

How Many? Counting Centers

Strand:	Number and Number Sense
Topic:	Count to tell how many are in a set
Primary SOL:	K.1 The student will a) tell how many are in a given set of 20 or fewer objects by counting orally; and b) read, write, and represent numbers from 0 through 20
Related SOL:	K.3a, K.4a, K.4b, K.12

Materials

- Number paths (provided below)
- Small objects in plastic bags representing 0-20
- Small cups
- Small objects/counters (e.g., beads, beans, counting bears)
- Number cards 0–20 (provided below)
- Ribbons of various lengths
- Index cards
- Containers of various sizes
- Paper lunch bags of various colors
- Tub of objects that can be sorted (e.g., colored cubes, tiles, pattern blocks, beads, colored pom-poms)

Vocabulary

count, number, numeral, set, zero (0), one (1), two (2), three (3), four (4), five (5), six (6), seven (7), eight (8), nine (9), ten (10), eleven (11), twelve (12), thirteen (13), fourteen (14), fifteen (15), sixteen (16), seventeen (17), eighteen (18), nineteen (19), twenty (20)

Student/Teacher Actions: What should students be doing? What should teachers be doing?

Note: The size of the numbers that students work with will increase throughout the year until students can confidently and accurately count 20 (or more) objects. Students should not be expected to count objects greater than the highest number that they can correctly produce in the rote counting sequence. Because student readiness levels are different, students may be working on counting experiences with differing ranges of numbers.

Note: Number paths can be used to provide support for counting and numeral recognition and formation. A number path is a counting model where each number is represented within a square and the squares can be clearly counted. See subsequent pages for student copies.

1. Before beginning the lesson, assemble all of the centers described in step 3 and place the centers around the room. Each center helps students to see numbers as quantities and to develop cardinality – the idea that counting tells how many are in a set.
2. Show a “treasure box” containing seven shells (or whatever small item you may have) and a number path with the number 7 circled. Provide a scenario such as the following:

Jamie found a treasure box. Inside the box was a collection of shells and a strip with some strange symbols on it. Jamie wondered if it was some kind of secret code.

Show the students the shells and the number path. Ask: *What do you think this strip of paper with these strange symbols might be? Why do you think one of the symbols (the 7) might be circled?* Let student ideas guide the discussion that the symbols are numbers, numbers are used to count, and the 7 might be circled because there are 7 objects. Let students demonstrate counting the shells. Ask questions like: *Why do we have to say the numbers in that order? How did you know to stop at seven when you were touching the shells? Can we touch each shell two times when we count? If I put the shells in a different arrangement, will I end up with a different amount? I wonder if this strip of paper could actually help us show that there are seven shells.* If students do not suggest putting the shells on the strip starting at one, suggest trying that. Demonstrate using the number path to help count, also showing what happens if you skip a number or place two shells on one space.

3. Explain to students that they are going to be able to work at different centers that involve counting to figure out how many objects there are. Explain that at some of the centers there will be number strips (called *number paths*) that might help them.
4. Demonstrate the expectations for working at each center. You may want to only introduce one or two centers each day so that students don't have to remember all of the expectations at one time. Some students can be given independent work at their seats as you rotate groups through the centers that have been introduced. You can gradually work up to having all students working at all of the centers. Listed below are the materials and recording activities for each of the centers:
 - **Collections Center:** Give each student a number path using a range they can confidently and accurately count to. (Students may have different number paths according to their independent working levels.) The attached number paths can be modified as needed. Have bags prepared with small objects to represent each number 0–20. Each bag should contain a different type of small item. (Using different types of objects will help to keep objects from accidentally migrating from one bag to another.) Individually, students will choose a bag and count the objects inside by placing each object on the number path starting at one. Students place all of the objects back in the bag before counting another collection. To help differentiate the activity for students with varying abilities, bags containing 0 to 5 objects can be one color, bags containing 6 to 10 objects can be a different color, and bags that contain 11 to 20 objects can be a third color. Students can be directed to work on a certain color bag.
 - **Cup Center:** Provide cups filled with small objects (such as beans) representing numbers 0–20. Provide number cards 0–20. Students will count the objects in each cup and match the cup to a number card. Students place all of the objects back in the cup before counting a different cup. To help differentiate for varying abilities, cups can be color coded as described in the Collections Center above. As students become more proficient with writing numerals, they can write numerals on index cards instead of using the numeral cards. Number paths can be available for students who need that support.

- **Dot Card Center:** Students count to determine how many dots are on a dot card by placing a cube (or other small object) on top of each dot. Students can then place a numeral card (or write the numeral on a small piece of paper) next to the dot card that matches each numeral.
 - **Ribbon Center:** Provide ribbons of various lengths and small objects/counters. Label the ribbons A, B, C, etc. Students will count to find out how many counters fit along the length of each ribbon. Have students record the letter of their ribbon and the numeral/number of dots that represents the number of counters that fit along that ribbon on an index card or in their journal.
 - **Container Center:** Provide containers of various sizes and small objects/cubes. Label the containers A, B, C, etc. Students will count to find out how many objects fit in the containers. Have students record on an index card or in their journal the letter of their container and the numeral/number of dots that represents the number of counters that fit in the container.
 - **Mystery Bags Partner Center:** Provide paper bags and small objects/counters. Individually, students will create a mystery bag for a number of their choosing 0–20 and record the number of objects on a small card to remember how many counters they put in the bag. They will give their bag to another student in their group. That student will count the objects in the bag and tell the number to the bag’s creator. The bag’s creator shows the numeral card and determines whether the student is correct.
 - **Scoop, Sort, and Count Center:** Put out a tub of objects that can be sorted in different ways. Have students use a container to scoop out some objects, sort them into categories and then count to describe how many are in each category. Students can use number cards or write the numeral on index cards to label each category. The range of numbers students will count can be differentiated by changing the size of the objects or the size of the container used to scoop.
5. As students are working at the centers, observe and interact with them. As you observe each student consider the following: *Does the student use the correct rote counting sequence? Does the student use one-to-one correspondence as they count the objects? Is the student developing reliable ways of keeping track of what has already been counted as they count? Is the student confident? Is the student accurate? Does the student realize that the last number they say tells how many there are? (If you ask, “How many?” after they have finished counting, do they tell you or do they recount?)*
6. At the end of the class period, come back together whole group. Call on various students to share their experience in each center. *What did you count today? How many _____ were there? How did you use a number path today? Were you surprised about anything? What was easy? What was difficult? Did you help anyone today? Did you work hard today?*

Assessment

- **Questions**
 - How did you use your number path?
 - Once you counted the objects in the cup, how did you know which card to pair it with?
 - How did you come up with the number of objects that fit the length of each ribbon? Filled each container?
 - When you covered the dots, what were you also doing?
- **Journal/writing prompts (include a minimum of two)**
 - Choose a number from zero (0) to twenty (20). Draw a picture representing that number. Try to write the number next to your picture. (Remember, writing numerals may not be assessed until a later date.)
 - Ask students to draw a box in their journals. Show them some stickers and ask, “How many stickers do you think will fit inside the box if your stickers cannot overlap at all?” (You may need to demonstrate what this means.) Let them make an estimate and then use stickers to figure out how many fit and write the number that tells how many stickers are in the box.
- **Other Assessments (include informal assessment ideas)**
 - Observe students in each of the centers. Ask questions relating to the numbers they are counting to.
 - Use a student interview. Show a student a pile of 15–20 counters. Ask the student to figure out how many counters there are. Without providing any guidance, observe how the child figures it out.

Extensions and Connections (for all students)

- Be aware of opportunities to count items throughout the course of the day—the number of books in a basket, the number of students on a piece of playground equipment, the number of people standing in line, the number of chairs around a table, the number of people buying lunch, the number of boys in the class vs. the number of girls in the class, etc.
- Have students fold an 8½” x 11” piece of paper into four boxes. As they move through the centers, have them illustrate what they accomplished in each of the boxes (e.g., draw the cups and number card that match from the Cup Center.)
- Display a teacher-created picture of a garden, with various numbers of flowers, bugs, clouds, etc. Students can create their own garden scene with self-selected numbers of the same items. With a partner, students can count how many of each item is pictured.
- For the Ribbon Center and the Container Center, provide different-sized manipulatives for students to use. Discuss how the size of the manipulative affects the measure.

Strategies for Differentiation

- For students requiring additional support with mobility and performance of the tasks in each counting center (i.e., counting, patterning, grouping, recording, writing), assign a peer buddy or classroom aide to assist with any switch-activated devices and to give visual or occupational support as needed.
- Differentiate centers as described above, and be sure to include numeral cards for students who cannot yet write numerals. Also, allowing students to draw a corresponding number of dots is helpful for those unable to form numerals correctly.
- Provide a recording sheet for centers, as needed.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Number Paths


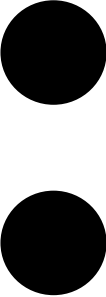

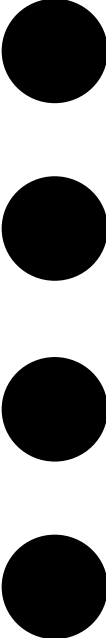
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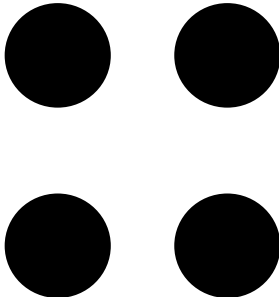
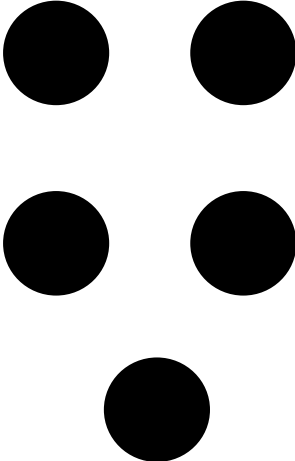

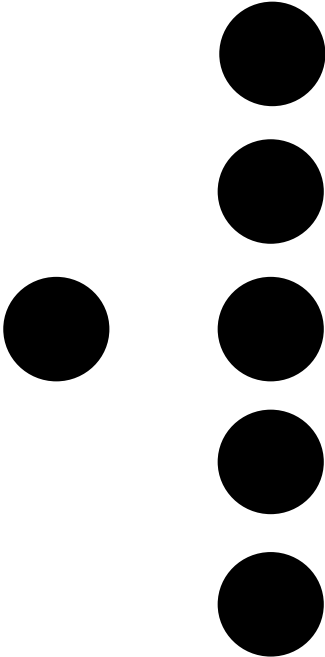
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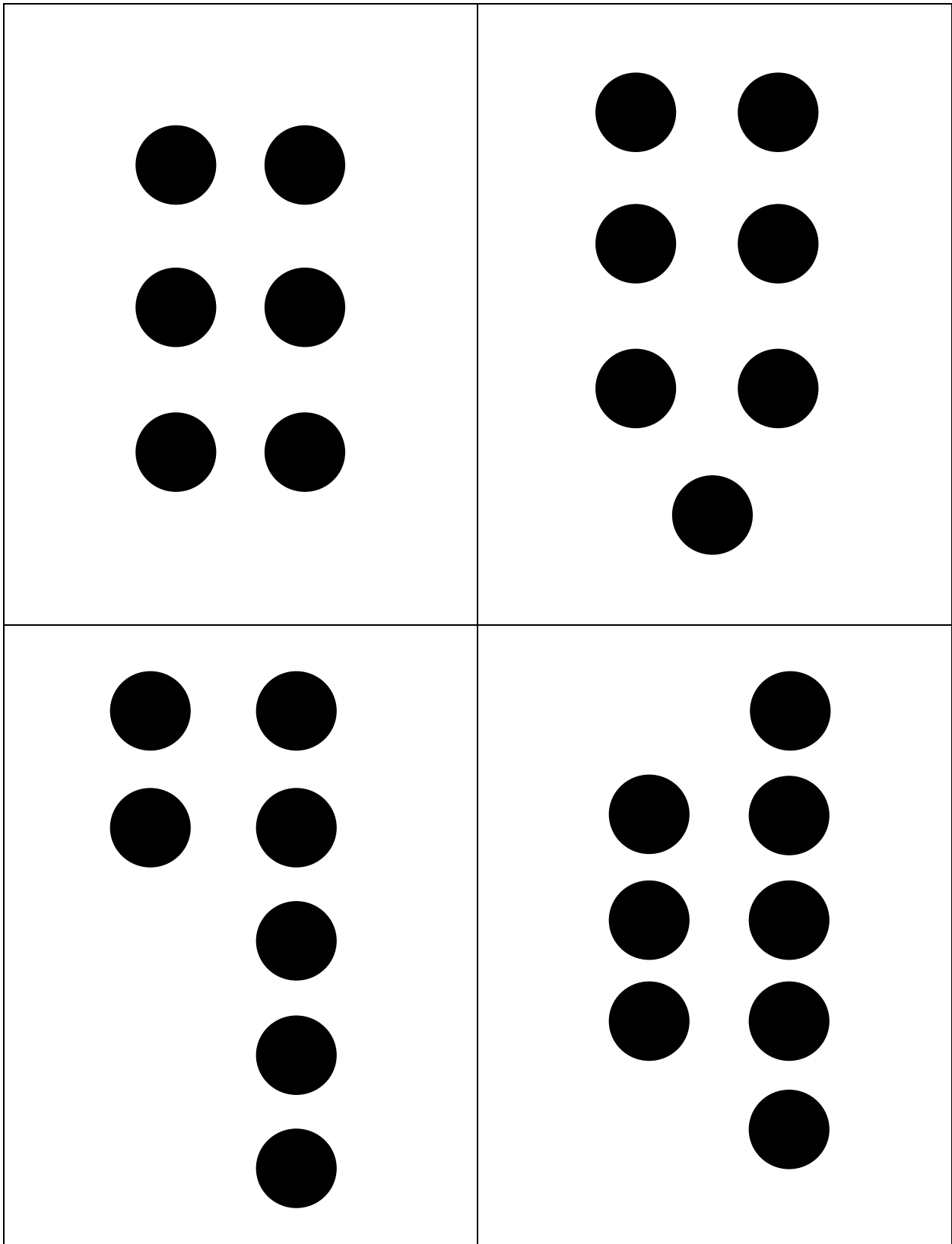
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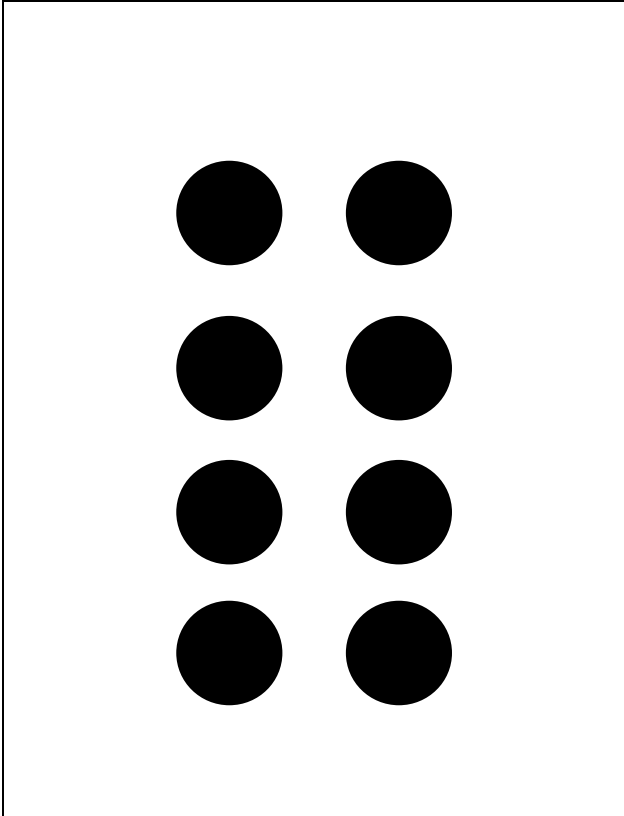
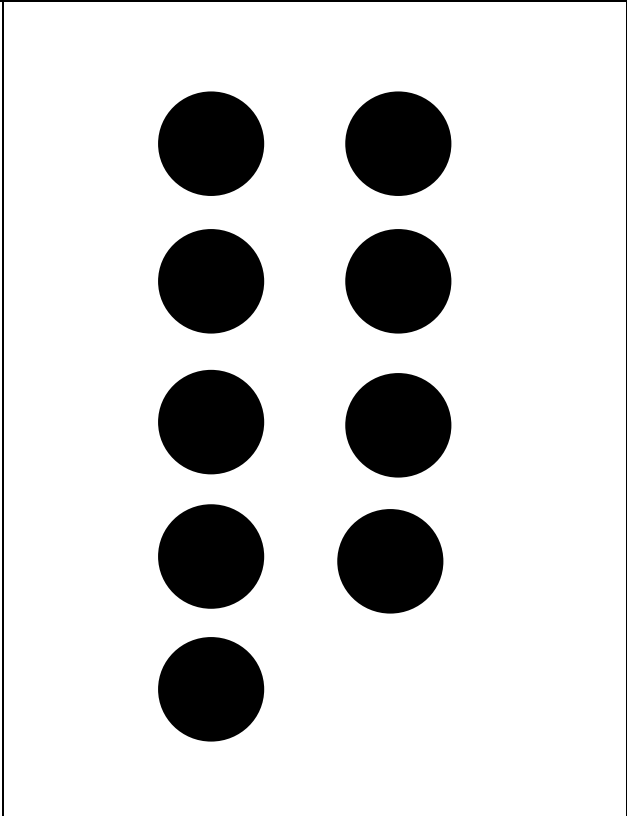
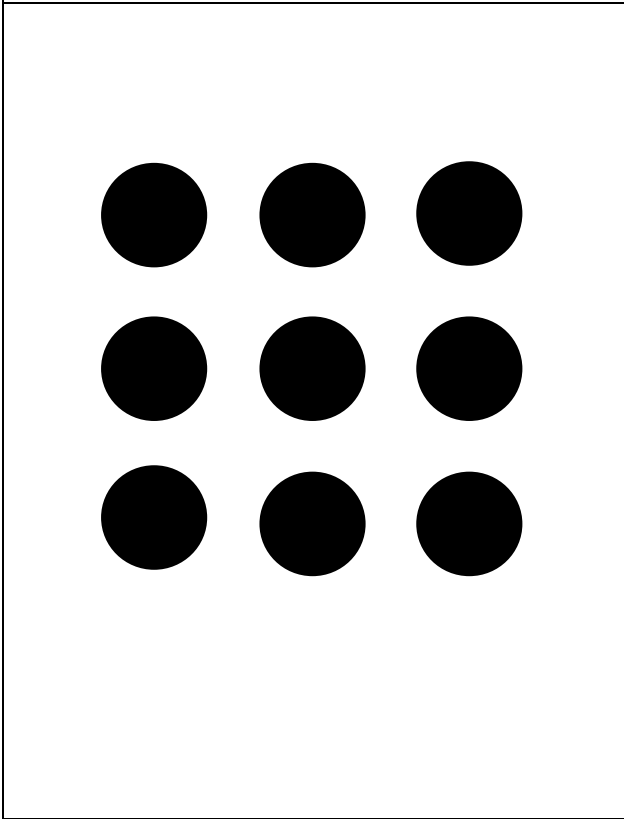
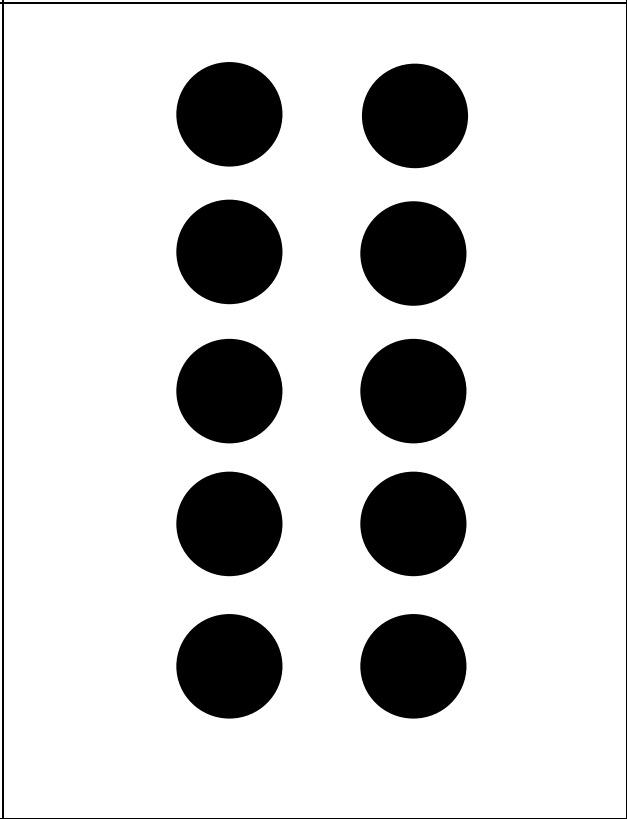
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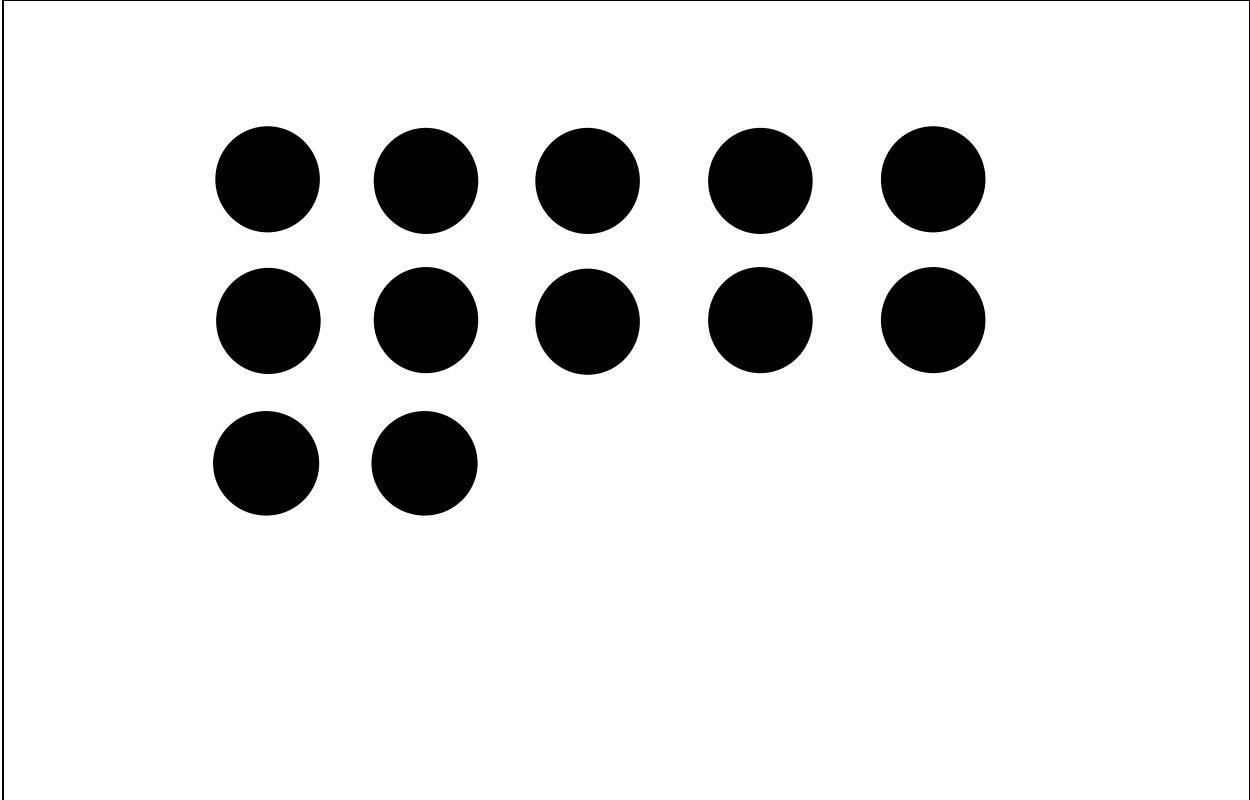
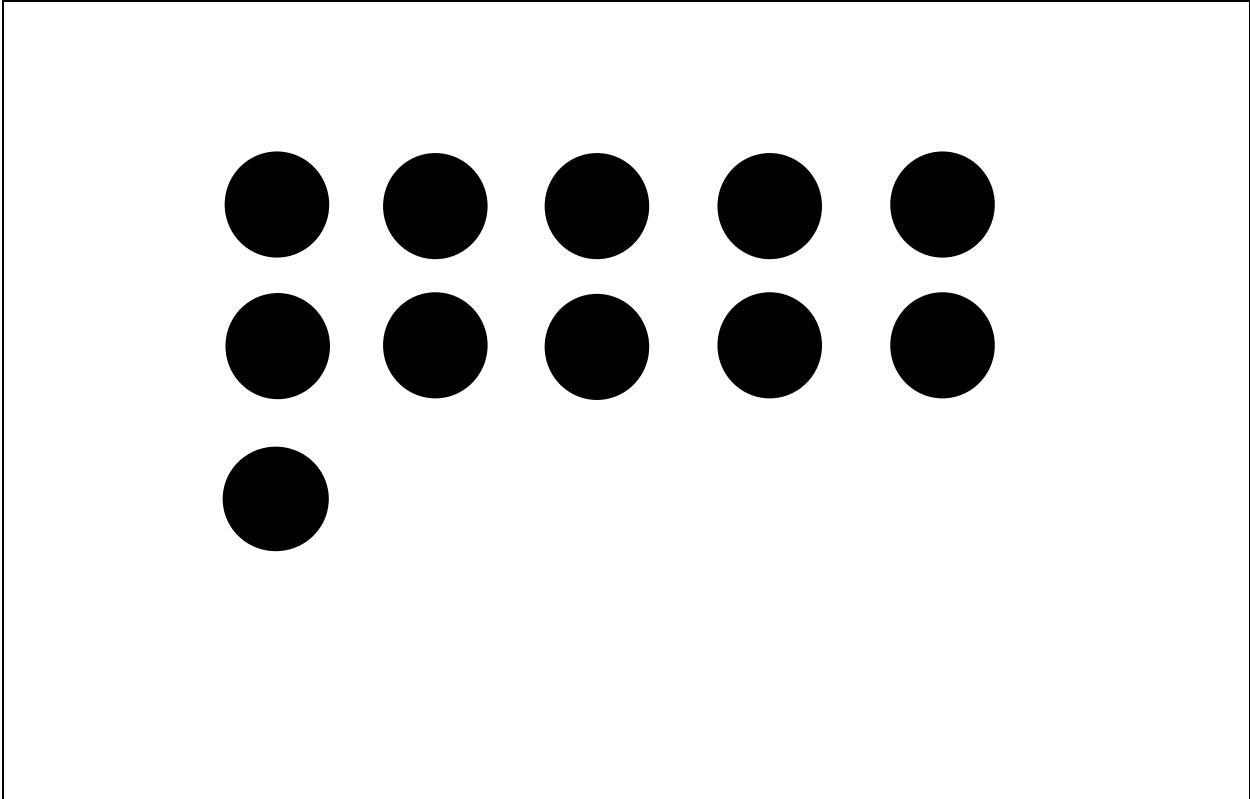
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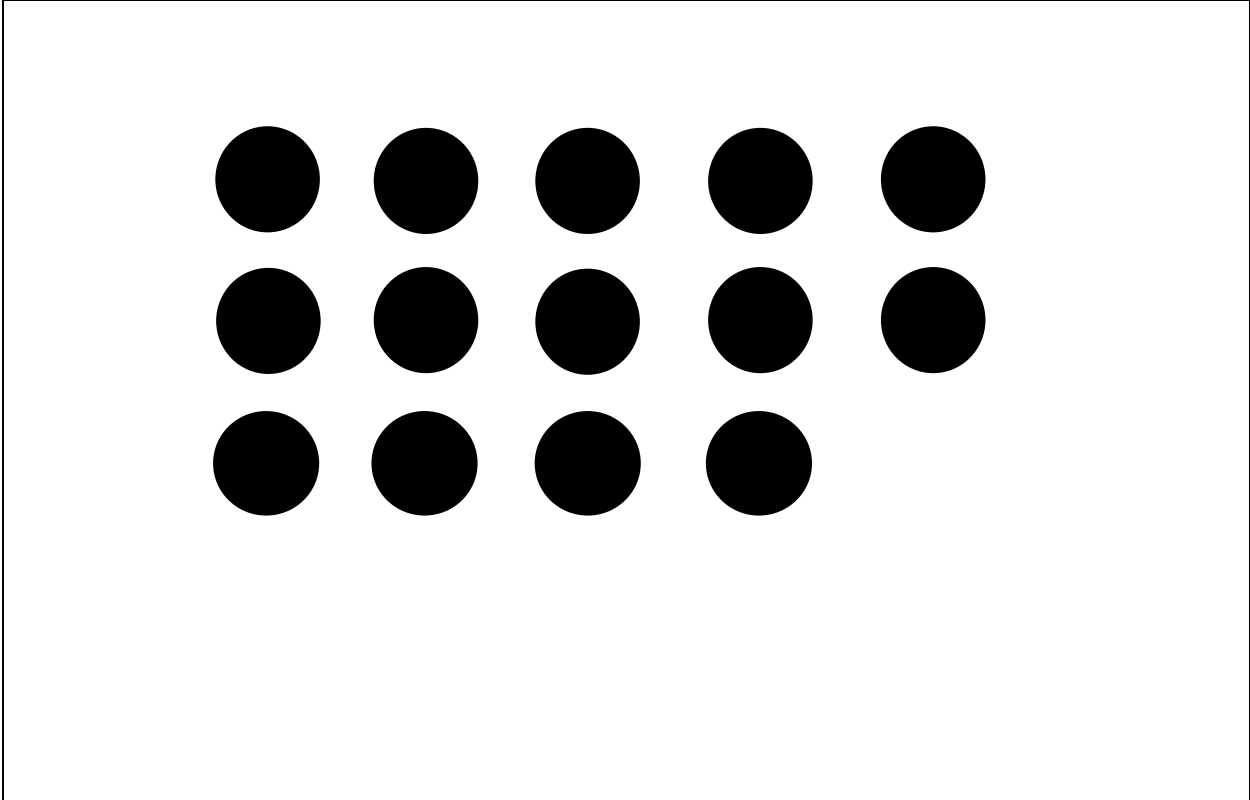
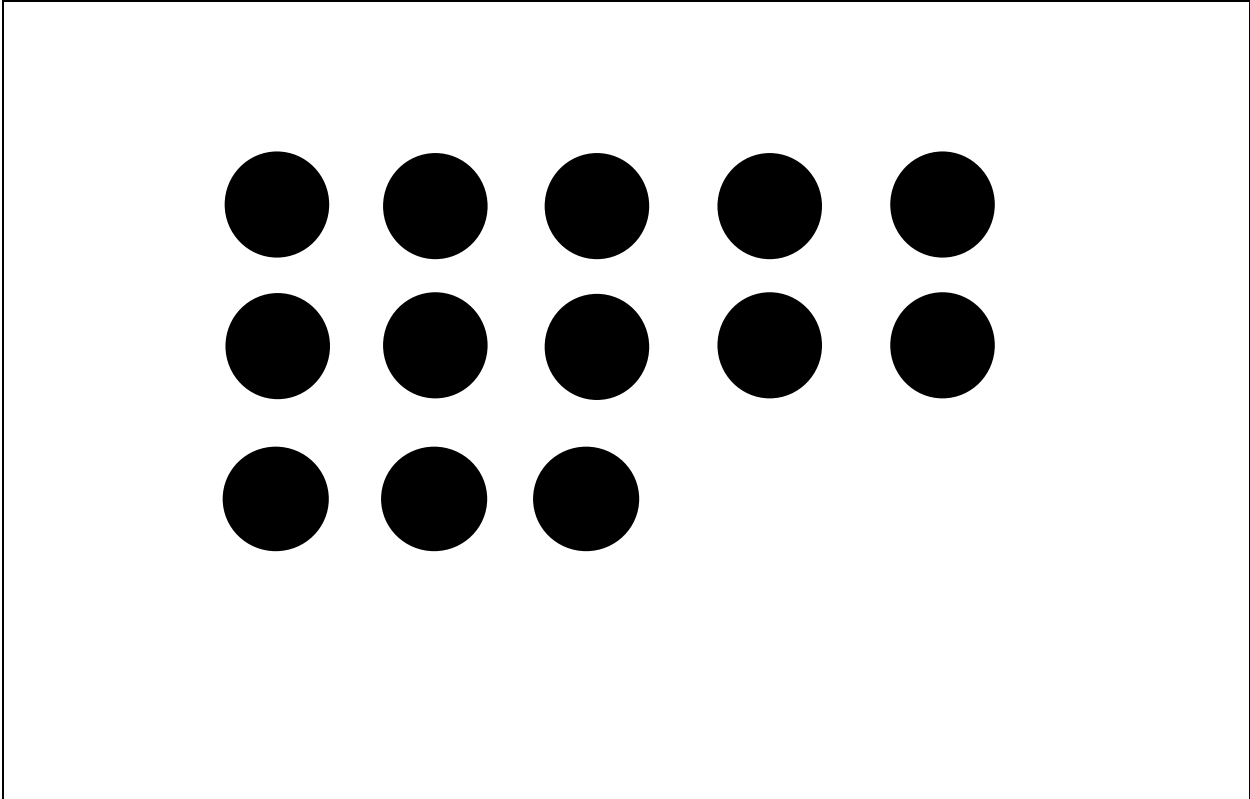
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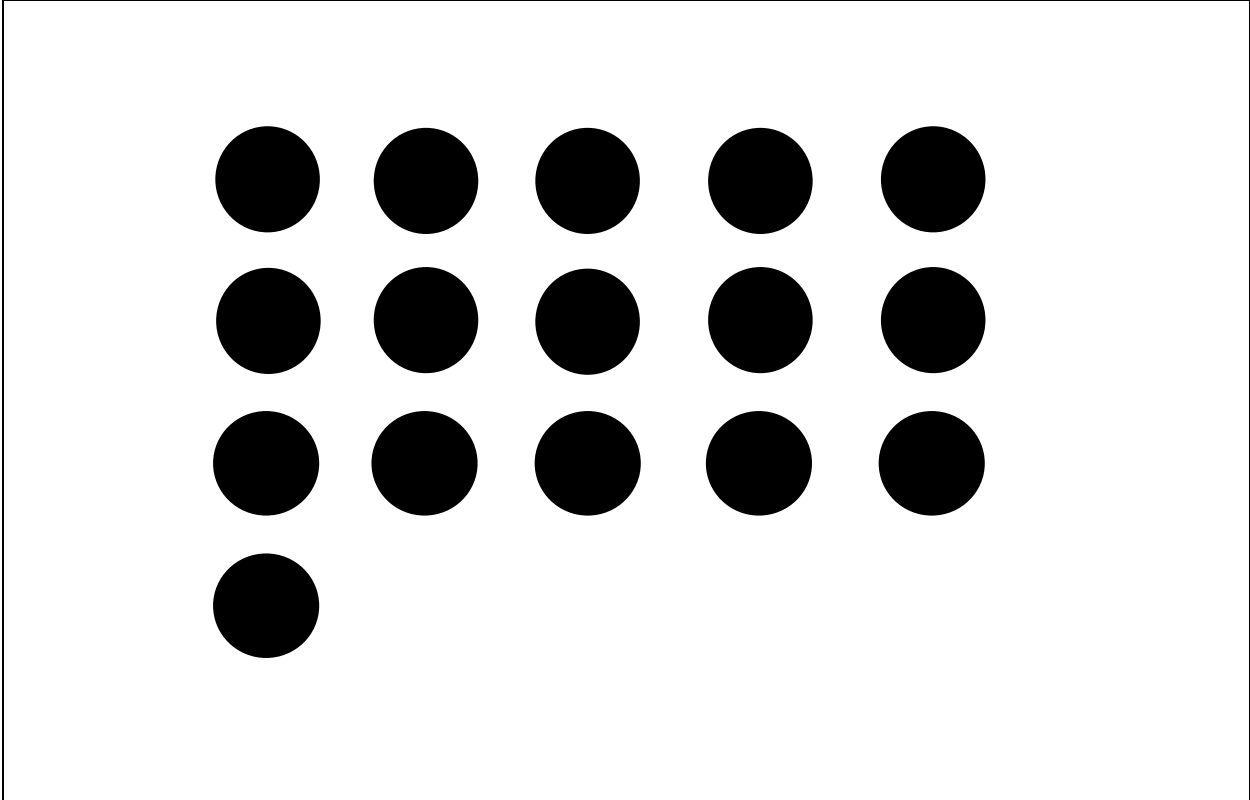
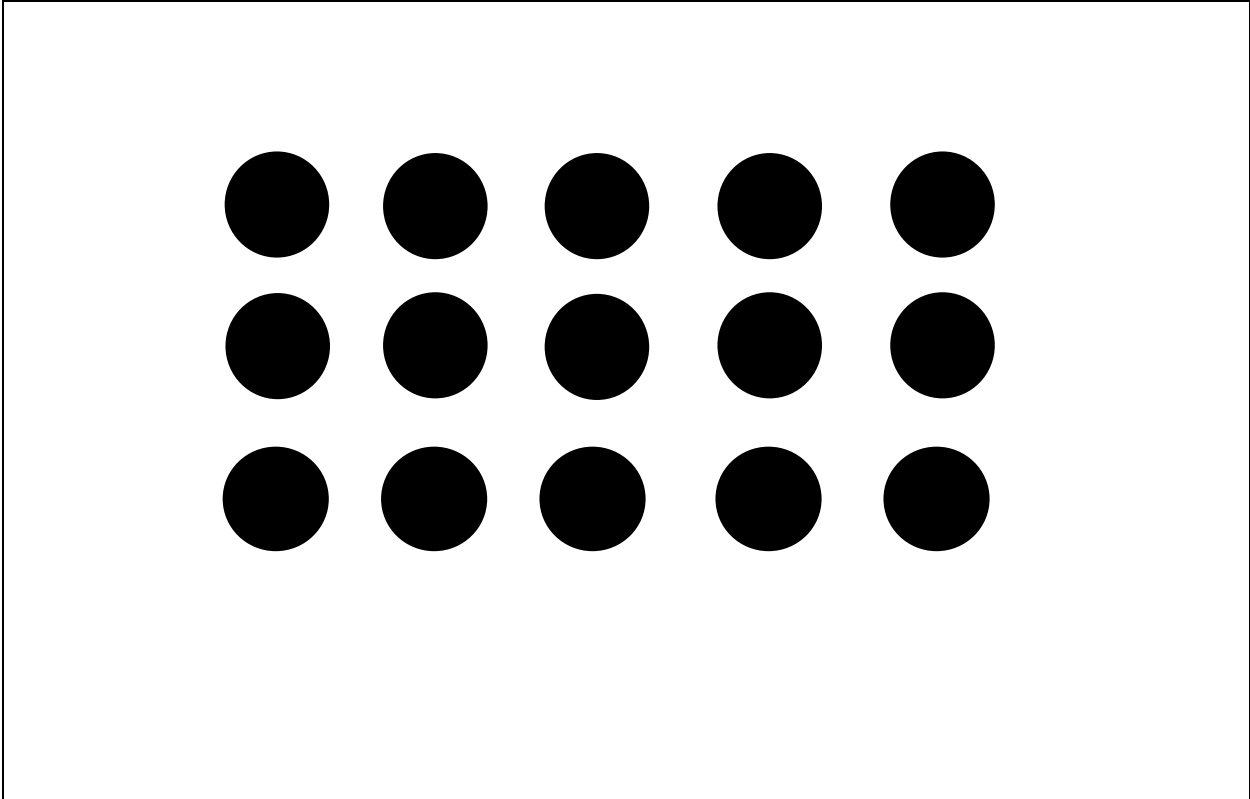
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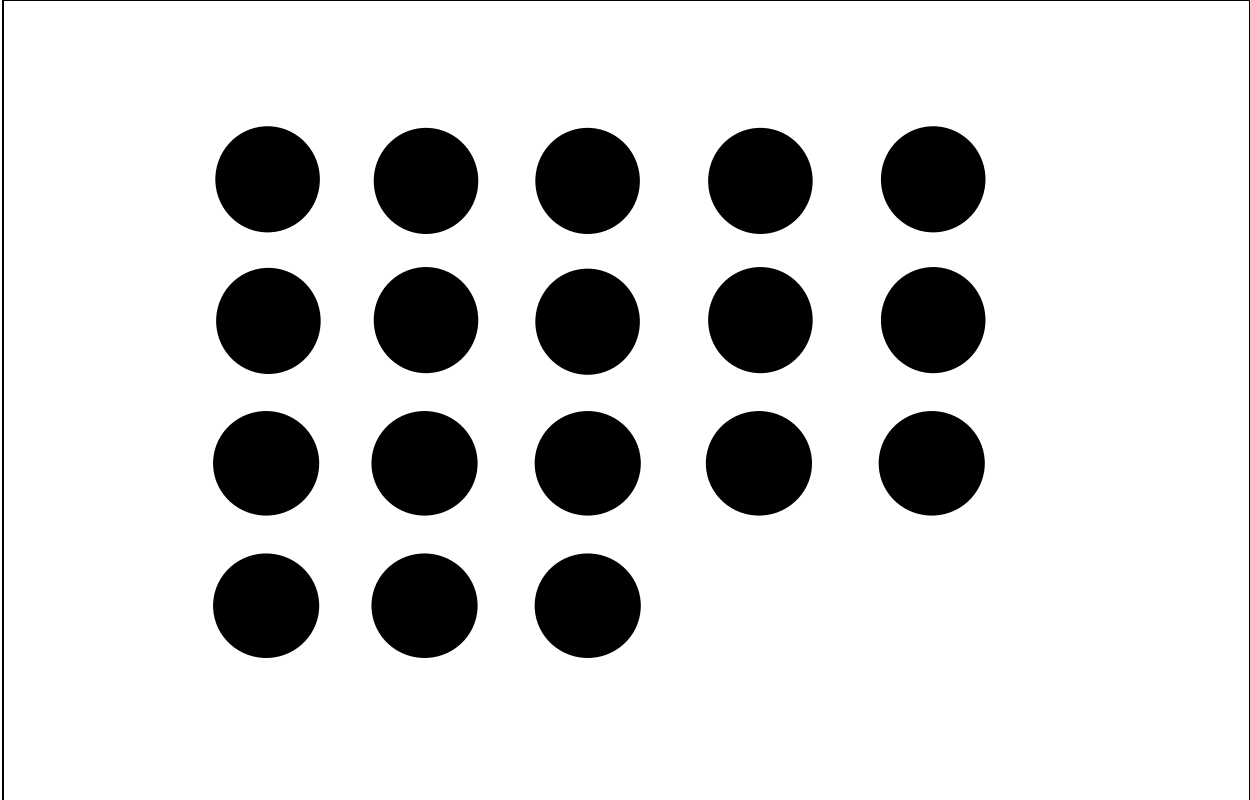
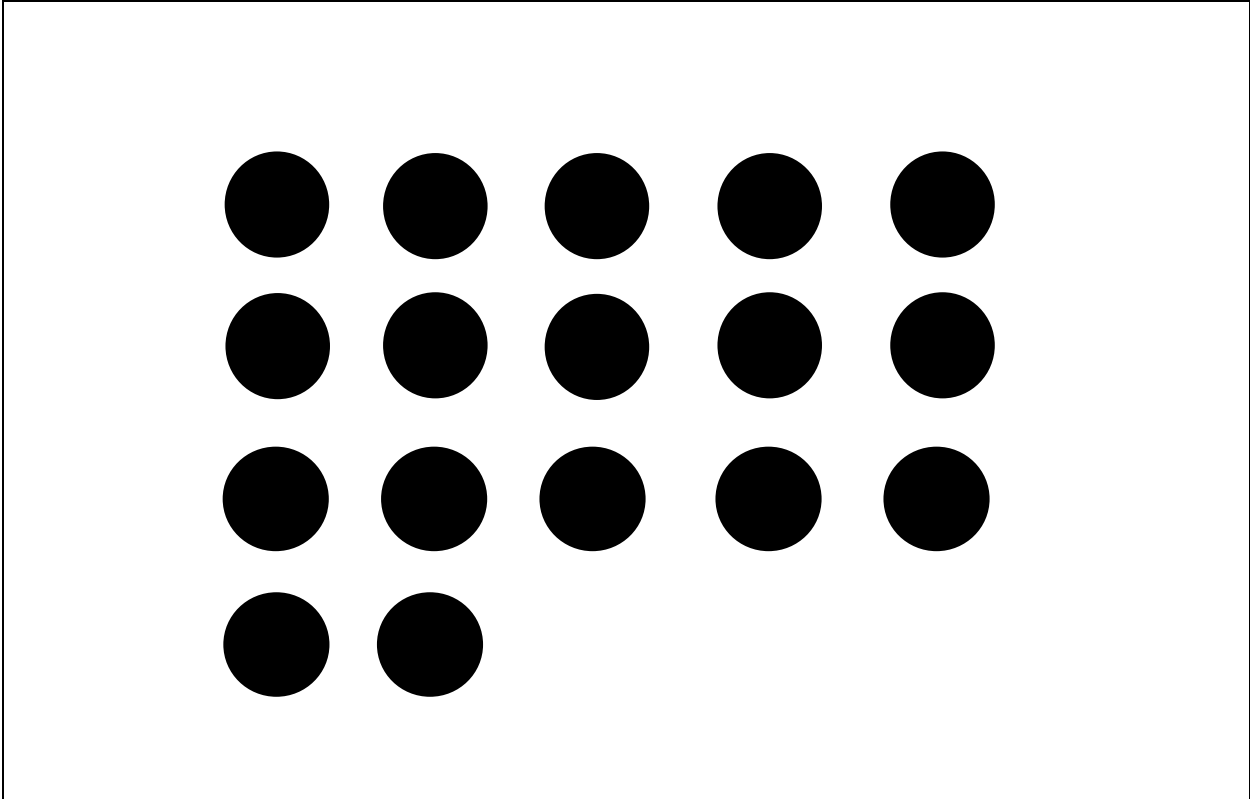
Dot Cards



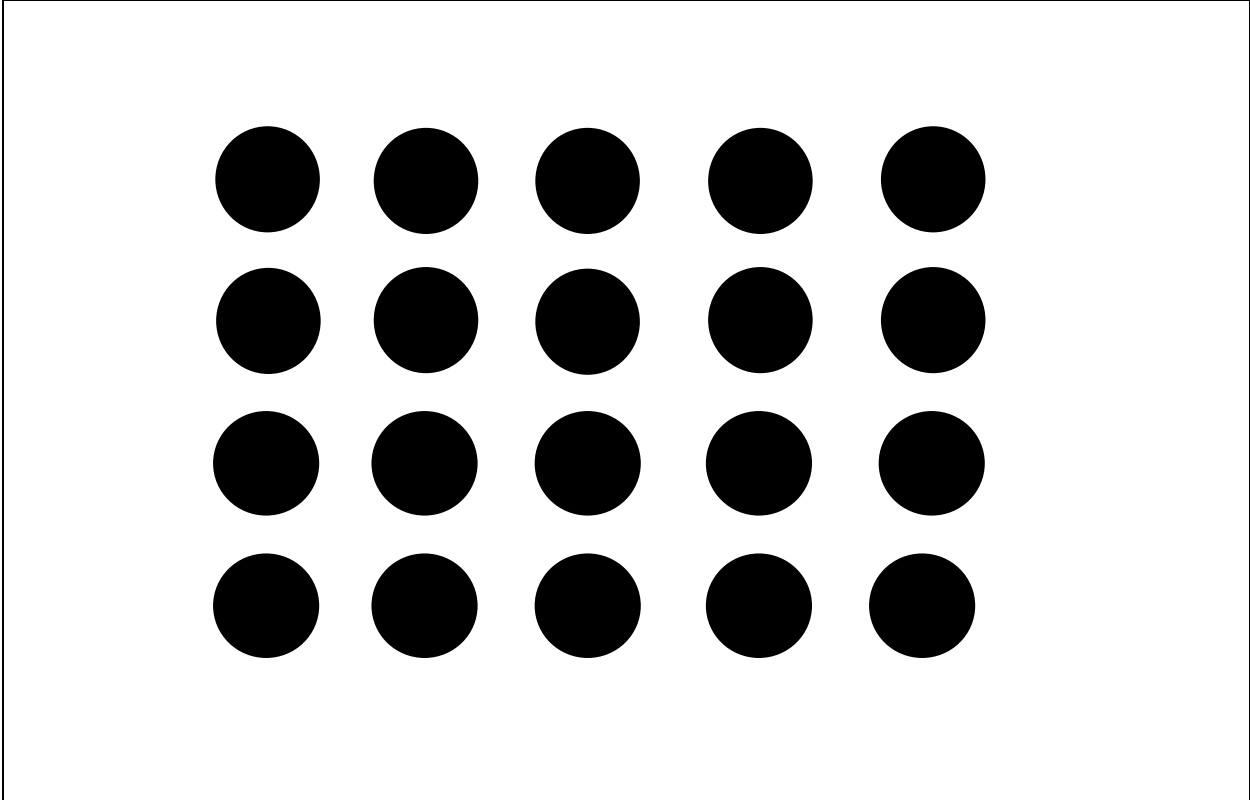
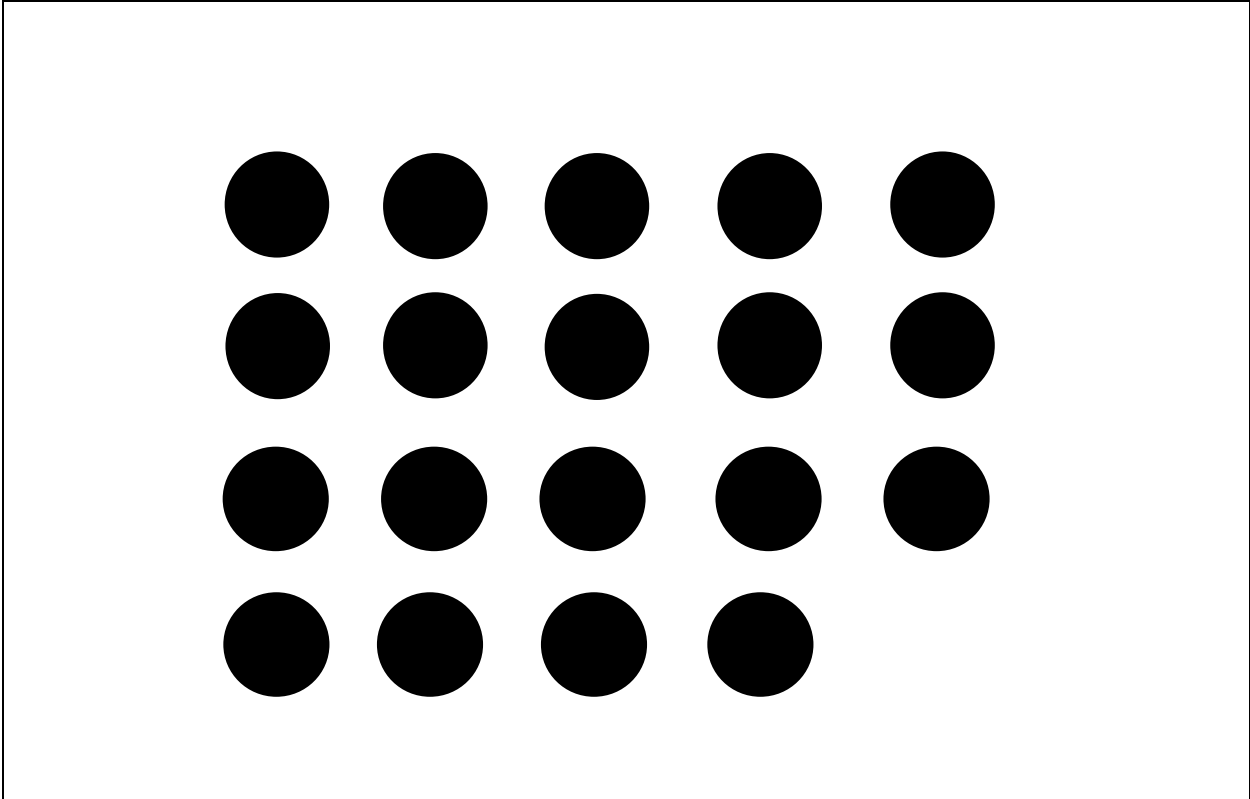
Dot Cards


















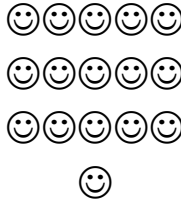



Dot Cards






















Dot Cards



Numeral Cards 0-20

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5 	6 	7 	8 	9 
10 	11 	12 	13 	14 
15 	16 	17 	18 	19 

Numeral Cards 0-20

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