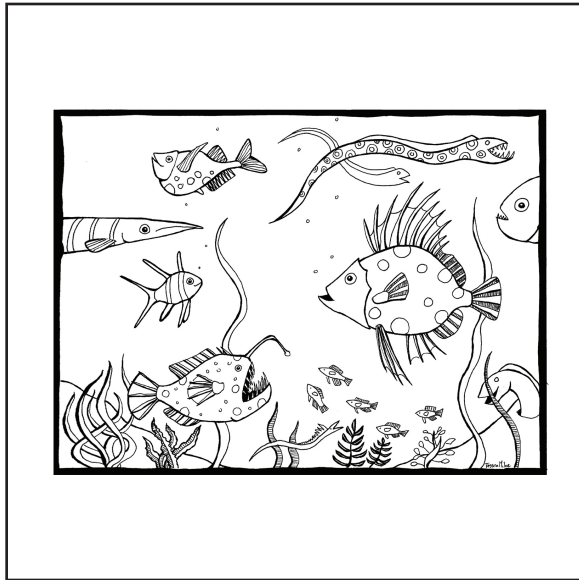
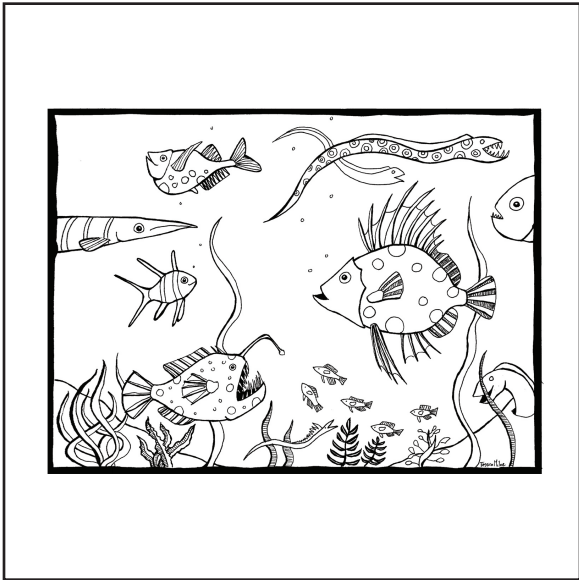
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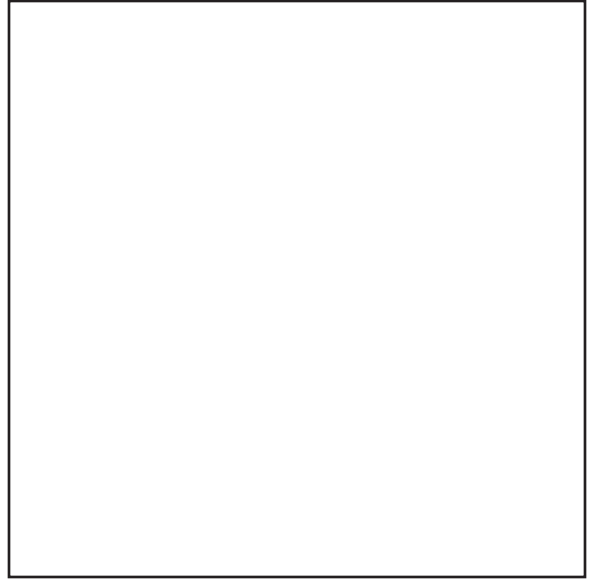
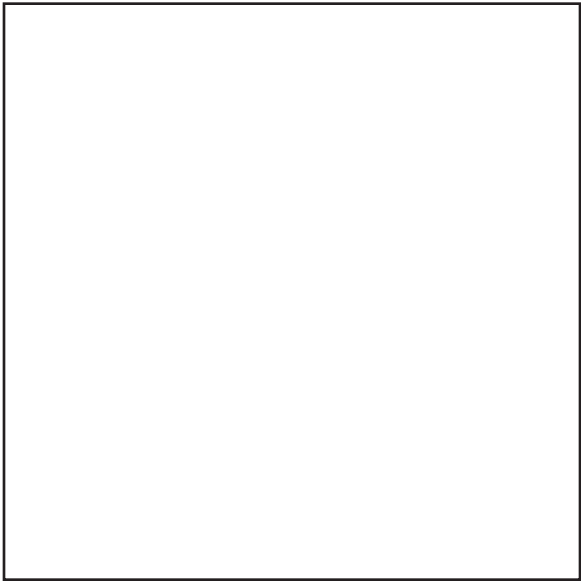
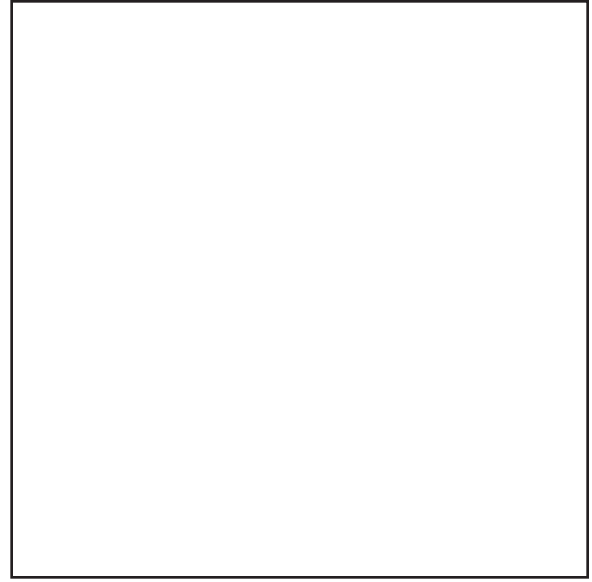
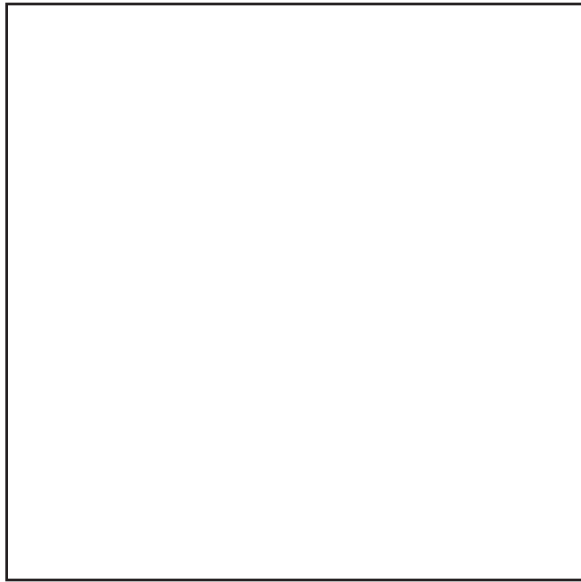
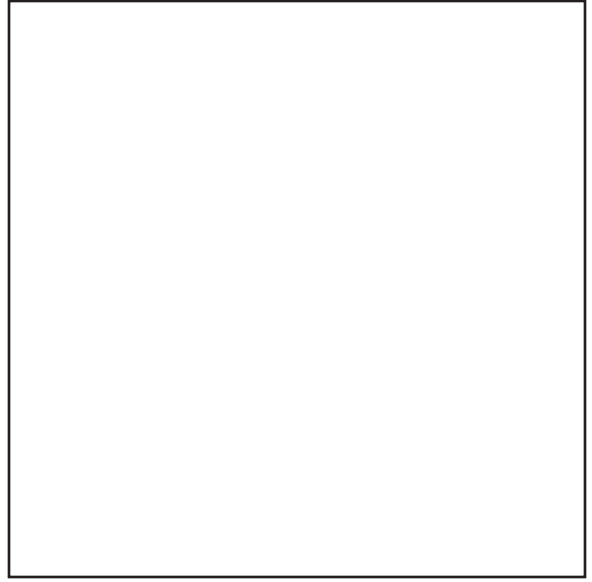
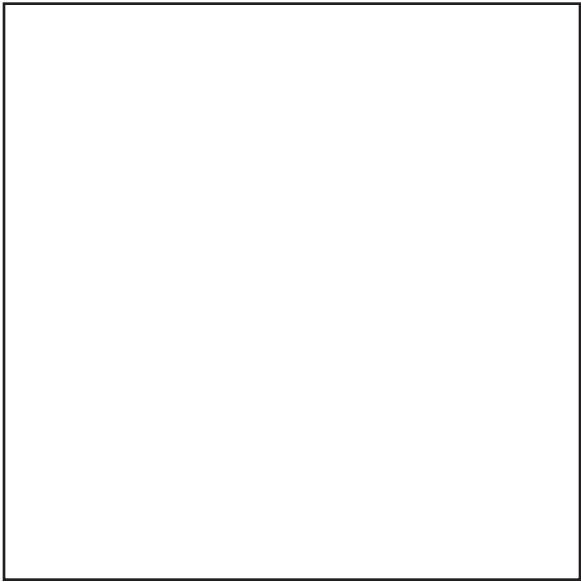


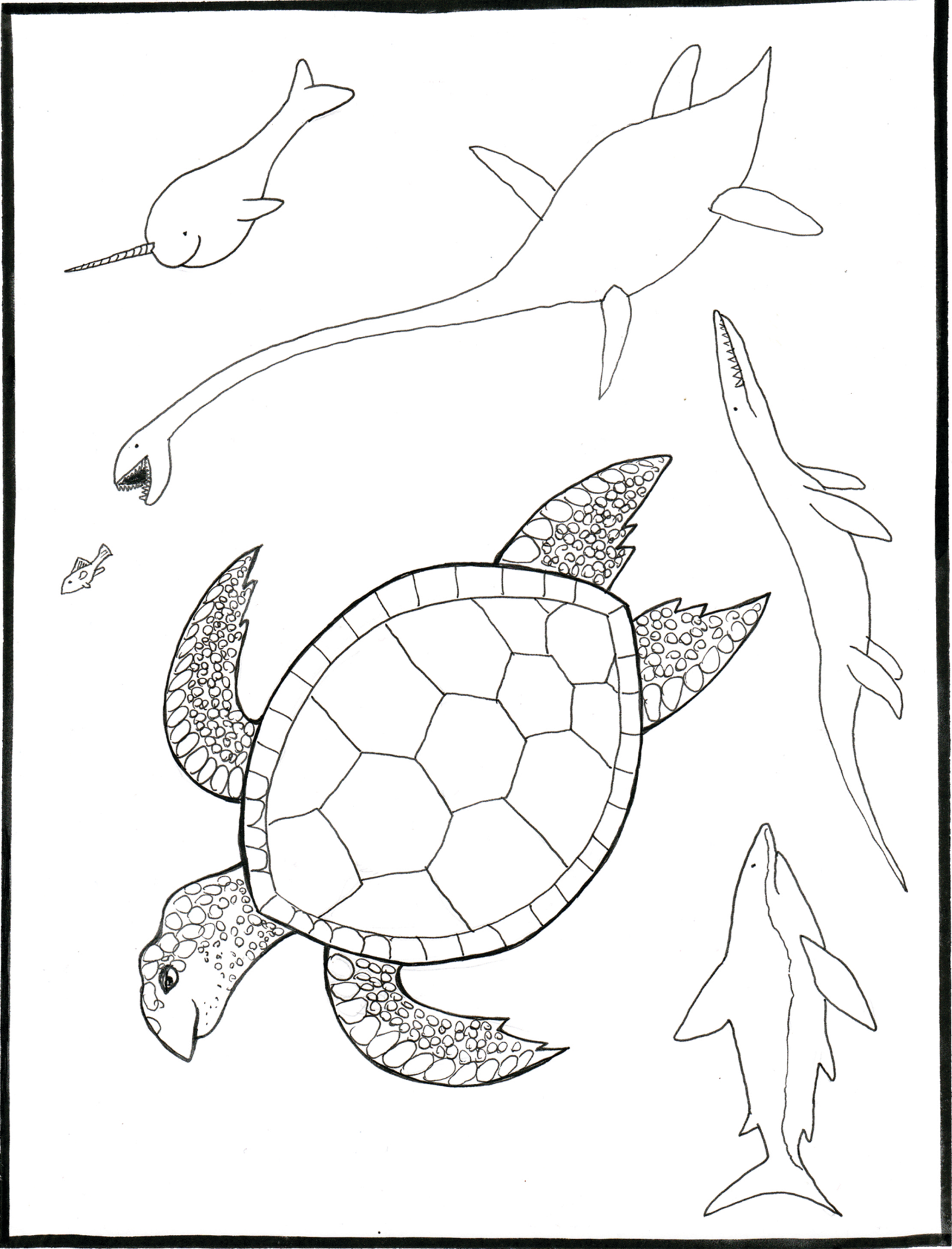


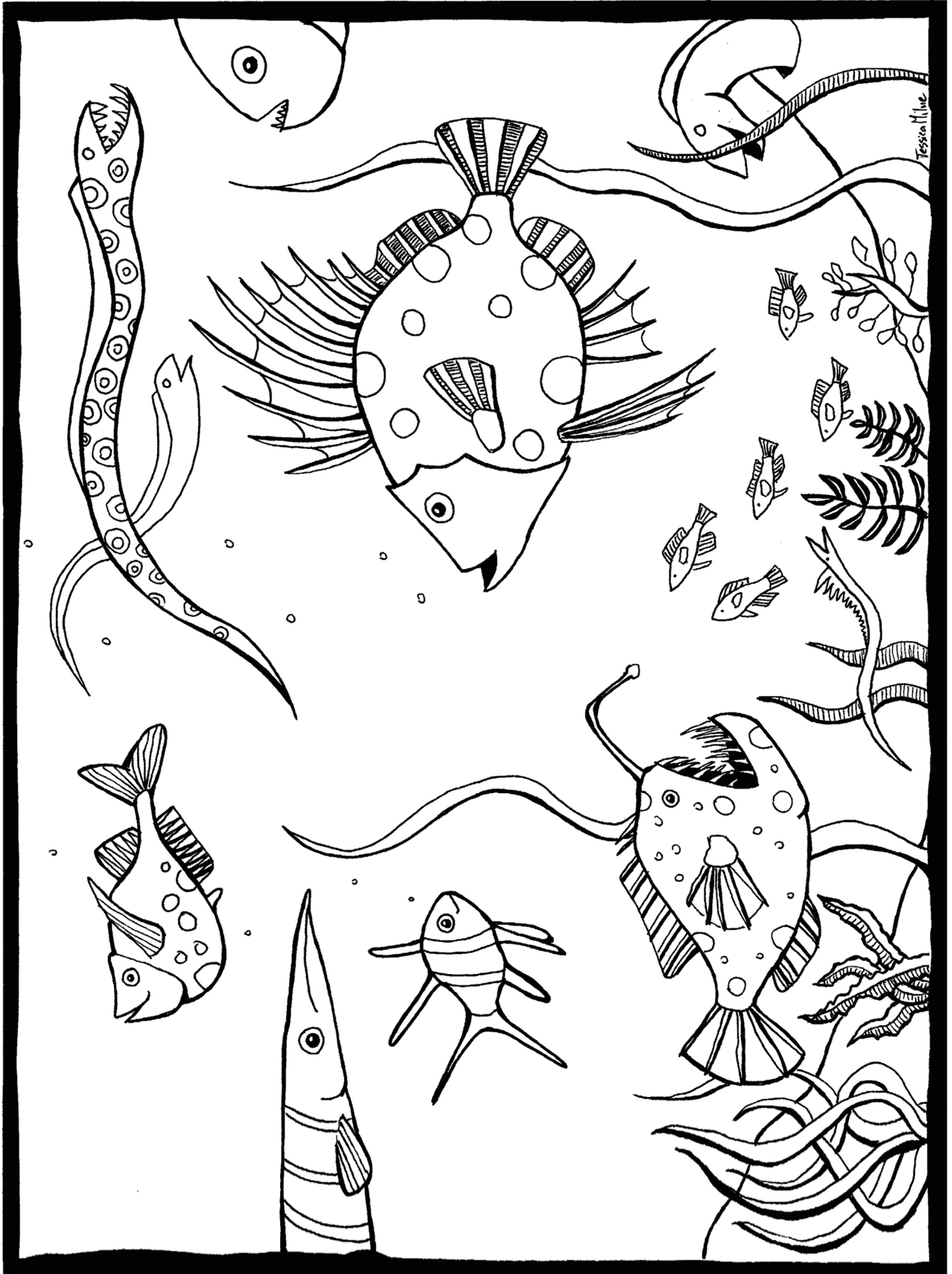






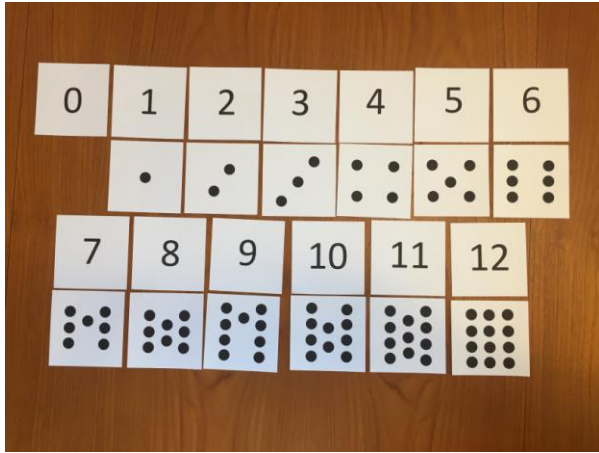




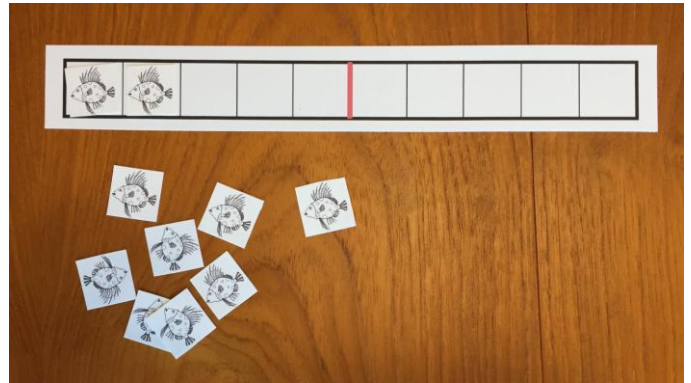


Jessica H. Line

Samples of games to be played by students:



Matching Numbers to Dot patterns



10 Square Grid with Fish Counters



Memory Game

References:

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