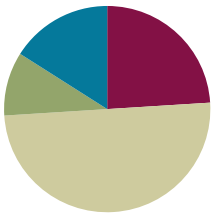
Lesson 32

Objective: Solve *both addends unknown* word problems with totals of 9 and 10 using 5-group drawings.

Suggested Lesson Structure

Fluency Practice	(12 minutes)
Application Problem	(5 minutes)
Concept Development	(25 minutes)
Student Debrief	(8 minutes)
Total Time	**(50 minutes)**



Fluency Practice (12 minutes)

- Counting to 30 by Ones with the Rekenrek **K.CC.1** (3 minutes)
- Break Apart Numbers **K.OA.3** (4 minutes)
- 5-Group Puzzles **K.OA.3** (5 minutes)

Counting to 30 by Ones with the Rekenrek (3 minutes)

Materials: (T) 100-bead Rekenrek

Note: Counting from 20 to 30 proves easier than learning the linguistically challenging counting sequence of 11–20. Once students know the number word *twenty,* it becomes just a matter of extending a pattern.

T: (Slide 10 beads over.) How many?
S: 10.
T: (Slide over 10 more for a total of 20.) How many?
S: 20.
T: (Slide over 10 more for a total of 30.) How many?
S: 30.
T: (Show 20 beads.) How many?
S: 20.
T: (Slide over 1 more.) 20. 1 more is 21. How many?
S: 21.
T: (Slide over 1 more.) 21. 1 more is 22. How many?
S: 22.

Continue this process with as little or as much guidance as students require.

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Break Apart Numbers (4 minutes)

Materials: (S) Break apart numbers (Fluency Template 1), personal white board

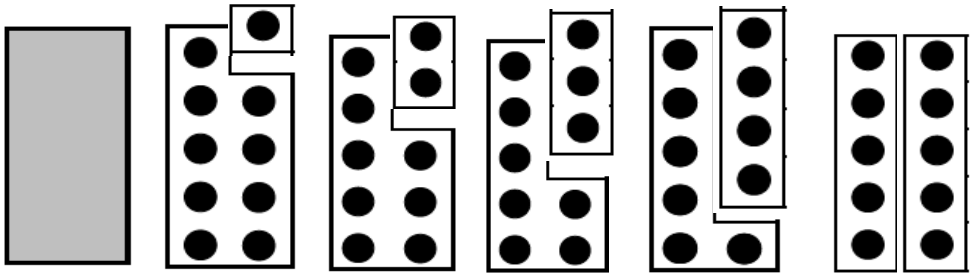
Note: Reviewing decomposing numbers to 5 supports kindergarten's required fluency of adding and subtracting within 5. The activity also prepares students to work with decomposition in today's lesson.

Students complete as many *different* number bonds as they can in one minute. Students can work with partners as needed. If students come up with number bonds including 0 as a part, invite them to draw more number bonds on their sheets so they have enough to record all decompositions of a number. (They can even add a number bond with a total of 1.) Take a poll of how many students completed all decompositions for 2, 3, etc., and celebrate accomplishments.

5-Group Puzzles (5 minutes)

Materials: (S) 5-group puzzles (Fluency Template 2) cut apart to show the decompositions of 10, personal white board

Note: Assembling the 5-group cards gives students a way to visualize partners to 10, leading them to develop automaticity with this essential skill for Grade 1.



Students assemble the dot cards to make 10 and then write the number bond.

Application Problem (5 minutes)

Materials: (S) Paper, crayons

Chen had 9 pencils. Some of his pencils were red, and some were blue. Draw Chen's pencils.

Make a number bond about your pencils. Now, turn and talk to your partner about your pictures and your number bond. Do your pictures look the same? Are your number bonds the same? Are they both correct?

Note: Decomposition of the number 9 and discussion about alternatives serve as the anticipatory set for today's *put together with both addends unknown* objective.

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Have blue and red pencils available for students working below grade level and students who are still struggling with the part–whole relationship. Allow them to use the pencils to model the problem before asking them to draw the problem and represent it using number bonds.

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Concept Development (25 minutes)

Materials: (S) Two large 5-group cards (Lesson 12 Fluency Template 2), personal white board

Note: Today's problem-solving objective encourages students to work more independently. The lesson begins with whole-group work to exemplify the problem type. With partners, students listen to and represent variations of the word problem and then write and solve the related equations. Depending on the abilities of students, the problems can be modeled by the teacher as necessary.

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

English language learners benefit from speaking with their peers at key points in the lesson before their classmates are asked for responses. An opportunity to turn and talk to a partner to discuss how they knew that 7 and 2 are partners gives them a chance to practice their words and express their thinking, encouraging them to participate more fully in class discussions.

T: (Write 9 = ___ + ___.) Michael has 9 toy blocks. Some are large, and some are small. Student A, how many of his blocks do you think are large?

S: 7.

T: I'm going to make a picture on the board of his large blocks. (Demonstrate.) I wonder how many of his blocks are small.

S: 2.

T: How did you know?

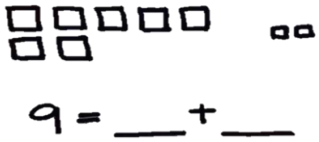
S: I used my fingers to count. → I counted on from 7. → I knew 7's partner was 2 to make 9.

T: You are right! Let me put that into my picture. (Demonstrate.) I want to finish my number sentence. What does the 9 tell us—a part or how many he has in all?

S: How many blocks he has in all.

T: Which numbers should go in the blanks?

S: Those are for the parts! → 7 for the big ones and 2 for the small ones.



T: Yes! Now, let's read the number sentence together.

S: 9 = 7 + 2.

T: You and your partner are going to work together to do some more problems like this. Listen to my story: Susie had a plate of 9 cookies. Some were vanilla, and some were chocolate. How many of each kind did she have?

T: Do we know how many cookies she has of each kind?

MP.1

S: No! → This is like the last one. There are lots of ways it could look.

T: With your partner, decide how many chocolate and how many vanilla cookies Susie had. Make a picture about your story in the 5-group way on your personal white board, and write the number sentence. Raise your hand when you are done, and I will check your work. Then, try making a different story!

Partners who demonstrate strong understanding may do their work on the board or on chart paper as class examples. Collect the number sentences while assessing student work. List them on the board after the work time is over, ensuring that all the sets of addends are represented.

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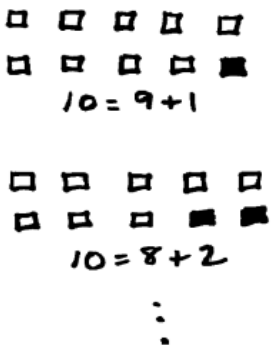
T: You are good addition sentence detectives! Let's try another one!

T: Listen to my story: Jamal had a basket of 10 blocks. Some were white, and some were gray. Work on this problem with your partner. Show Jamal's blocks, and write the number sentence. Raise your hand when you are ready for me to see your work!



Follow the same procedure as for the previous problem. List the equations on the board to be reviewed before the Problem Set or during the Student Debrief.

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted time.

Note: Encourage students to use their math drawing for this activity. For example, instead of drawing nine elaborate trains, students can draw black and green rectangles to represent the trains.

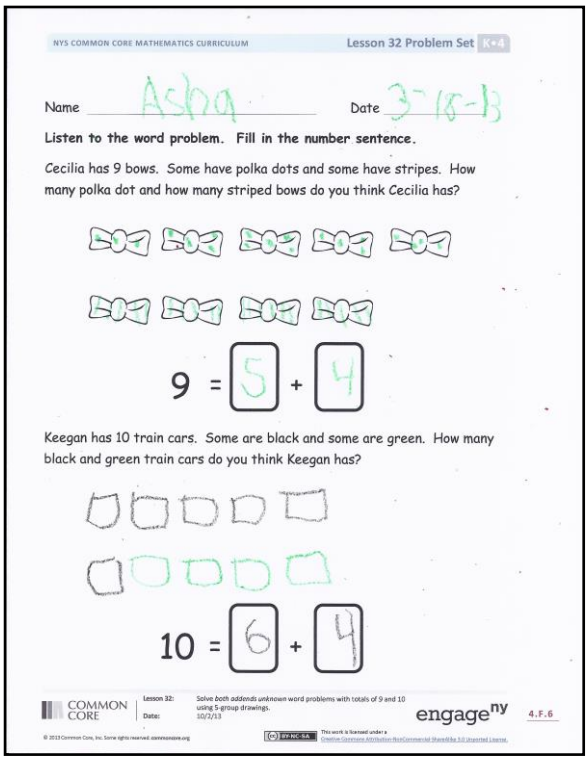
There is an Extra Practice sheet for students who finish the first two pages of the Problem Set early. Make a few copies for early finishers.

Student Debrief (8 minutes)

Lesson Objective: Solve *both addends unknown* word problems with totals of 9 and 10 using 5-group drawings.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 32 Problem Set K•4

Name Asha Date 3-16-13

Listen to the word problem. Fill in the number sentence.

Cecilia has 9 bows. Some have polka dots and some have stripes. How many polka dot and how many striped bows do you think Cecilia has?

9 = 5 + 4

Keegan has 10 train cars. Some are black and some are green. How many black and green train cars do you think Keegan has?

10 = 6 + 4

COMMON CORE Lesson 32: Solve both addends unknown word problems with totals of 9 and 10 using 5-group drawings. Date: 10/2/13 engage^ny 4.F.6

Any combination of the questions below may be used to lead the discussion.

- What did you think about when you were drawing the picture of trains in the Problem Set?
- Did you notice any patterns when you were working today? (Refer students to the list of equations showing decompositions of 9 and 10. They may also see patterns in the 5-groups.)
- How did you decide where to put the numbers in your number sentence blanks?

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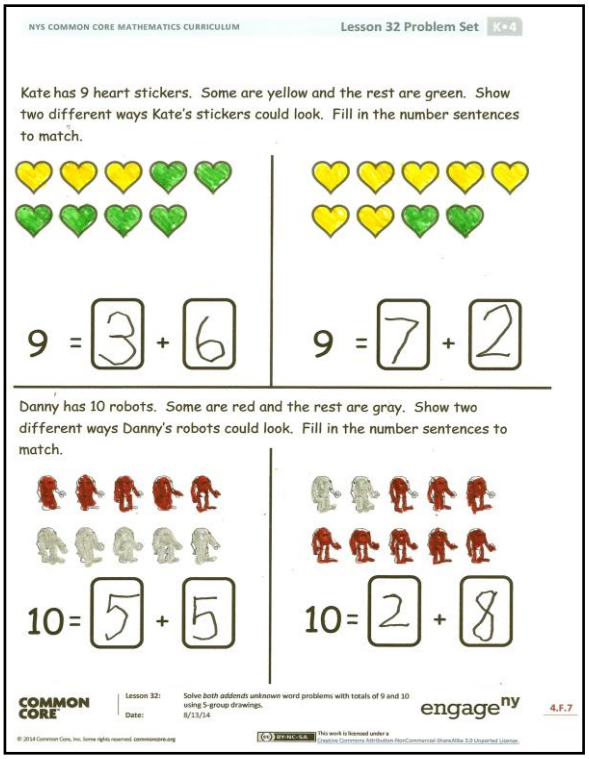
- You were able to choose your own groups when you were solving the problems about the cookies. When you chose your first part, did you have a lot of choices for the second part? How did you know what it had to be?
- How are 5-group drawings helpful when you are solving story problems?



NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 32 Problem Set K•4

Kate has 9 heart stickers. Some are yellow and the rest are green. Show two different ways Kate's stickers could look. Fill in the number sentences to match.

9 = 3 + 6

9 = 7 + 2

Danny has 10 robots. Some are red and the rest are gray. Show two different ways Danny's robots could look. Fill in the number sentences to match.

10 = 5 + 5

10 = 2 + 8

COMMON CORE | Lesson 32: Solve *both addends unknown* word problems with totals of 9 and 10 using 5-group drawings. Date: 8/13/14 | engage^ny | 4.F.7

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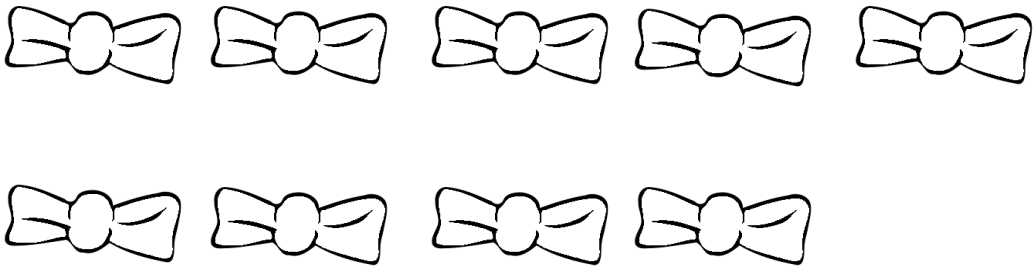
Name _____ Date _____

Listen to the word problem. Fill in the number sentence.

Cecilia has 9 bows. Some have polka dots, and some have stripes. How many polka dot and how many striped bows do you think Cecilia has?



9 = ☐ + ☐

Keegan has 10 train cars. Some are black, and some are green. How many black and green train cars do you think Keegan has?

10 = ☐ + ☐

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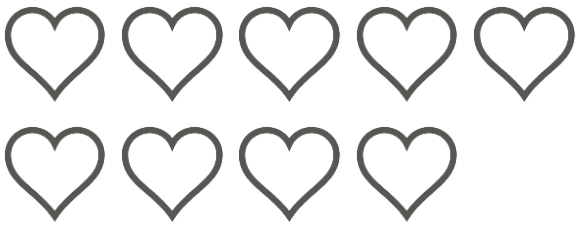
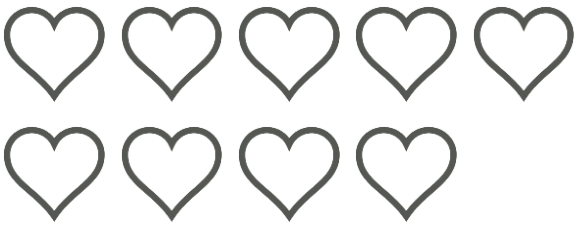
Kate has 9 heart stickers. Some are yellow, and the rest are green. Show two different ways Kate's stickers could look. Fill in the number sentences to match.

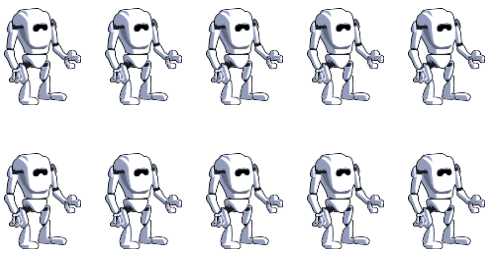


9 = ☐ + ☐

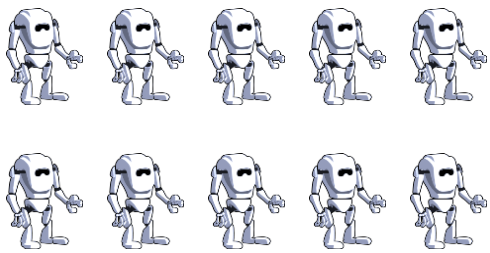


9 = ☐ + ☐

Danny has 10 robots. Some are red, and the rest are gray. Show two different ways Danny's robots could look. Fill in the number sentences to match.



10 = ☐ + ☐



10 = ☐ + ☐

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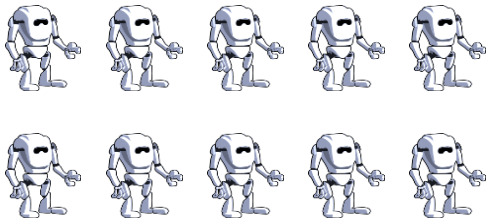
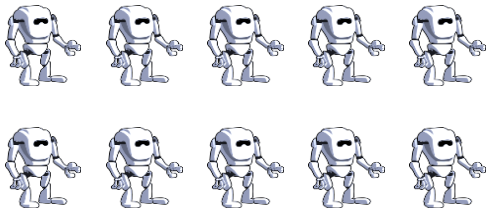
Name _____ Date _____

Color the robots to match the number sentence. Tell a story about the robots.

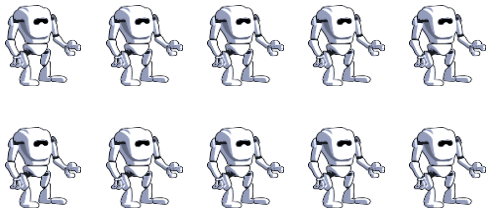
10 = 5 + 5



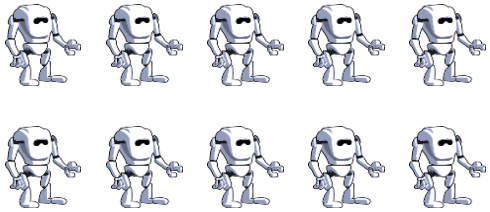
10 = 6 + 4



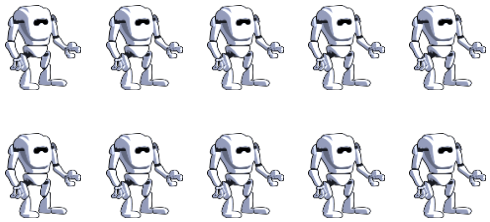
10 = 7 + 3



10 = 8 + 2



10 = 9 + 1



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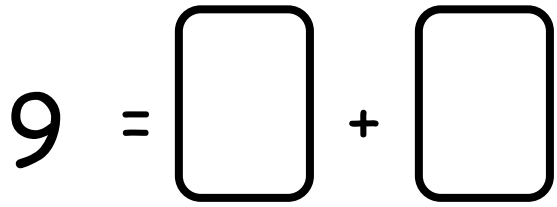
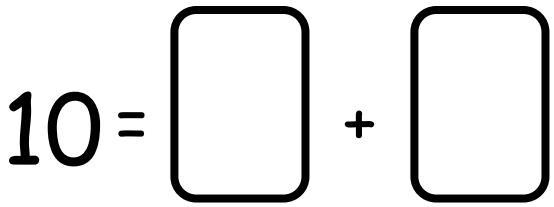
Jerry has 9 baseball hats. Draw the hats the 5-group way. Color some red and some blue. Fill in the number sentence to match.



Anne had 10 pencils. Draw the pencils the 5-group way. Color some pencils blue and some yellow. Fill in the number sentence to match.



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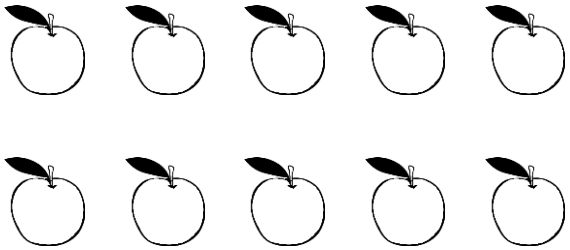
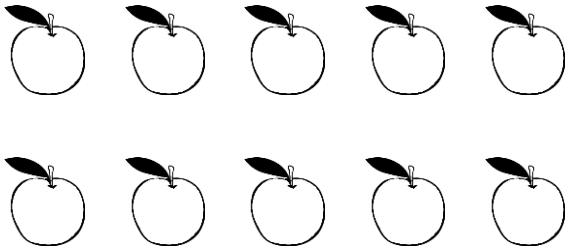
There are 10 apples. Color some red and the rest green. Then, show a different way the apples could look. Fill in the number sentences to match.

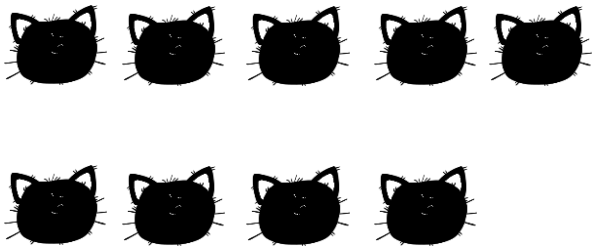


10 = ☐ + ☐

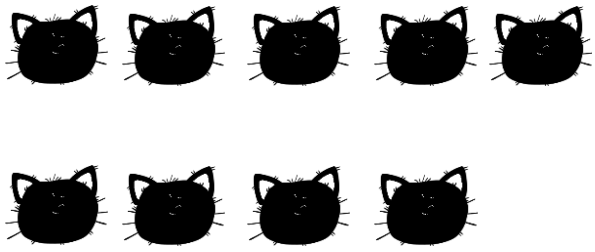


10 = ☐ + ☐

Anya has 9 stuffed cats. Some are orange, and the rest are gray. Show two different ways Anya's cats could look. Fill in the number sentences to match.



9 = ☐ + ☐



9 = ☐ + ☐

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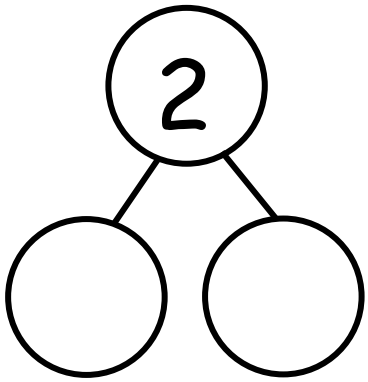

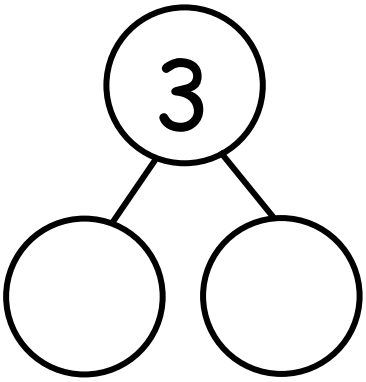

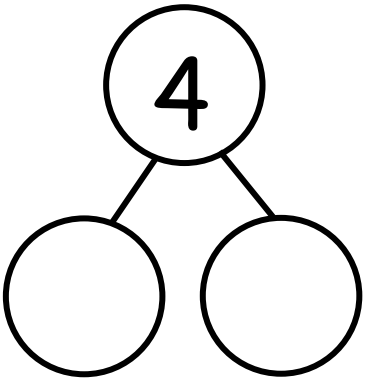

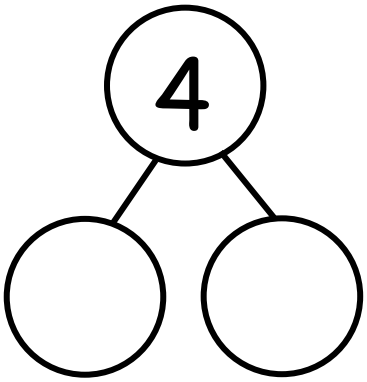

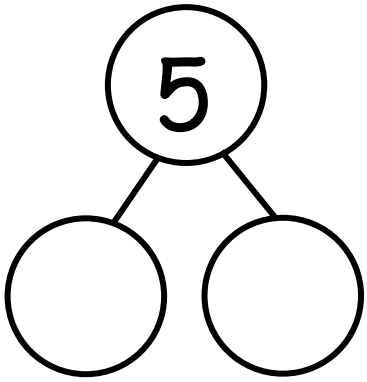

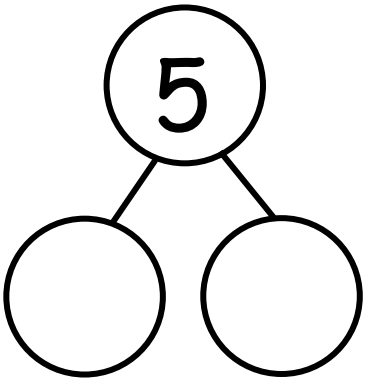

break apart numbers

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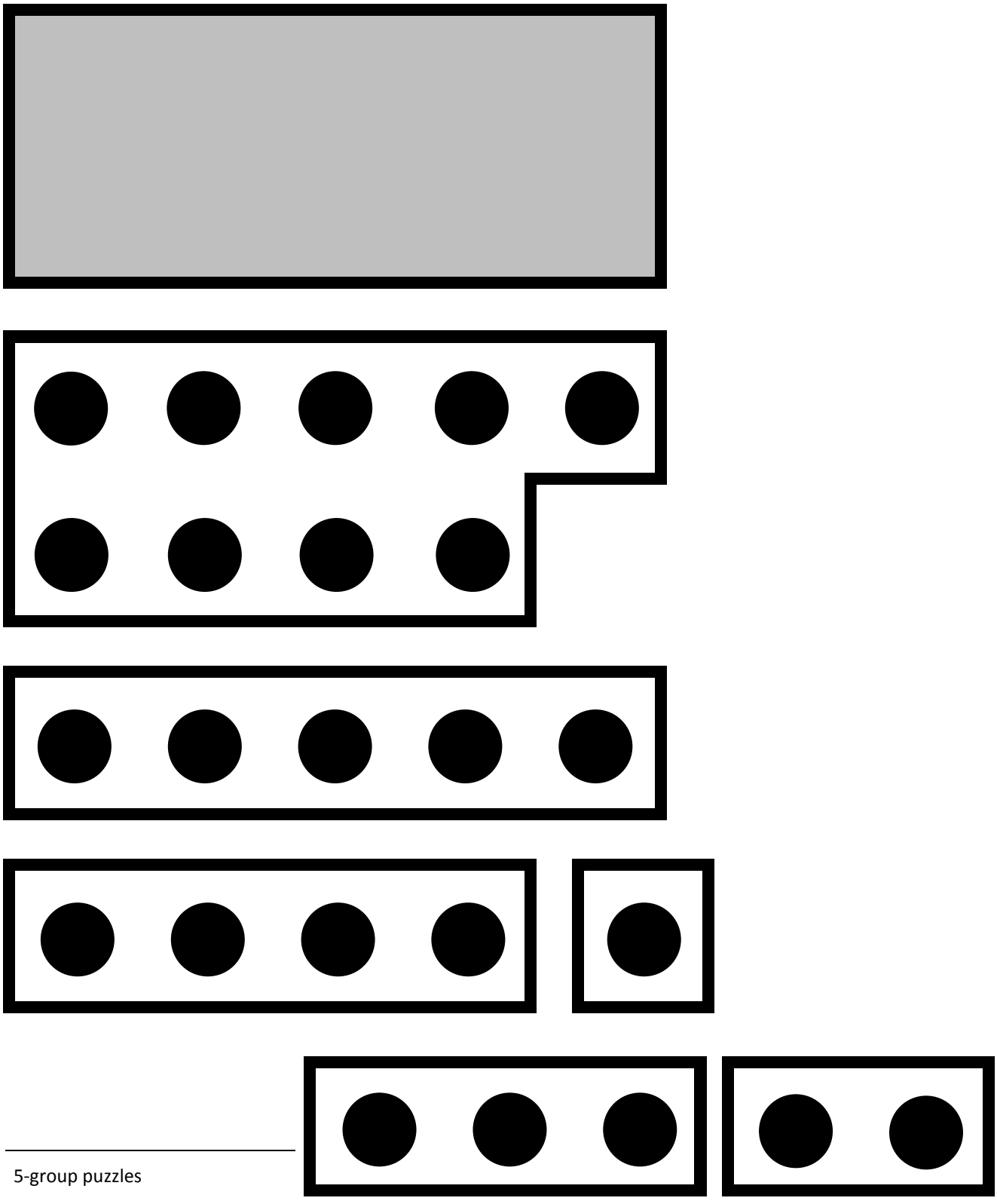

5-group puzzles

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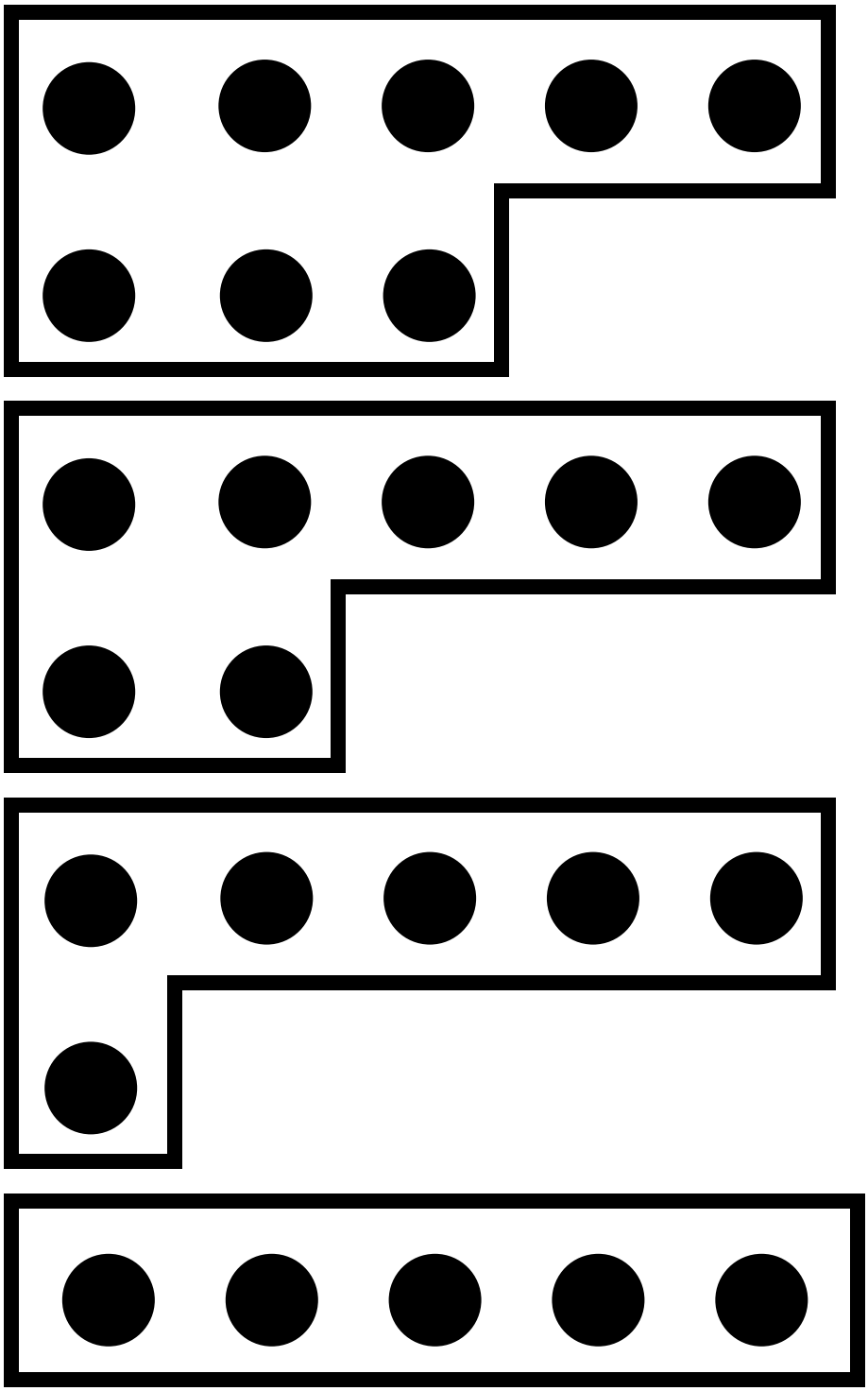

5-group puzzles

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