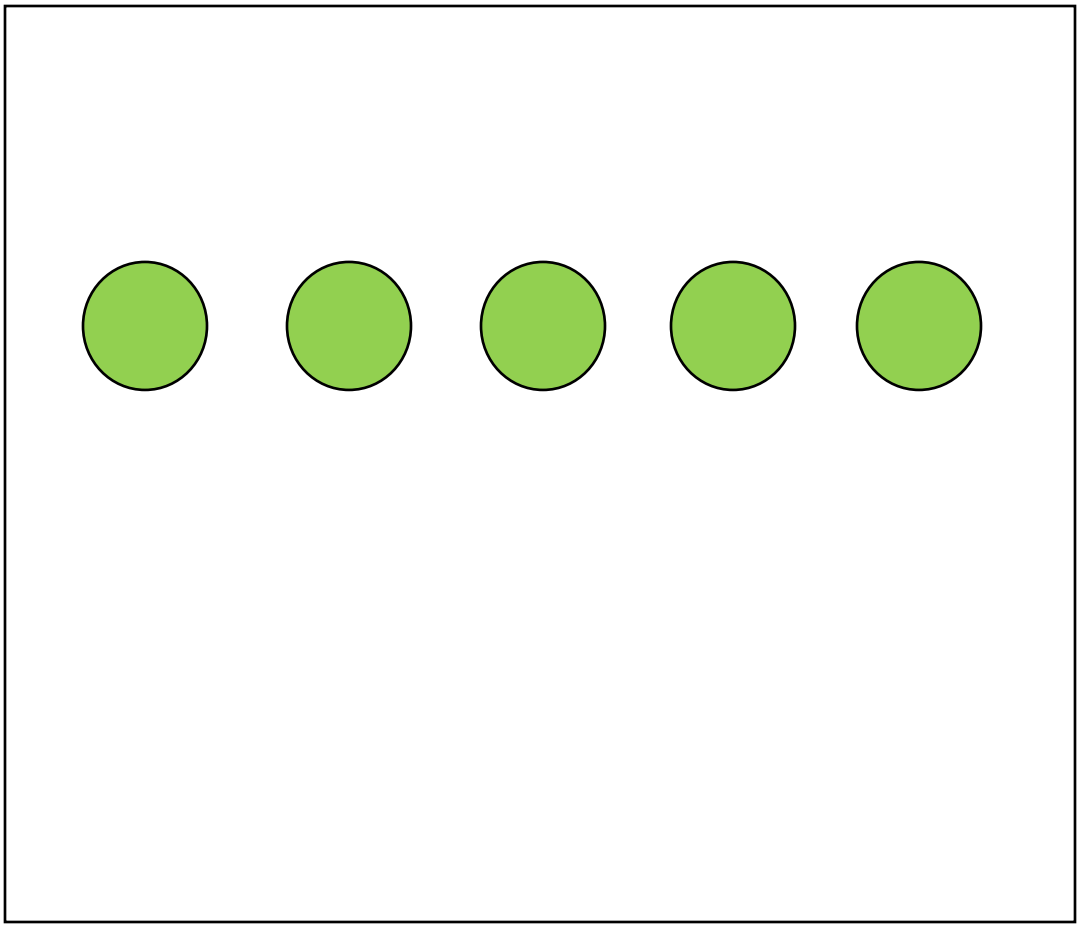
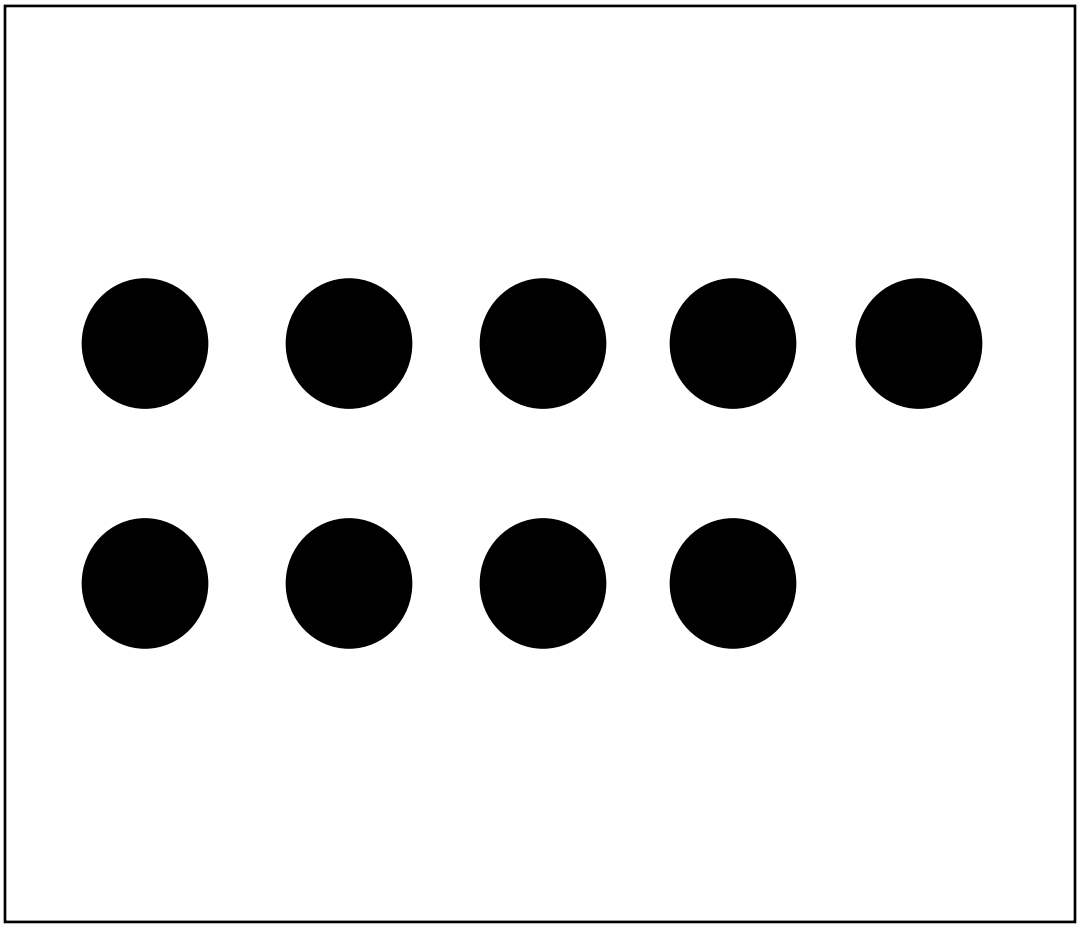
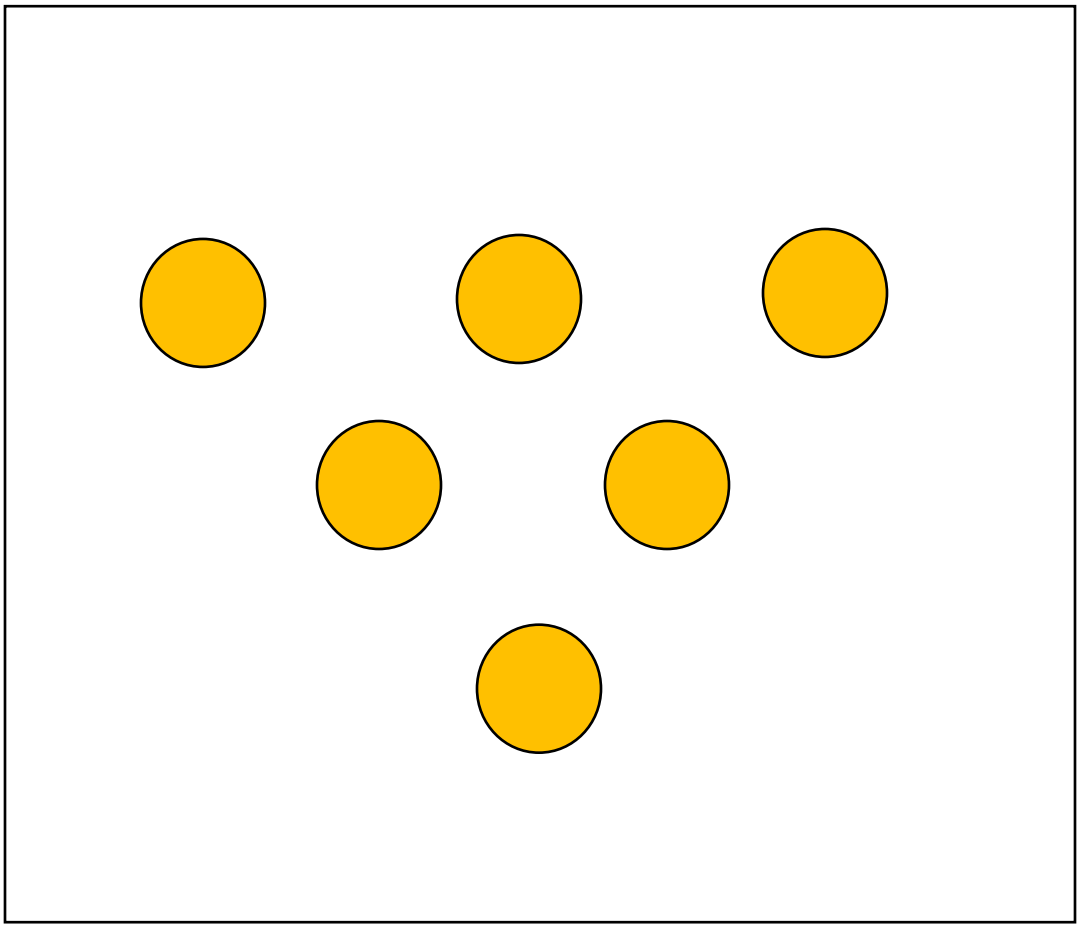
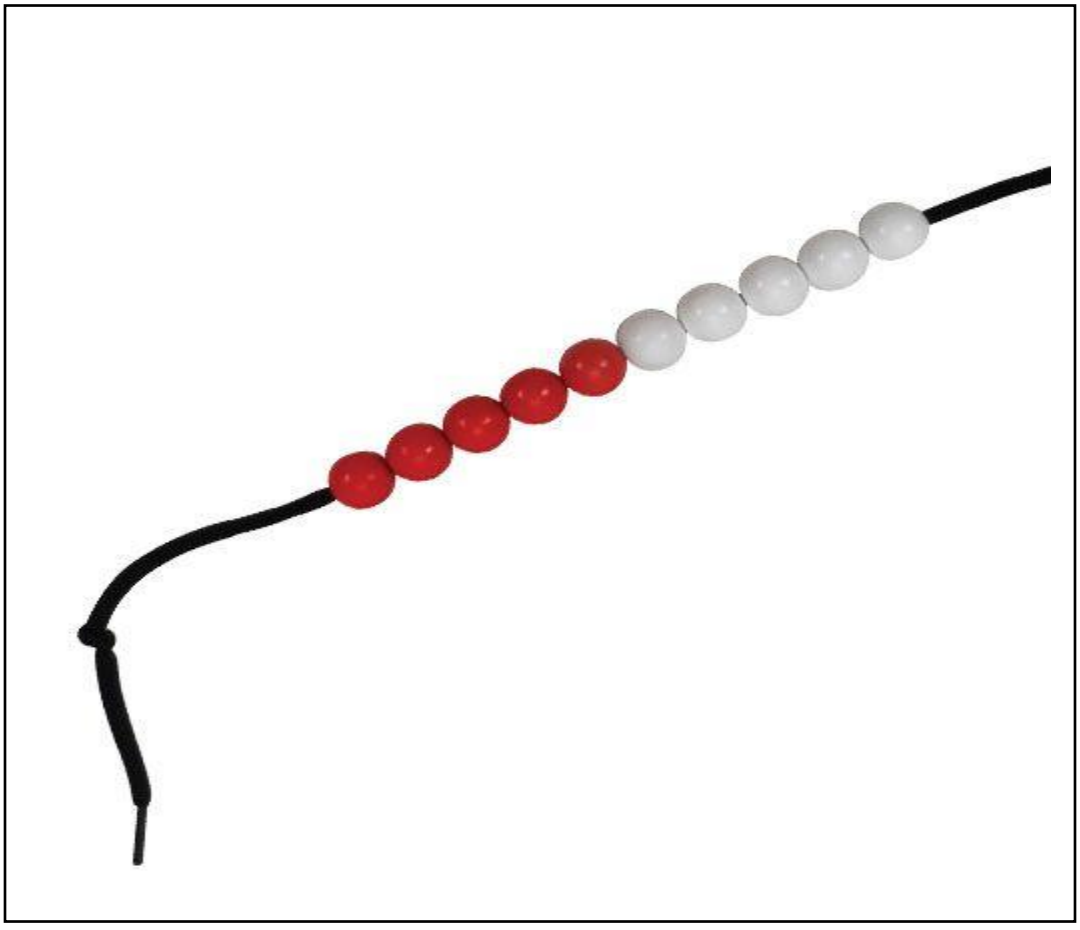
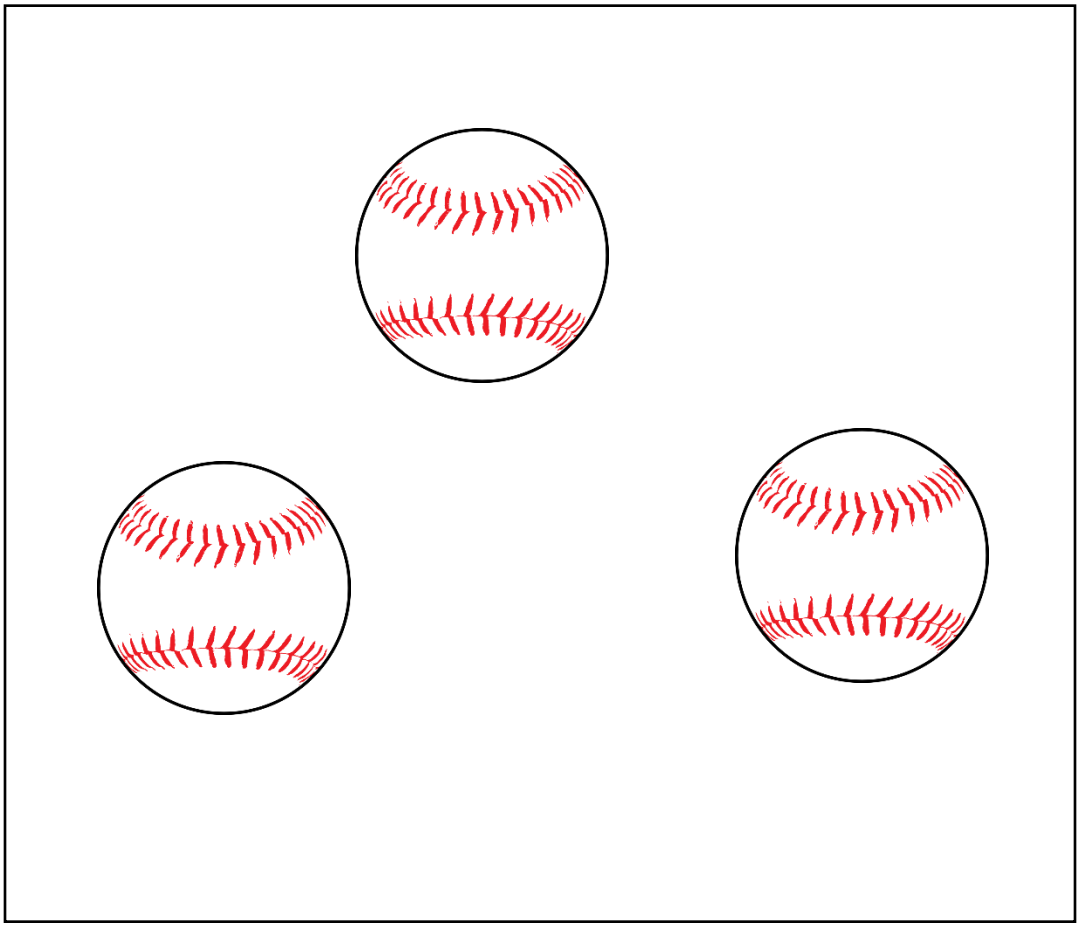
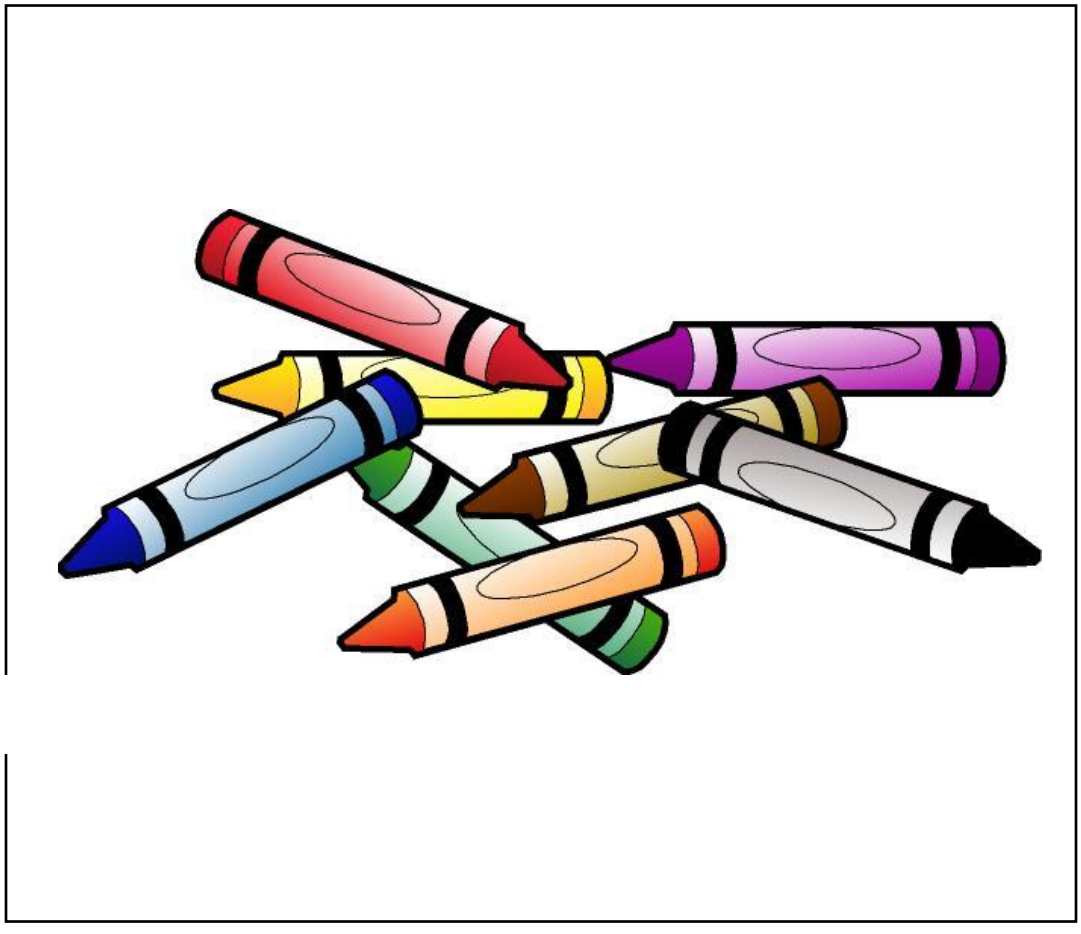


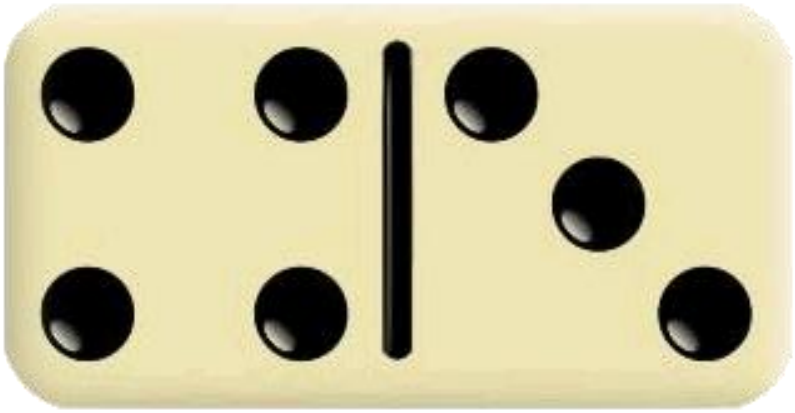


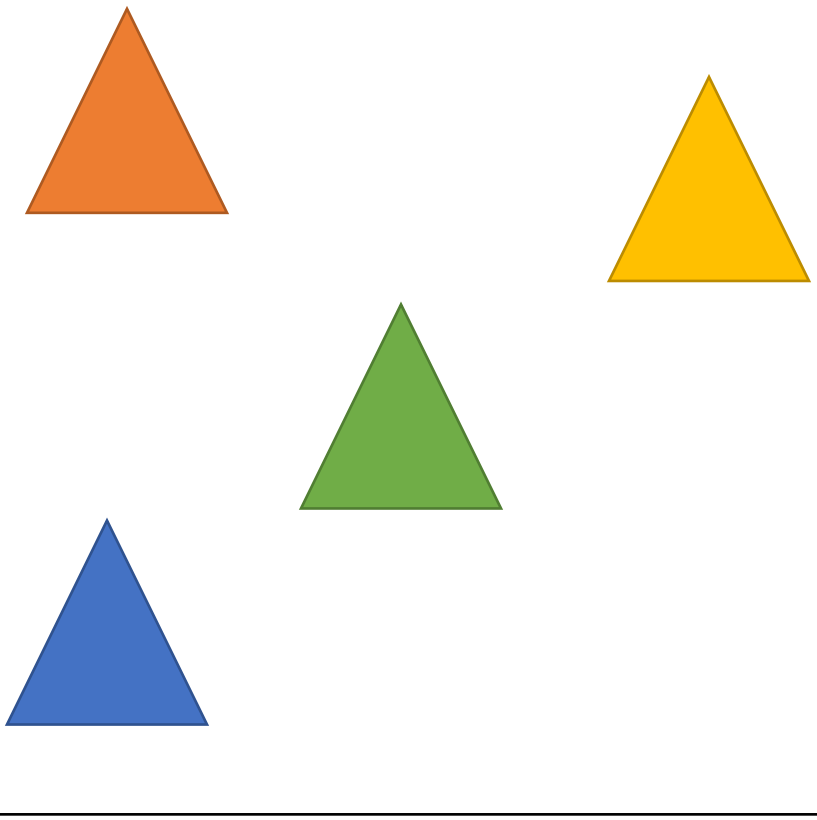


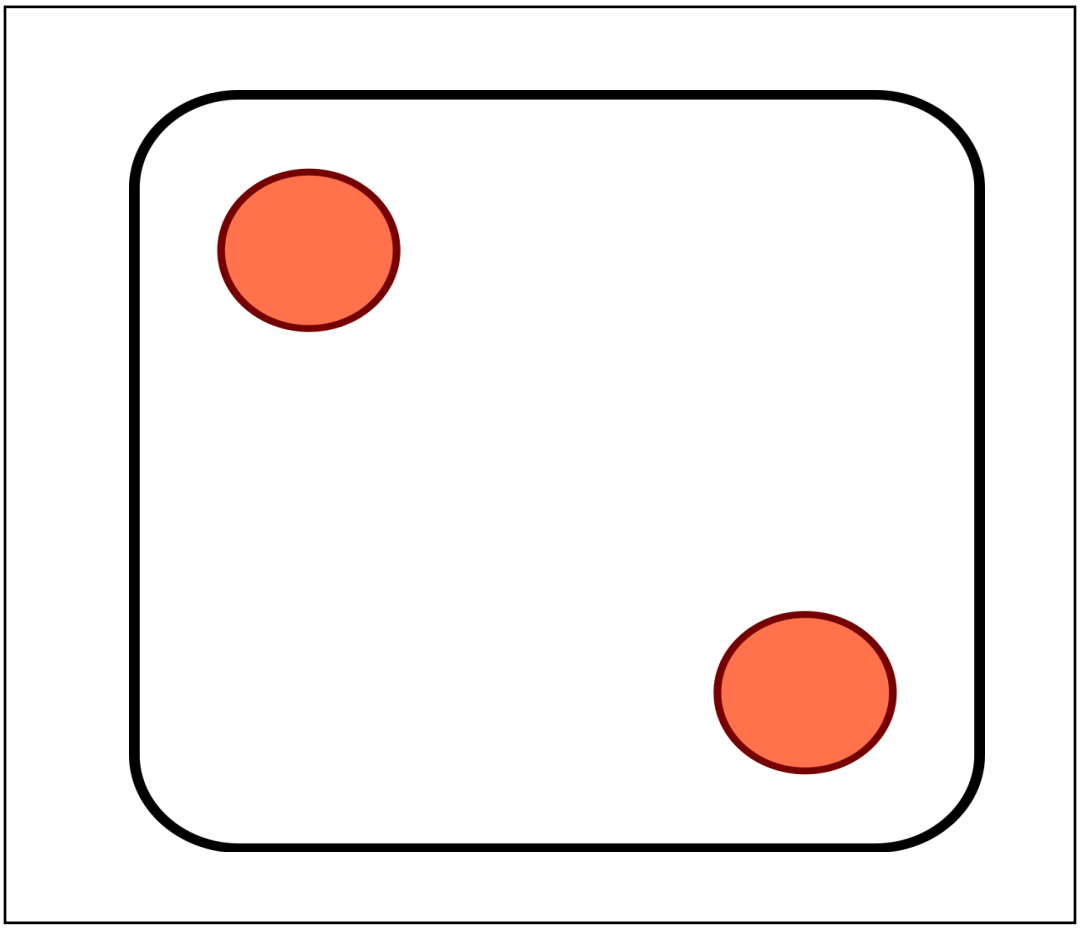


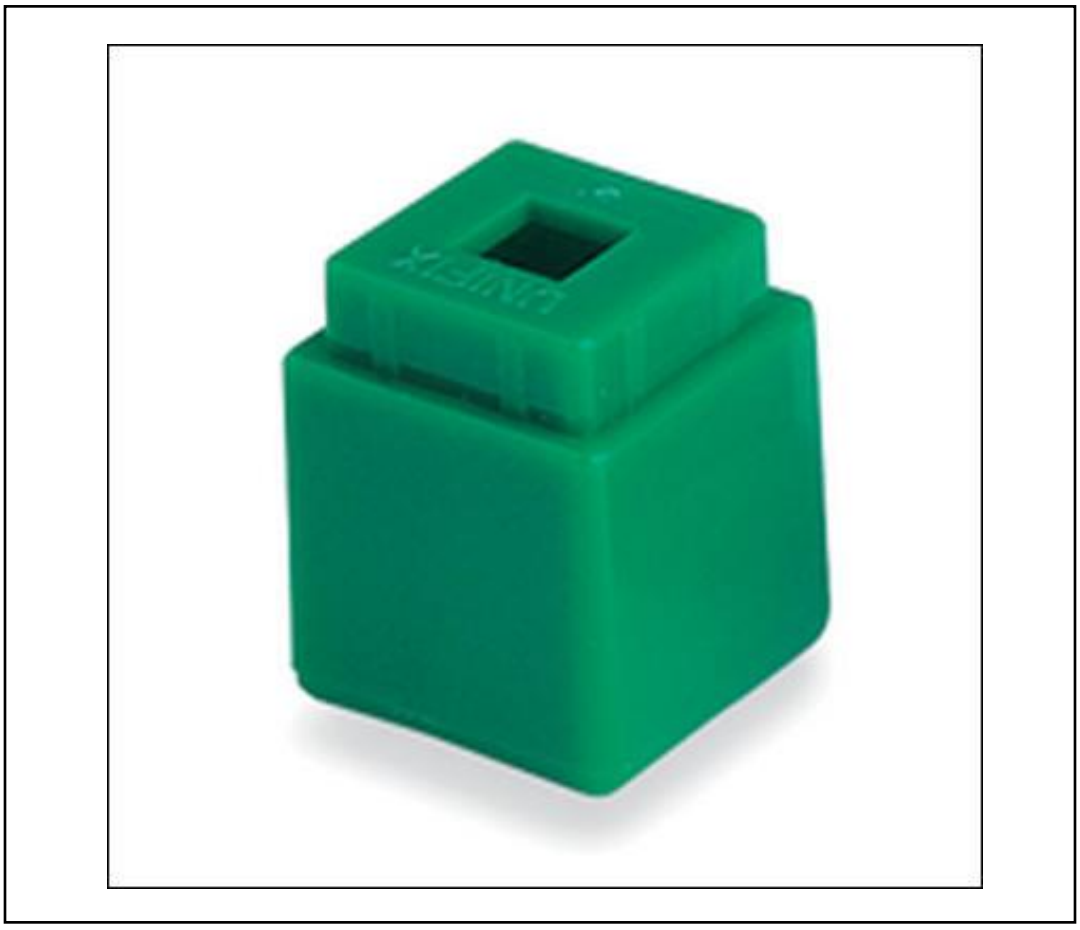


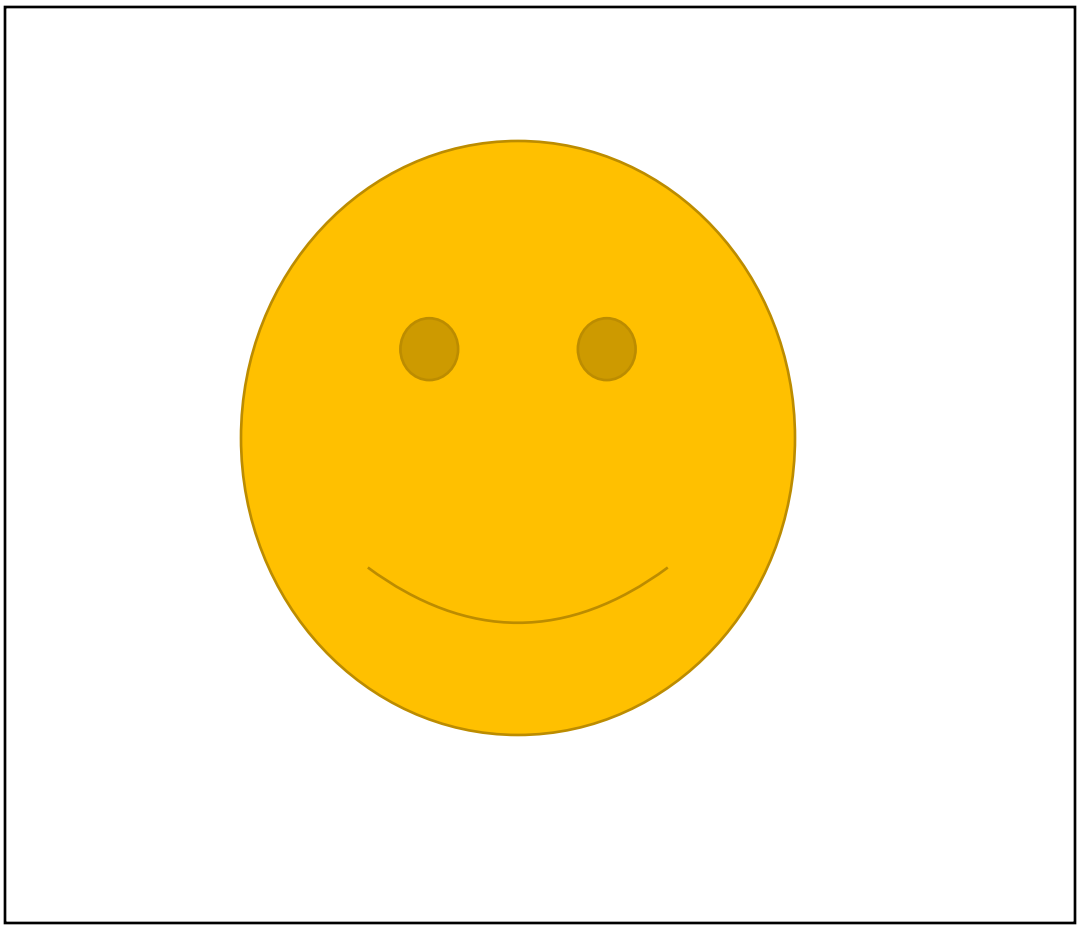


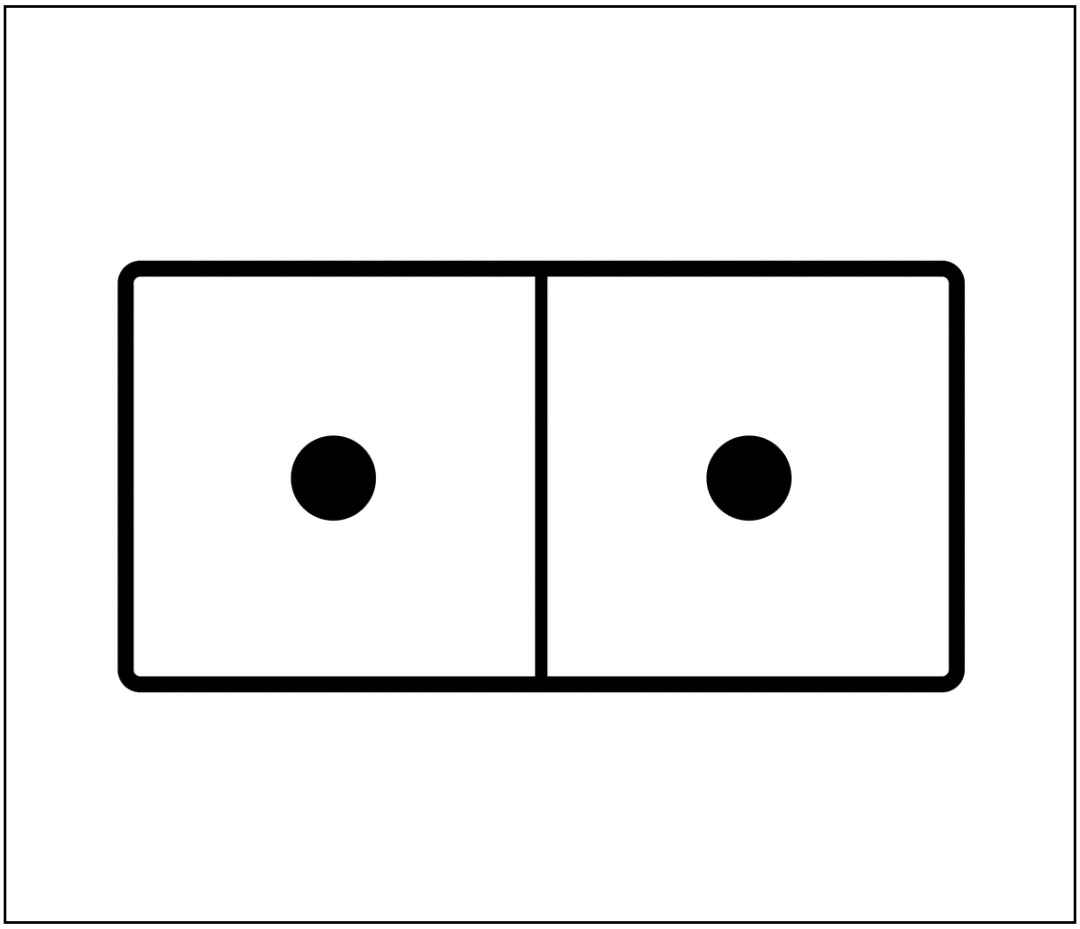


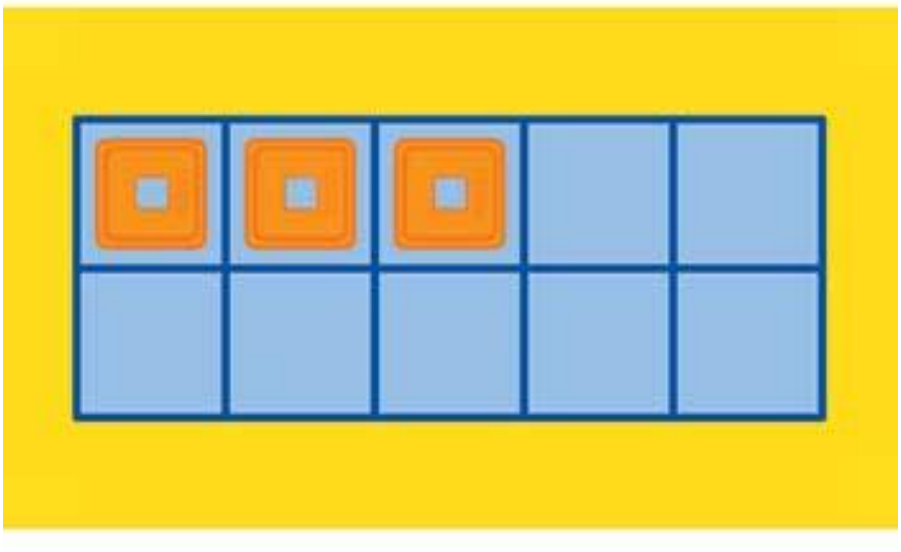


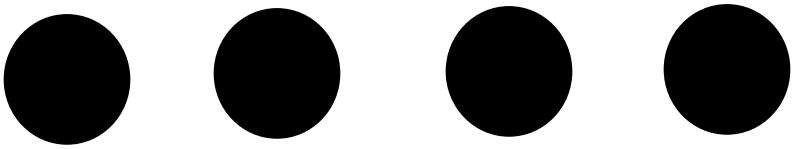


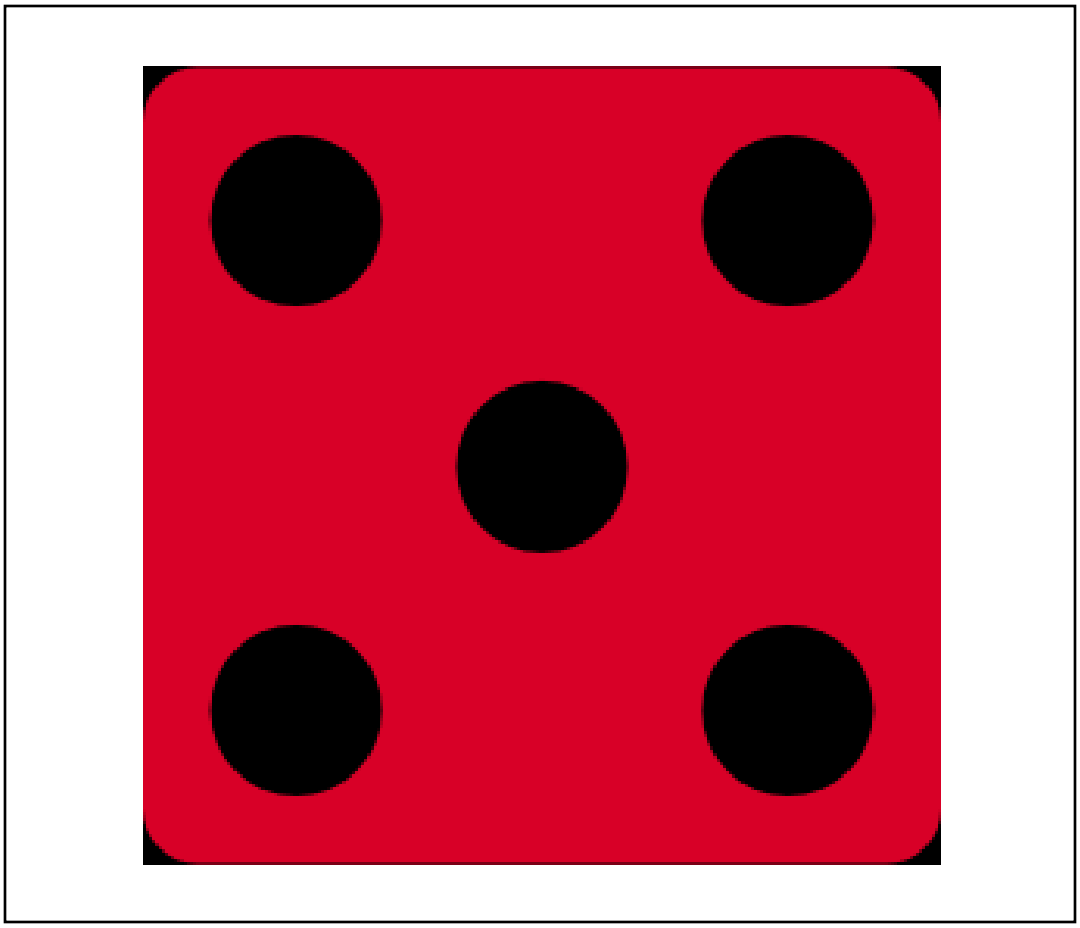


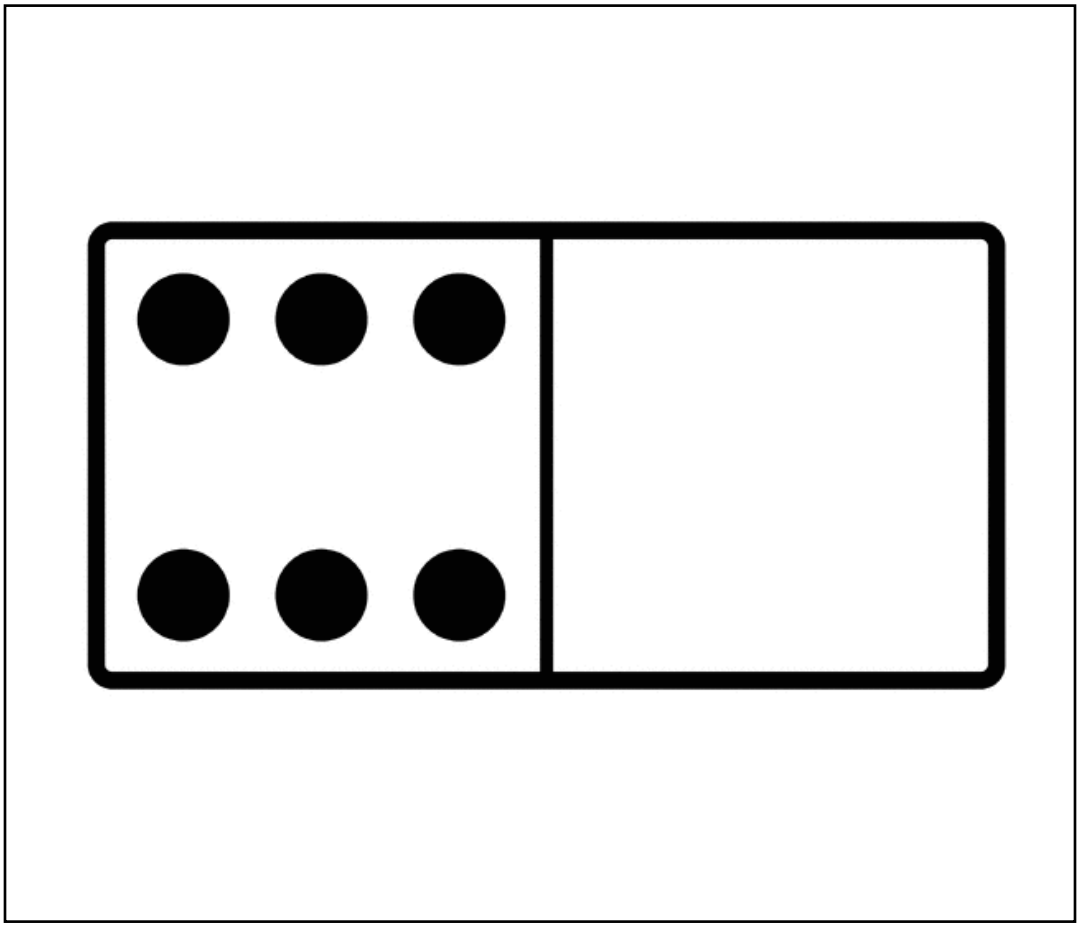


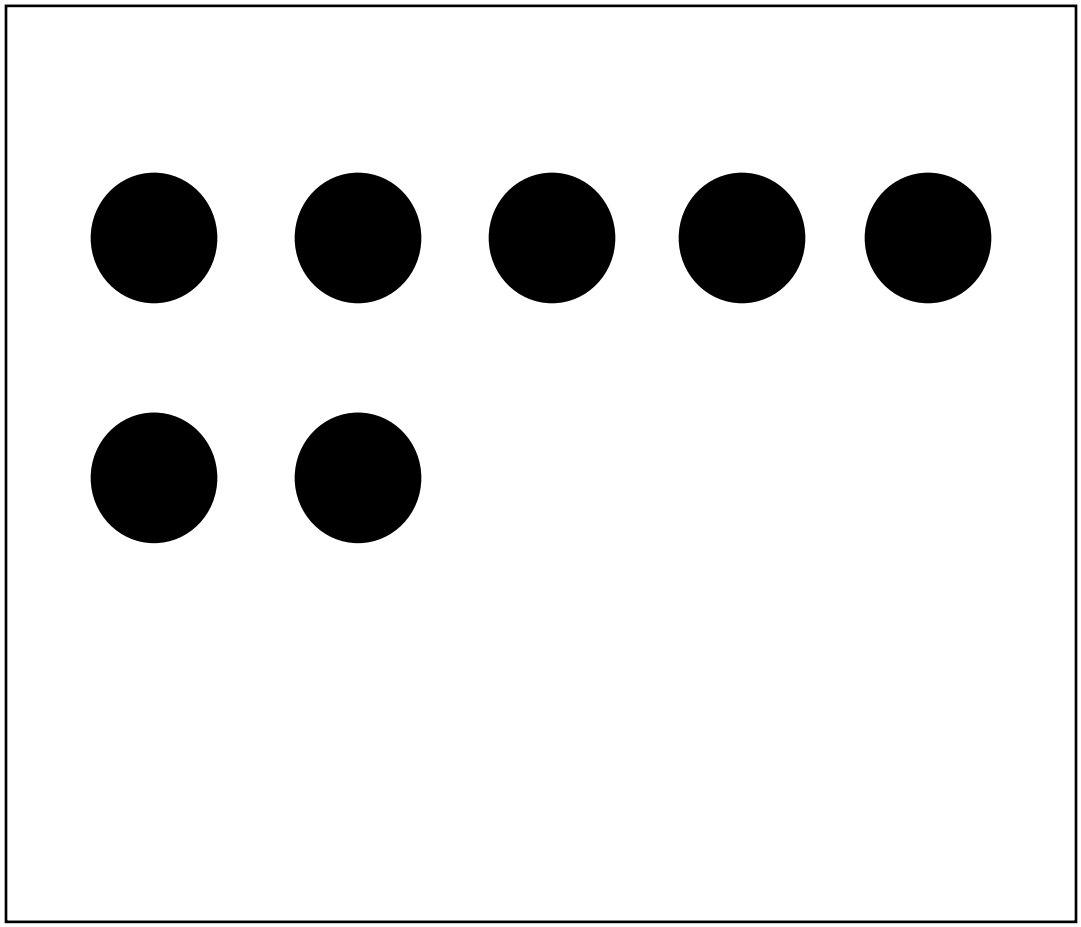


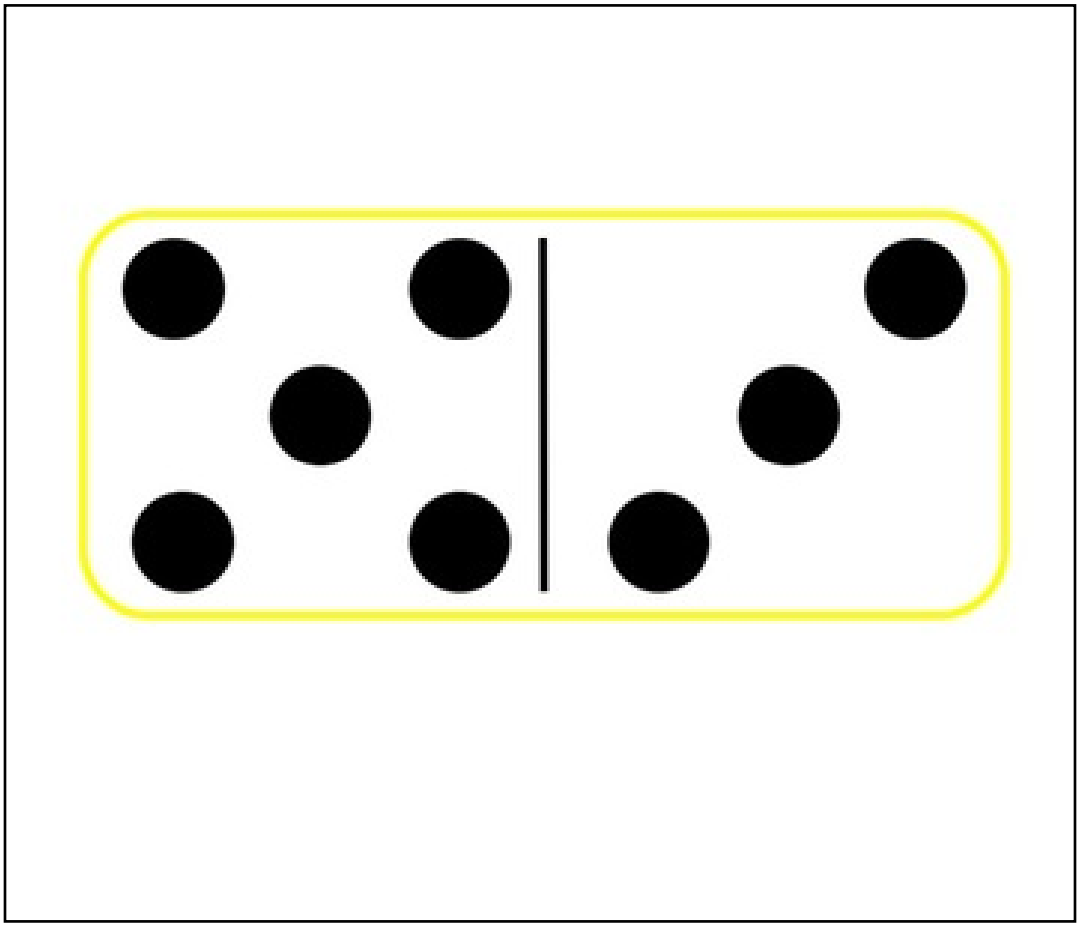


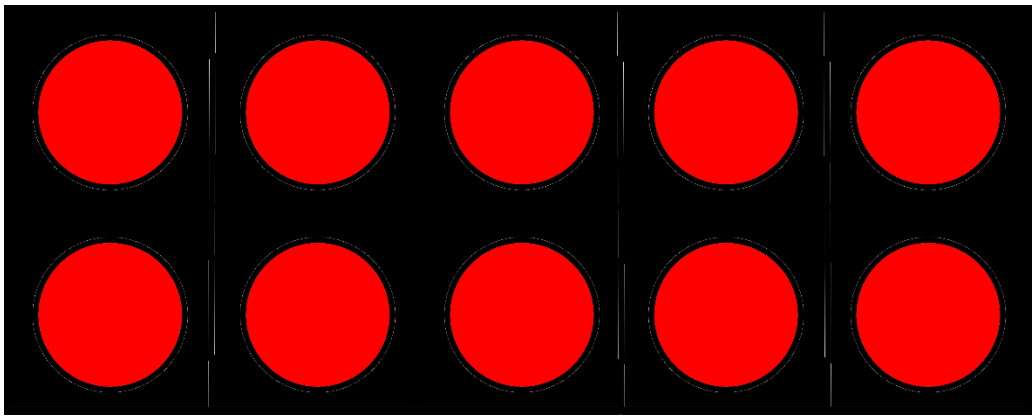






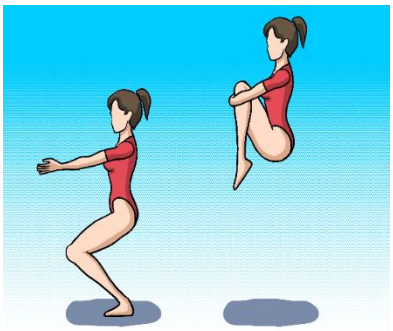


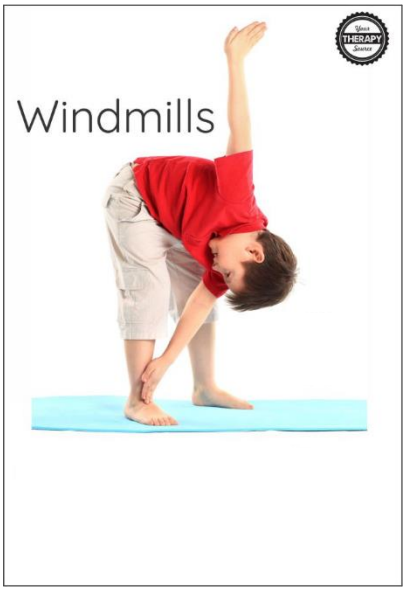


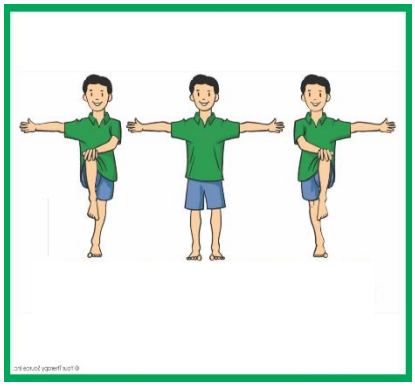


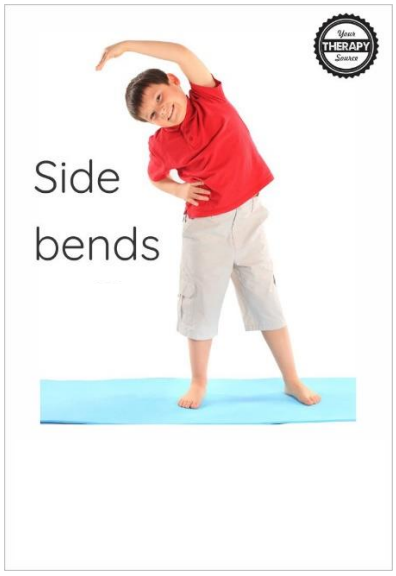
1	2	3
4	5	6

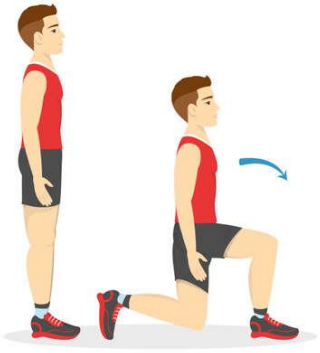
7	8	9
10		

		
		 Jumping Jacks


Windmills




Side
bends

Kindergarten Beebot Number Identification (1-10) Lesson Plan

Subject(s): Computer Science, Math, Physical Education

Grade: Kindergarten

Common Core Learning Standard(s) Addressed:

CCSS.MATH.CONTENT.K.CC.B.4.A

When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.

CCSS.MATH.CONTENT.K.CC.B.4.B

Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.

CCSS.MATH.CONTENT.K.CC.B.5

Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

*2.AP.A.01 With guidance, identify and model daily processes by creating and following algorithms (sets of step-by- step instructions) to complete tasks (e.g., verbally, kinesthetically, with robot devices, or a programming language). [Practice 4.4 Developing and Using Abstractions]

*2.AP.C.01 With guidance, independently and collaboratively create programs to accomplish tasks using a programming language, robot device, or unplugged activity that includes sequencing, conditionals, and repetition. [Practice 5.2 Creating Computational Artifacts]

*2.AP.M.01 Using grade appropriate content and complexity, decompose (breakdown) the steps needed to solve a problem into a precise sequence of instructions (e.g., develop a set of instructions on how to play your favorite game). [Practice 3.2 Recognizing and Defining Computational Problems]

2.PE.1.1 Students demonstrate fundamental locomotor skills.

2.PE.1.2 Students demonstrate fundamental body control skills.

2.PE.1.4 Students demonstrate fundamental movement concepts related to space, effort, and relationships.

Learning Targets/Objectives:

- Students will identify the numbers 1-10 represented in a variety of ways (numeral, ten frame, 5 groups, dice, scattered, domino, picture).
- Students will demonstrate one-to-one correspondence when counting objects in the range of 1-10.
- Students will use a Beebot to create an algorithm to reach the appropriate destination on the Beebot mat.
- Students will decompose the steps needed to solve the task with the Beebot.
- Students will demonstrate fundamental locomotor, body control, and movement concepts including crossing midline.
- Students will apply knowledge of counting in standard order for numbers 1-10 to perform the correct amount of exercises.
- Students will work collaboratively to solve the problem.

Relevance/Rationale:

This lesson ties together computer science (problem solving) with math and physical education to create an engaging cross-disciplinary authentic learning experience that incorporates higher level thinking. Students need to not only identify numbers

(1-10), but know how to collaborate and problem solve using that knowledge as well in order to program the Bee-Bot to reach the appropriate location.

Formative Assessment Criteria for Success:
You will know that students have successfully met the lesson's outcomes if they:

- Are able to accurately identify numbers 1-10 in a variety of formats (numeral, ten frame, dice, 5-group, picture, scattered, domino).
- Are able to count in standard order for numbers 1-10 to perform the correct amount of exercises (one-to-one correspondence).
- Are able to create and follow an algorithm to find the appropriate destination with the Beebot.
- Are able to decompose and explain the steps necessary to program the Beebot to solve the task.
- Are able to demonstrate fundamental locomotor, body control, and movement concepts including crossing midline.
- Are able to work collaboratively to solve the problem.

Activity Steps:
Pre-activity prep: Print attached cards. The larger cards can be placed at various locations on a Beebot mat. The numeral cards should be stacked in one pile, the exercise cards should be stacked in another pile.
Pre-requisite knowledge: Students should be familiar with a Beebot and the basics of programming it. Students should be proficient at identifying numeral numbers 1-5 or 1-10.

1. Begin the lesson by sharing learning targets with students (Ex: I will count objects within 10. I will program a Beebot to go to the correct number. I will perform the correct number of exercises)
2. If needed, give students a quick refresher course in Beebot operation.
3. Explain to students that they will be using their knowledge of number identification and counting to problem solve and do some fun exercises.
4. In small groups (2-4 students) explain and demonstrate the activity to students. Beebot maps should already be set up for the groups along with the 2 piles of cards (numeral cards, exercise cards). First, students should draw a numeral card (ex: 5). Then, the group will work together to find a matching number of objects on the Beebot mat (there is more than one correct answer). Once they have decided where they want to go, they should collaborate to decompose the steps needed to reach the appropriate location. Then students should enter the program on the Beebot. If it ends up at the correct location, students will then draw an exercise card and perform that number of exercises (so if they drew the numeral 5, they will perform 5 of that exercise). If the Beebot did NOT reach the intended location, they should collaborate to problem solve to figure out how to reprogram the Beebot to get to the correct location. Offer scaffolding and encouragement as needed. Have students participate in the activity for 10-20 minutes.
5. When finished, reflect on the learning experience. Ask students if they met their learning targets. Ask them what

they liked and didn't like about the activity. Ask them what they want to work on getting better at for next time.

Resources/Materials:
Beebots, Beebot mats, Beebot cards (attached), Numeral cards (attached), Exercise cards (attached), Learning targets. Optional: whiteboard and dry erase markers to draw decomposed steps for Beebot to follow.

Modifications/Accommodations:

- For students not solid on numbers 6-10, just use numbers 1-5 instead.
- Instead of having two options on the Beebot mat, just place out one option. This will help if students are struggling with programming the Beebot.
- Have students use the whiteboard and dry erase marker. Assist them as necessary to map out steps before programming the Beebot.
- For students unable to perform some/all of the physical exercises, they can be modified. Ex: students could do wall push-ups instead of on the floor, Students unable to stand can do toe touches and windmills sitting down. Alternate exercises can be used as well.
- For more advanced students, have them program the Beebot to find TWO correct answers on the Beebot mat before drawing an exercise card.
- For more advanced students have them find the number that is one more or one less than the numeral card they drew.