MONTH 1

Logic & Patterns

Monthly Learning Goals

Month 1 introduces students to the kind of thinking that will be used throughout the rest of the Math Mania curriculum. Students will practice looking for patterns, making predictions, testing ideas, and explaining why an answer makes sense.

The goal is not to teach students a list of formulas. Instead, students will learn to slow down, notice what is happening in a problem, and use clues to figure out what comes next.

By the End of This Month, Students Should Be Able To:

- Identify and describe simple numerical and visual patterns.
- Make predictions based on information they already have.
- Use clues to eliminate possibilities in logic problems.
- Explain the reasoning behind an answer rather than just giving the answer.
- Try multiple approaches when the first idea does not work.
- Work with a partner or group to compare different strategies.
- Recognize that a problem can sometimes have more than one possible approach.

Skills We Will Practice

Pattern Recognition
Finding what changes, what stays the same, and what comes next.

Logical Reasoning
Using clues and information to narrow down possibilities.

Problem Solving
Breaking a larger problem into smaller pieces and trying different strategies.

Mathematical Communication
Explaining an idea clearly enough that someone else can follow it.

Persistence
Sticking with a problem even when the answer is not immediately obvious.

This Month's Activities

- Matchstick puzzles
- Number and shape patterns
- Logic grid puzzles
- "What comes next?" challenges
- Visual reasoning puzzles
- Pattern races

Connection to the Rest of the Year

The skills introduced in Month 1 will come back throughout the entire Math Mania curriculum. Pattern recognition will help with competition math, logical reasoning will help with strategy games and probability, and explaining solutions will become especially important when students begin creating their own problems later in the year.

Fill in the blanks of the sequences.

1) 4, 8, 10, 20, 22, 44, 46, __, __, __

2) 1, 3, -1, -3, -7, -21, -25, __, __, __

3) 0, 1, 1, 2, 3, 5, 8, __, __, __

4) 4, 12, 16, 48, 52, 156, 160, __, __, __

5) 9, 12, 7, 10, 5, 8, 3, __, __, __

6) 16, 22, 19, 25, 22, 28, 25, __, __, __

7) 4, 12, 16, 48, 52, 156, 160, __, __, __

8) 4, 8, 1, 2, -5, -10, -17, __, __, __

9) 22, 28, 21, 27, 20, 26, 19, __, __, __

10) 1, 2, -4, -8, -14, -28, -34, __, __, __

1) 4, 8, 10, 20, 22, 44, 46, 92, 94, 186 (x2, +2)

2) 1, 3, -1, -3, -7, -21, -25, -75, -79, -237 (x3, -4)

3) 0, 1, 1, 2, 3, 5, 8, 13, 21, 34 (Fibonacci)

4) 4, 12, 16, 48, 52, 156, 160, 480, 484, 1452 (x3, +4)

5) 9, 12, 7, 10, 5, 8, 3, 6, 1, 4 (+3, -5)

6) 16, 22, 19, 25, 22, 28, 25, 31, 28, 34 (+6, -3)

7) 4, 12, 16, 48, 52, 156, 160, 480, 484, 1452 (x3, +4)

8) 4, 8, 1, 2, -5, -10, -17, -34, -41, -82 (x2, -7)

9) 22, 28, 21, 27, 20, 26, 19, 25, 18, 24 (+6, -7)

10) 1, 2, -4, -8, -14, -28, -34, -68, -74, -148 (x2, -6)

Name _____

Pattern Block Challenges



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How many of each shape did you use to solve the challenges?

	HEXAGON	FAT RHOMBUS	SKINNY RHOMBUS	SQUARE	TRAPEZOID	TRIANGLE
A						
B						
C						
D						
E						
F						
G						
H						
I						
J						

Name ANSWER KEY - SPRING

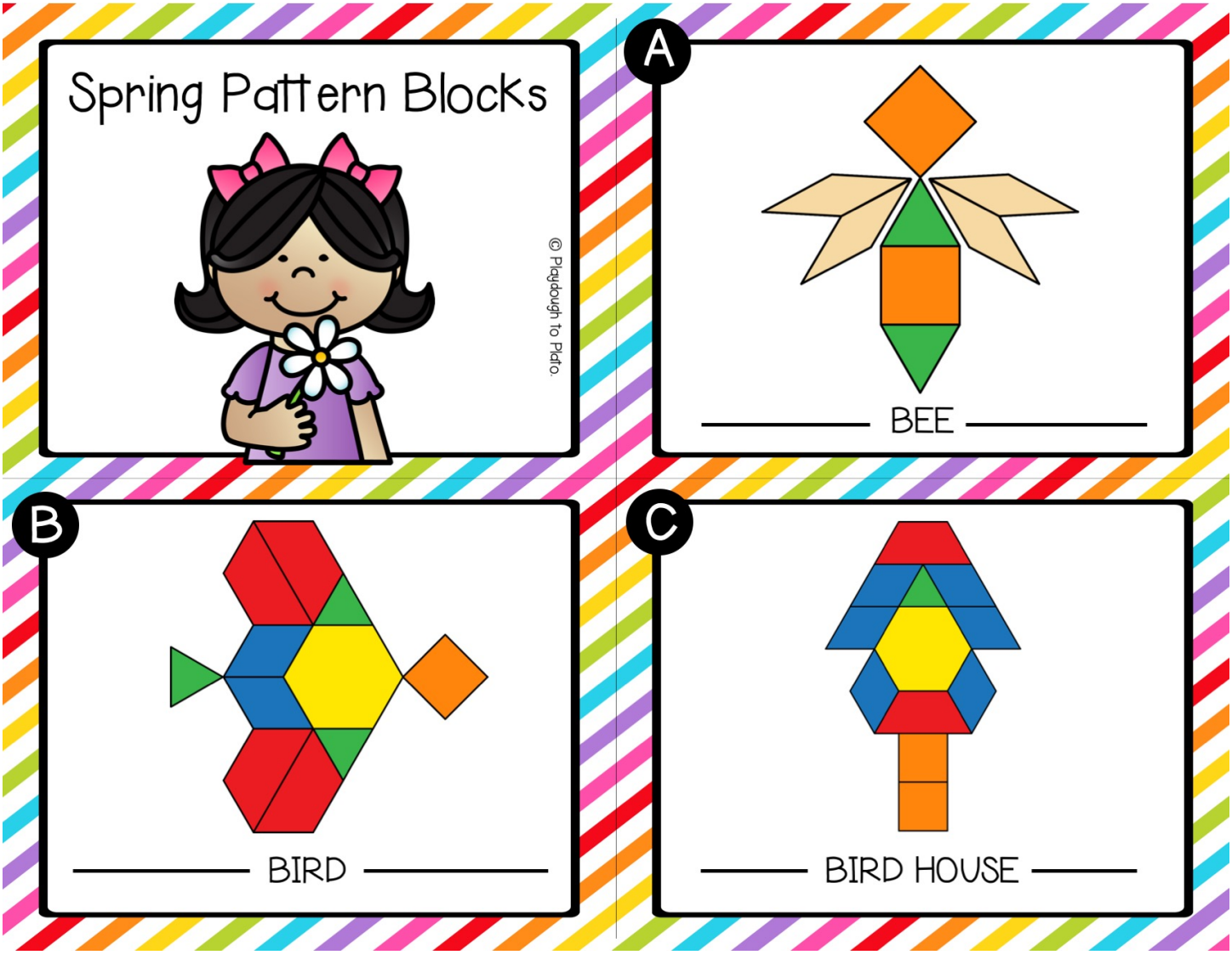
Pattern Block Challenges



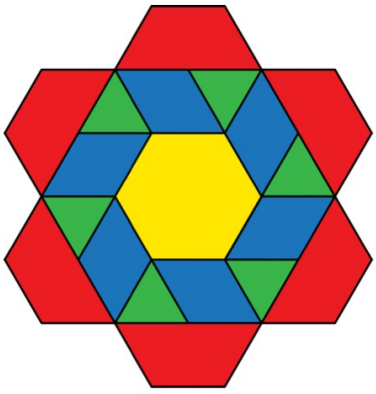
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How many of each shape did you use to solve the challenges?

	HEXAGON	FAT RHOMBUS	SKINNY RHOMBUS	SQUARE	TRAPEZOID	TRIANGLE
A	0	0	4	2	0	2
B	1	2	0	1	4	3
C	1	6	0	2	2	1
D	1	6	0	0	6	6
E	1	2	2	0	2	2
F	1	0	4	2	2	6
G	1	3	0	0	0	2
H	0	6	1	2	2	6
I	1	4	1	0	2	4
J	2	7	0	0	3	6

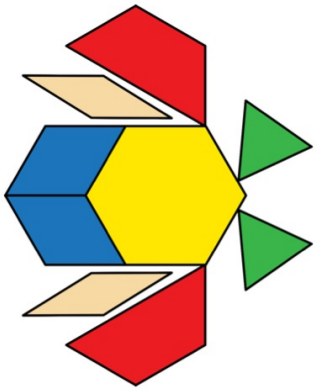

Spring Pattern Blocks
© Playdough to Plato
A
BEE
B
BIRD
C
BIRD HOUSE

D



BLOSSOM

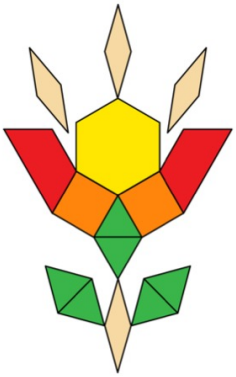
E



BUG

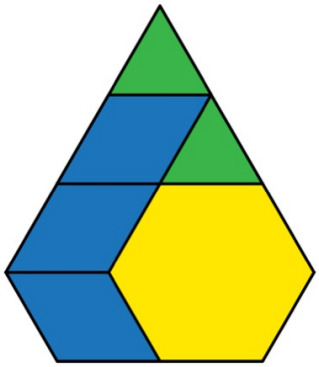
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F

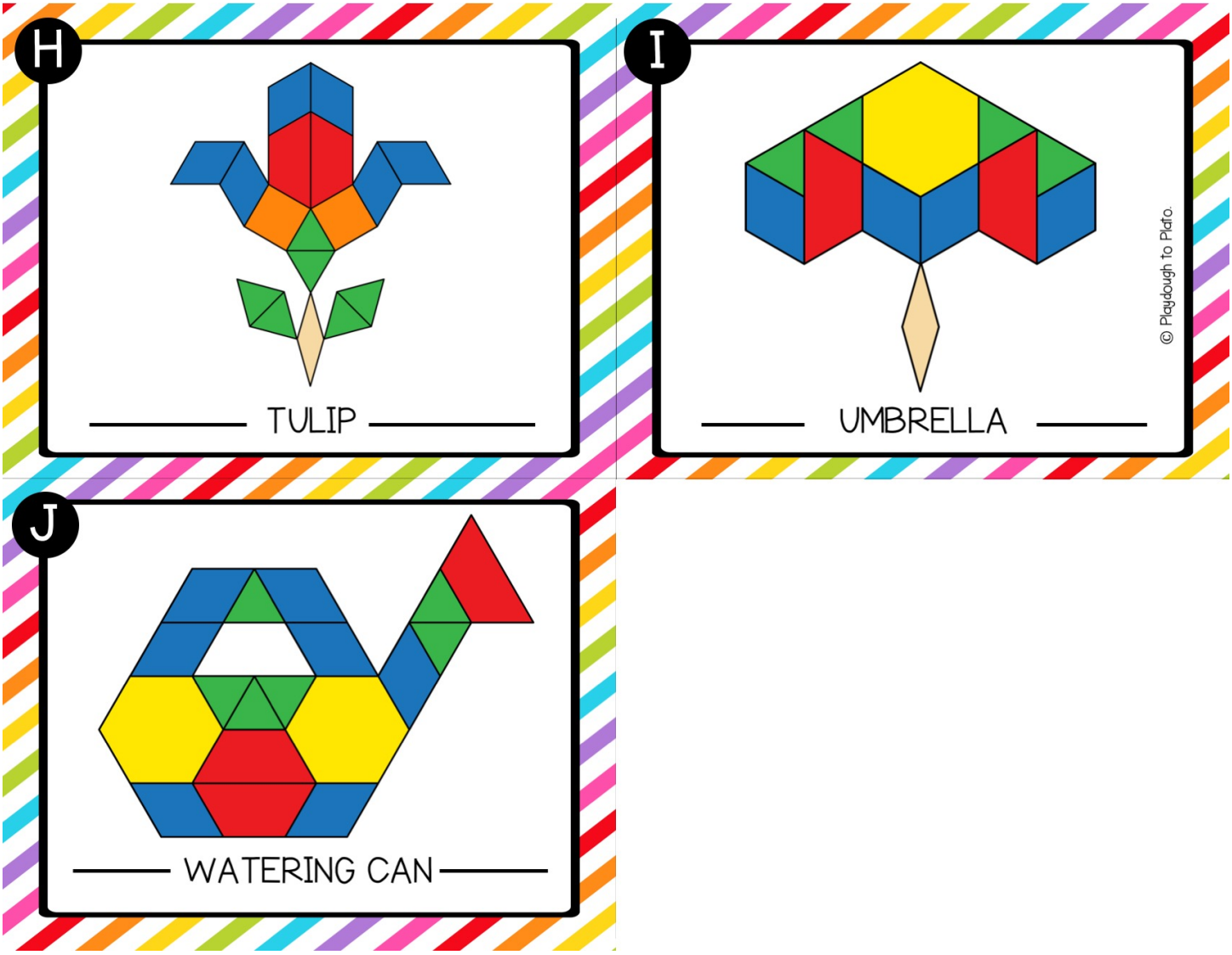


FLOWER

G



RAINDROP


H
TULIP
I
UMBRELLA
© Playdough to Plato.
J
WATERING CAN