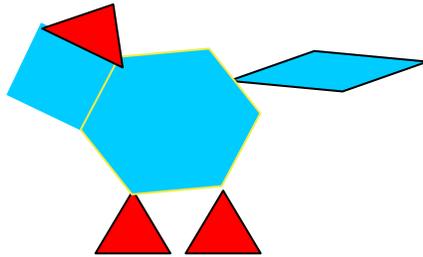


## Building Chicks with Pattern Blocks

Students build, extend, and describe a growth pattern using concrete materials and a context to support them in developing relationships. Students are introduced to a Stage #1 Chick. They predict and then extend the pattern.

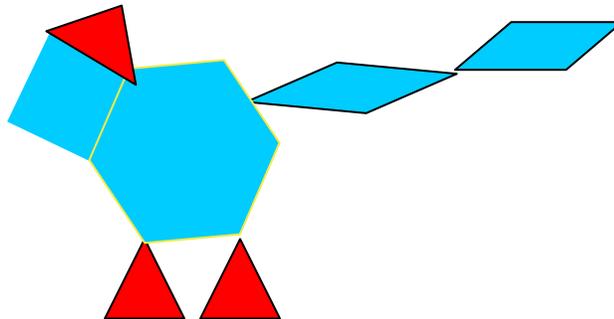


Show students a Stage #1 Chick. Ask students to build the Chick. Ask student(s) to use their imagination to predict what a Stage #2 Chick might look like. What might be the pattern?

Ask students to build the second Chick to illustrate their ideas. Ask different students to share and explain the pattern they think might be the pattern the teacher is thinking about.

Teacher shows Stage #2 in the pattern. Teacher explains that other ideas were possible but this is the pattern "I am thinking about".

Ask students to build the Stage #2 Chick.



What is the same and what is different about the Stage#1 and the Stage #2 Chicks?

What remained the same or constant about the two Chicks? (body)

How many blocks are in the body? (5)

What varied or changed from Stage #1 to Stage #2? *The tail changed.*

*How?* What do you predict a Stage #3 Chick will look like? Build a Stage #3 Chick.

## Building Chicks with Pattern Blocks page 2 (continued)

Draw a #3 column table with headings. The table should be visible to all students. Ask students to draw a table on their paper and label the columns.

Ask students to explain the column headings by relating the numbers to the blocks. Together fill in column through Stage #4 or #5

<b>Constant + Variable</b>		
<b>Stage #</b>	<b>Body + Tail</b>	<b>Total # of Blocks</b>
1	5 + 1	6
2	5 + 2	7
3	5 + 3	8
4	5 + 4	9
5		
6		

Ask: What do you notice about the numbers under **Body + Tail**? (five goes on and on ) Explain this number remains constant or stays the same. (relate to constant speed on bicycle or running or maybe your room is a constant "mess", constant talking) Ask students to think of other things that remain the same or constant. **(Add constant above body on chart.)**

Ask: What changes or varies? (relate to temperature changing, seasons, food in the lunch room; sports on television etc.) Tell students, the tail is the variable part of the pattern because it changes. **(Add variable above tail.)**

Ask: How is the pattern growing? What do you notice about the Tail numbers? (Listen to students as they explain their ideas.

*(Some students may see that the tail has same number of blocks as the stage number – do not tell students this information)*

*If someone suggests that the tail always has the same number of blocks as the stage number, ask students to listen to the conjecture or idea from student (name). Ask: Is this always true? How can we find out? (Try more numbers). Can anyone find an example of where this doesn't work? If no one suggests this, continue with lesson.)*

## Building Chicks with Pattern Blocks page 3 (continued)

Ask: What if the Stage Numbers are not in order? What if we skip to Stage #8? Build the Chick for Stage #8. What is the total number of blocks needed to build a Stage #8 Chick. Convince someone your pattern is correct.

Say: Describe a Stage #10 Chick. (5 blocks for body and 10 blocks for the tail.

Ask: What would be the total number of blocks needed to build a Stage 10 Chick? (15) How do you know?

(If lots of students are struggling, use many smaller Stage *numbers* before going to Stage 100.) Students who are struggling might work together to try to figure out small numbers. Be sure each student is engaged in the building of the Chick.

Give the following as an assignment: *Differentiate by giving smaller numbers to students who need more time to process these ideas.*

- Describe what a Stage #100 Chick would look like? How do you know?

Ask: How many total blocks would you need to build a Stage #100 Chick? Explain your thinking. (5 for the body and 100 for the Tail = 105 total blocks.)

- Share: Ask a few students who used smaller Stage numbers to share first. Be sure everyone can explain their ideas. (Teacher should continue to use vocabulary: (growing pattern; constant; stays the same; variable; changes; total number of blocks, etc. )

### Generalizing the Pattern

Ask: How would you figure out the number of blocks needed to build any Stage Chick? Try a few numbers as a whole class before asking students to select their own numbers.

Suggestions: ( 15, 20, 25 ) If some students are able to do this independently, allow them to share their ideas with others.

- Provide opportunities for students to develop their own patterns. (insect, flower, rocket, robot, animal)

*Adapted from Lessons for Algebraic Thinking, Grades 3-5. Math Solutions Publications, 2002.*