

The Best Surprise

Line Master 1 (Assessment Master)

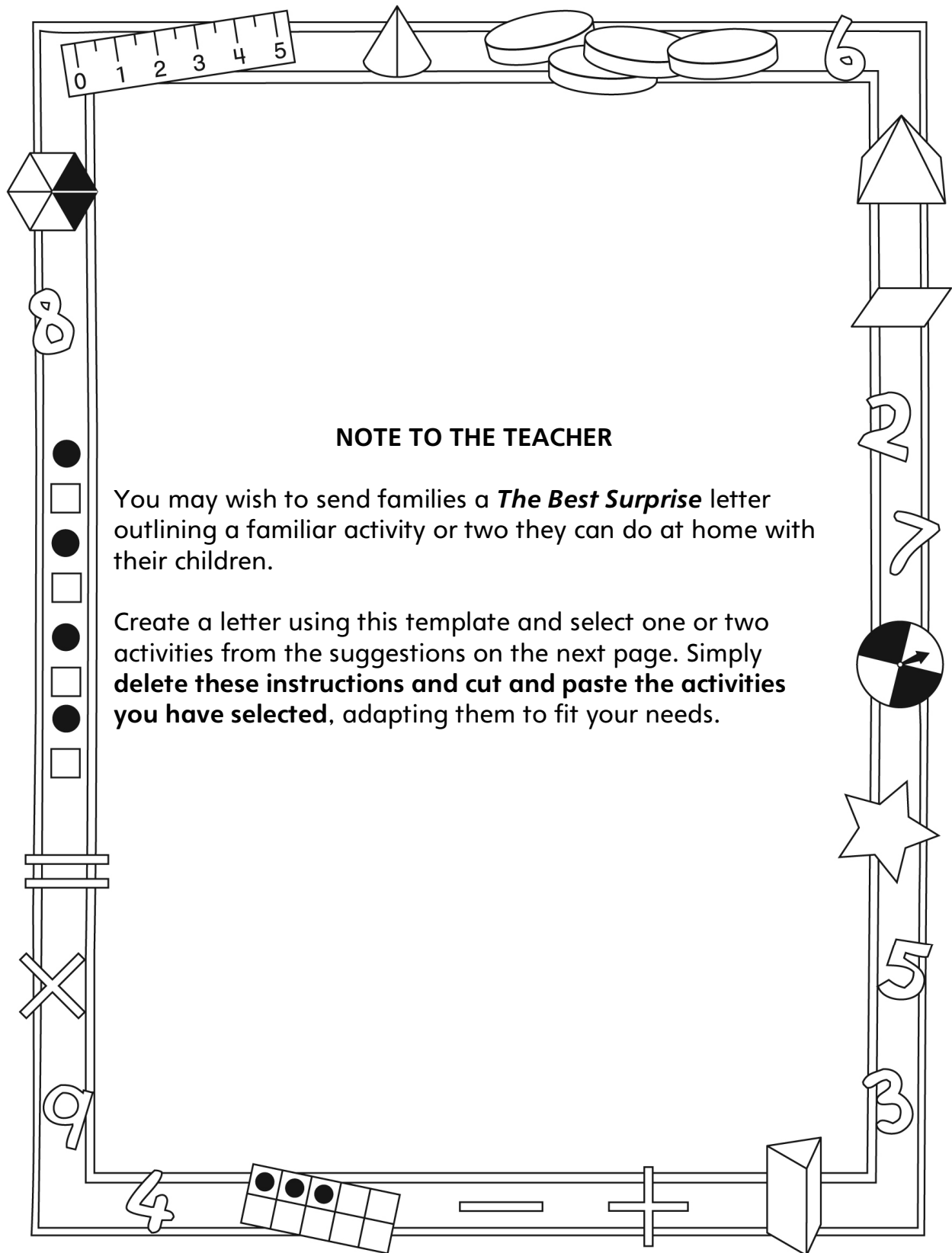
Name: _____

Explore Growing and Shrinking Patterns	Not observed	Sometimes	Consistently
Identifies and describes increasing and decreasing patterns			
Extends increasing and decreasing patterns			
Identifies missing terms			
Identifies pattern rules			
Investigate Number Patterns			
Identifies and describes number patterns			
Extends and creates number patterns			
Identifies missing terms			
Identifies pattern rules			
Makes connections to addition and subtraction			

Strengths:

Next Steps:

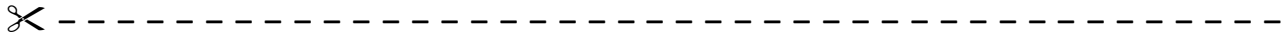
Connecting Home and School Line Master 2-1



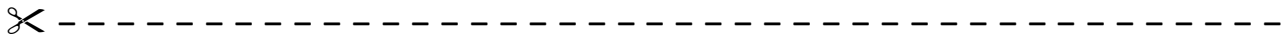
Connecting Home and School Line Master 2–2

Dear Family:

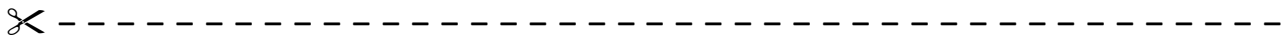
We have been working on *The Best Surprise*, which engages children in conversations, investigations, and activities that help to develop their understanding of the big math idea that “Patterns can be described mathematically.” Particular focus is placed on investigating increasing/ decreasing patterns, and investigating number patterns. Try this activity at home with your child.



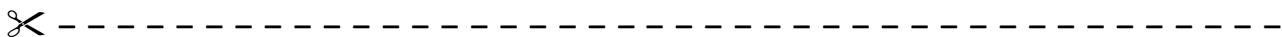
Reading the Story: As you read this story together, encourage your child to keep track of the number of tokens and tickets that Ethan and Emma receive and use as they enjoy the fair. In class, we’ve been identifying rules for how patterns grow and/or shrink. Encourage your child to look for and describe patterns in the illustrations and to identify the pattern rules.



Environmental Patterns: Addresses, apartment numbers, elevator buttons, and calendars can all be examples of number patterns in our environment. Go on number pattern searches with your child or draw his/her attention to patterns you notice. For example, as you walk, focus on house numbers. Chant the numbers aloud, and stop at intervals to ask your child to say the next upcoming house number. Alternatively, while on an elevator or looking at a calendar, cover a number. Then, ask your child to tell the number you covered and to explain how she/he knows.



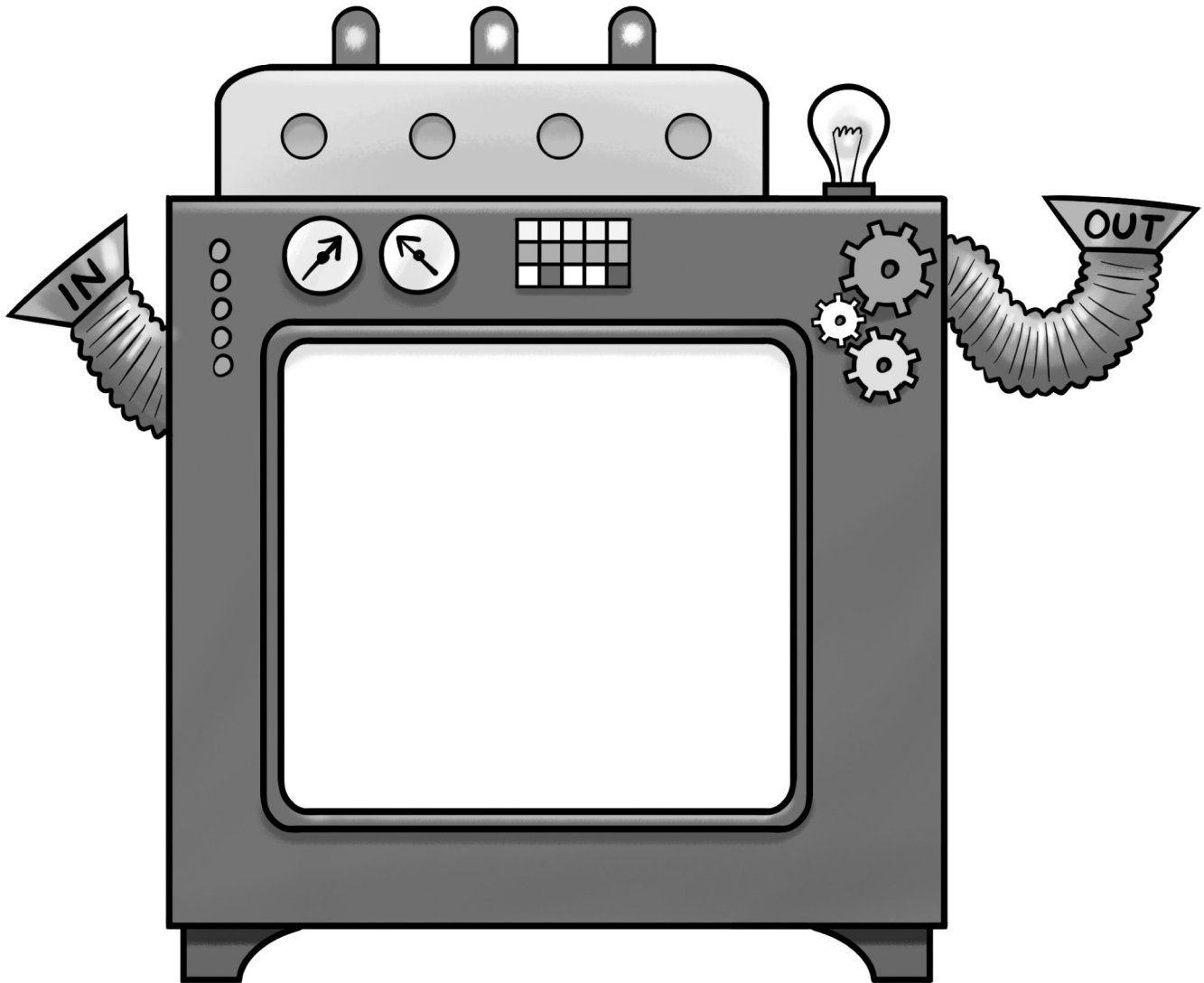
Change Machine: With your child, play a round of the game shown on page 16 of *The Best Surprise*. This game involves a machine that changes numbers according to the rule “add 4.” Say a number that is not on the board, and challenge your child to tell you what number would come out. For example, say: **Suppose 8 goes in the machine. What number comes out?** Secretly choose another change rule (e.g., subtract 2). Create an In–Out chart with at least 4 numbers going in and coming out. Invite your child to figure out the new rule. For example, say: **This time, 6 goes in the machine. What number will come out? How do you know?**



Sincerely,

The Best Surprise Math Mat

Line Master 3



Tokens and Tickets

Line Master 4

Name: _____

Tokens					Tickets				

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Pattern Starters

Line Master 5-1

The image shows a grid of six dashed boxes, each containing a geometric pattern. Scissors icons are placed at the top of each dashed box to indicate where to cut. The patterns are as follows:

- Top-left: A horizontal row of three squares with two more squares attached below the middle square, forming a T-shape.
- Top-right: A vertical column of three squares with one square attached to the right of the top square, and another square attached to the left of the bottom square.
- Middle-left: A horizontal row of two squares with one square attached to the top of the middle square.
- Middle-right: A horizontal row of two squares with one square attached to the left of the bottom square.
- Bottom-left: A diamond shape with a square attached to its bottom vertex.
- Bottom-right: A horizontal row of two squares with a diamond shape attached to the bottom of the middle square, and another horizontal row of two squares attached to the bottom of the diamond.

Pattern Starters

Line Master 5-2

The image shows a large dashed rectangular border containing a 3x2 grid of smaller dashed rectangular boxes. At the top of each of the two columns, there is a small icon of a pair of scissors, indicating where to cut. Each of the six boxes contains a different arrangement of circles:

- Top-left box: Three circles arranged in a triangle (one on top, two below).
- Top-right box: Three circles arranged in a triangle (one on top, two below).
- Middle-left box: Four circles arranged in a triangle (one on top, three below).
- Middle-right box: Four circles arranged in a triangle (one on top, three below).
- Bottom-left box: Two circles arranged vertically.
- Bottom-right box: Five circles arranged in a pentagon (three in a top row, two in a bottom row).

Make a Change Machine

Line Master 6-1

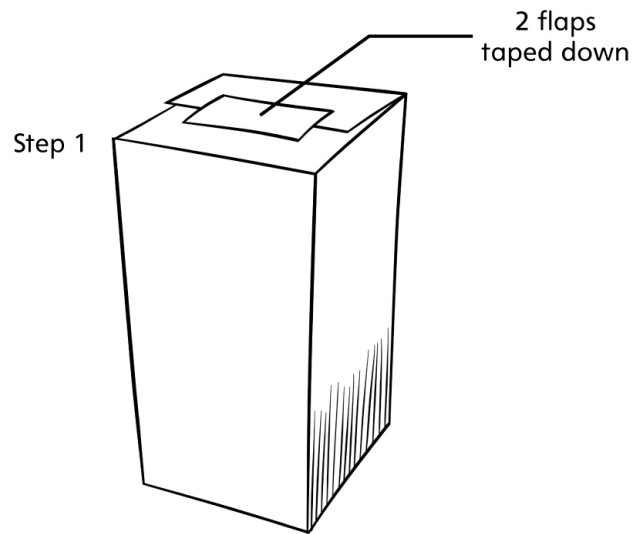
Materials

- 2 L beverage carton
- 2 cardstock or tagboard strips, one 7 cm × 28 cm and one 7 cm × 20 cm
- ruler
- masking tape or duct tape
- scissors or utility knife
- contact paper

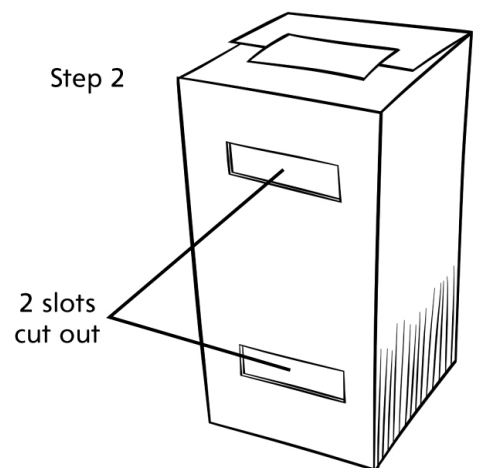
Instructions

Note: Change Machines should be made only by the teacher.

1. Cut the top of the carton open. Cut off two opposite flaps, and then tape the other two down.

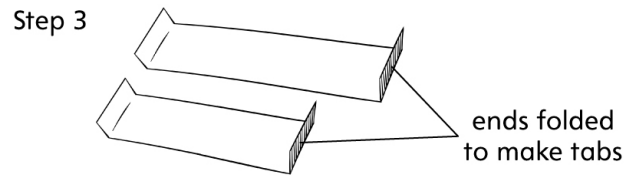


2. Draw two rectangular slots, each about 8 cm by 2 cm, about 6.5 cm apart, on one side of the carton. Cut out the slots.

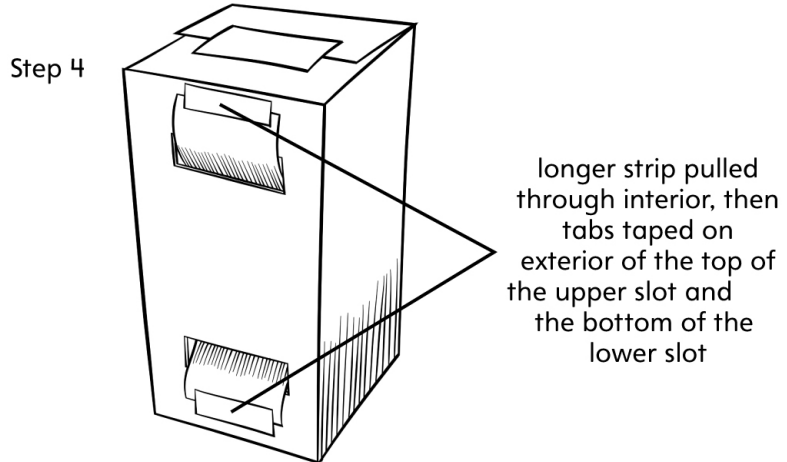


Make a Change Machine Line Master 6-2

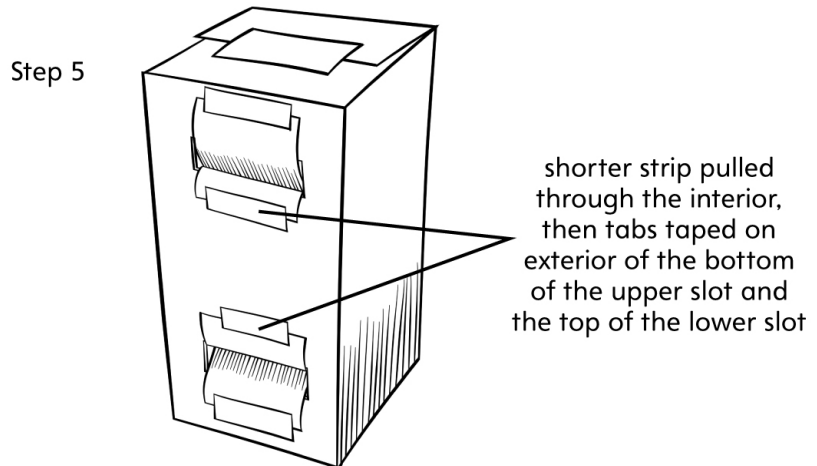
3. Fold up about 3 cm on the ends of both strips to make tabs.



4. Pull the longer strip through the slots in the carton, so that most of the strip is in the interior of the carton and the tabs are on the exterior. On the exterior of the carton, tape the tabs to the top of the upper slot and the bottom of the lower slot.



5. Pull the shorter strip through the slots of the carton, so that most of the strip is in the interior of the carton and the tabs are on the exterior. On the exterior of the carton, tape the tabs to the bottom of the upper slot and the top of the lower slot.



6. Decorate the exterior of your change machine with contact paper. Children will enjoy making decorating suggestions.

What's the Number?

Line Master 7

Start Number	Pattern Rule								
<table border="1"><tr><td>10</td><td>15</td></tr><tr><td>20</td><td>Your Choice</td></tr></table>	10	15	20	Your Choice	<table border="1"><tr><td>1</td><td>2</td></tr><tr><td>3</td><td>Your Choice</td></tr></table>	1	2	3	Your Choice
10	15								
20	Your Choice								
1	2								
3	Your Choice								

How to play:

1. Find your start number. Write it on a card.
2. Find your pattern rule. Decide if you will make your pattern grow or if you will make your pattern shrink.
3. Create 5 more cards by writing a different number that belongs to your pattern on each card.
4. Put your cards in order in a row beside your start card.
5. Ask your partner, "What's the number?"

Pattern Challenges

Line Master 8-1

✂ -----

2, 4, 6, 8, 10, 12

The pattern rule is _____ .

✂ -----

5, 10, 15, 20, 25, 30

The pattern rule is _____ .

✂ -----

13, 16, 19, 22, 25, 28

The pattern rule is _____ .

✂ -----

90, 80, 70, 60, 50, 40

The pattern rule is _____ .

✂ -----

20, 18, 16, 14, 12, 10

The pattern rule is _____ .

✂ -----

45, 40, 35, 30, 25, 20

The pattern rule is _____ .

✂ -----

Pattern Challenges

Line Master 8-2

6

50

15

28

In	Out
5	7
2	4
11	13
8	10

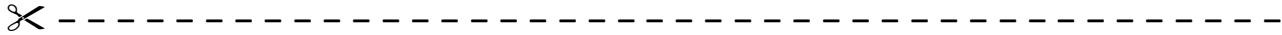
In	Out
10	5
20	15
30	25
40	35

In	Out
12	15
9	12
6	9
3	6

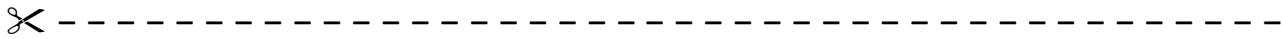
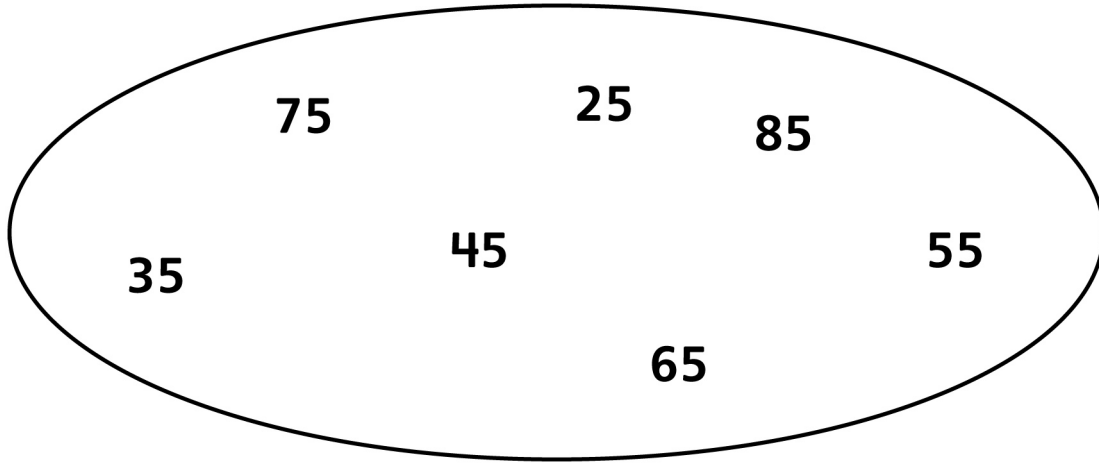
In	Out
40	38
14	12
26	24
34	32

Pattern Challenges

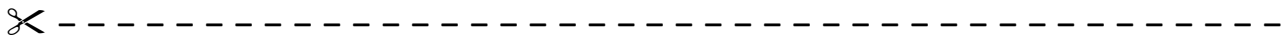
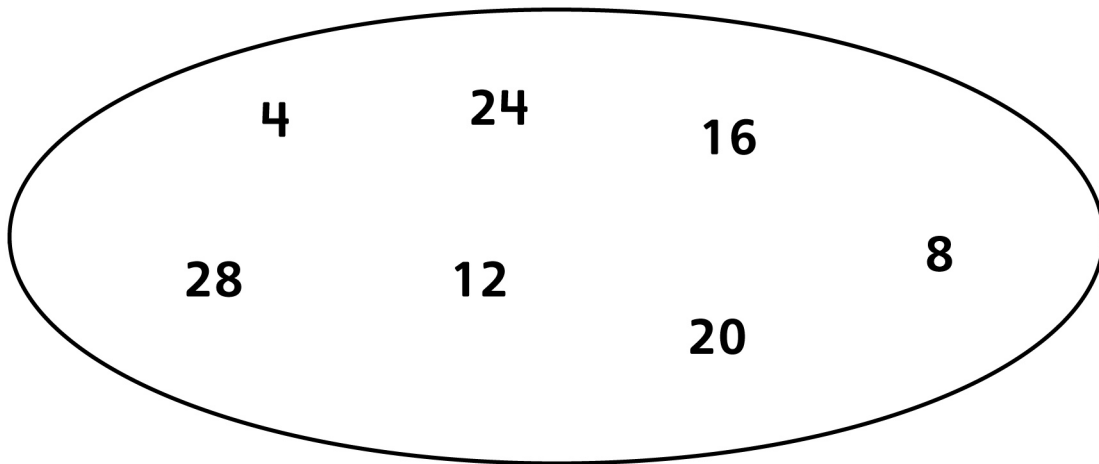
Line Master 8-4



Use the numbers to make a pattern.

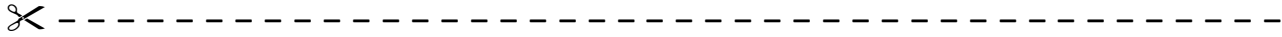


Use the numbers to make a pattern.

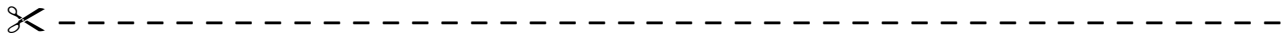
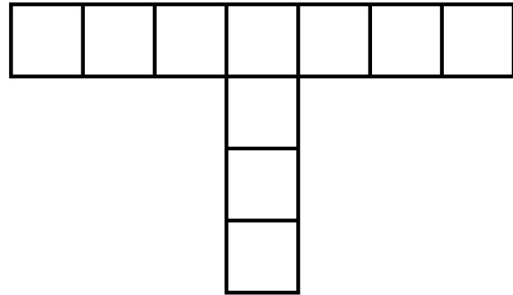
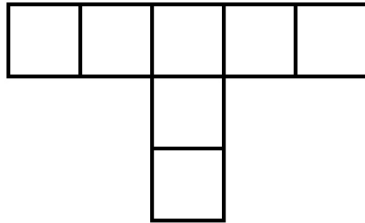
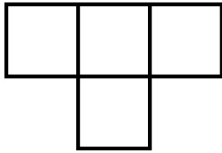


Pattern Challenges

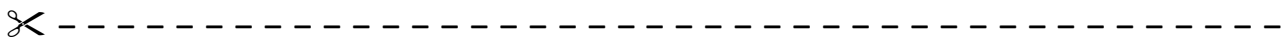
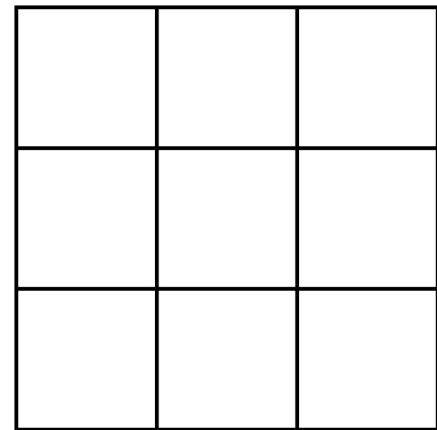
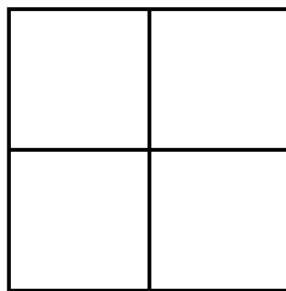
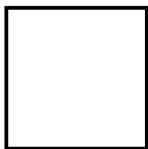
Line Master 8-5



What comes next?

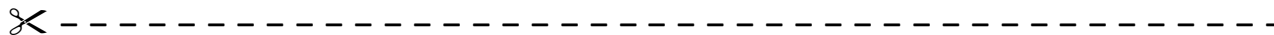


What comes next?

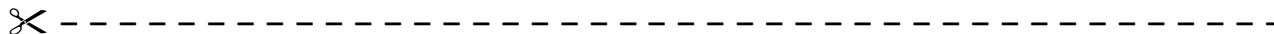
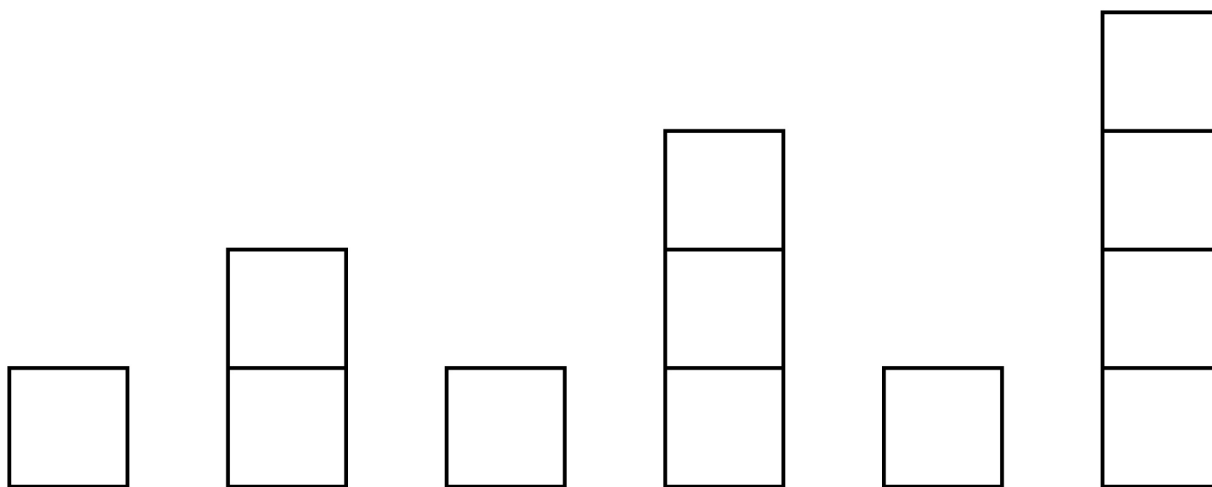


Pattern Challenges

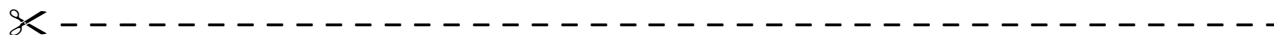
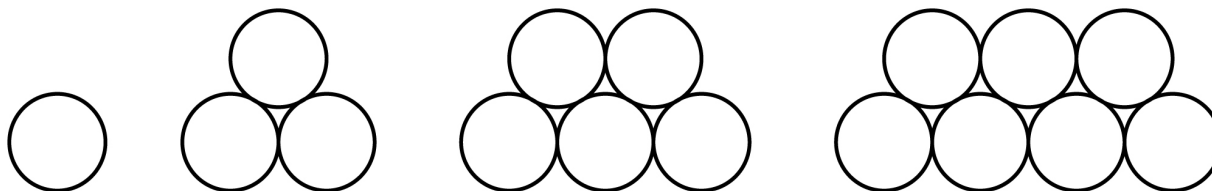
Line Master 8-6



What comes next?

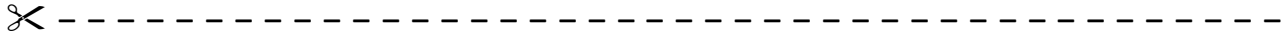


What comes next?

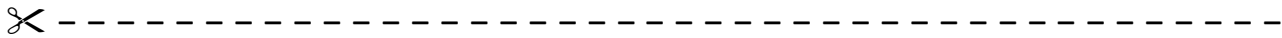
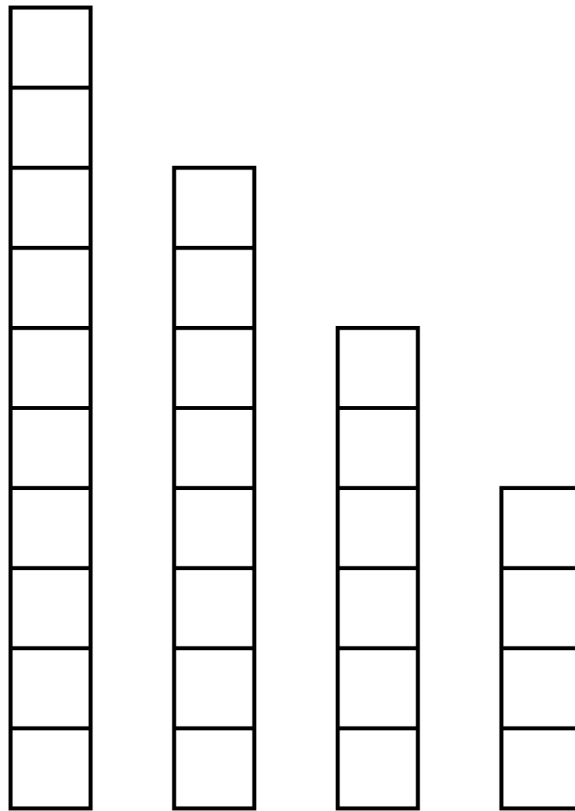


Pattern Challenges

Line Master 8-7



What comes next?



What comes next?

