Activity A.3b: Getting Acquainted with Zillio (Grades 3 & Up)

Learning Objectives:

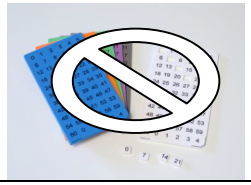
1) Become familiar with Zillio structure and terminology.
2) Learn how to reorder the staircases.
3) Recognize equivalent representations for the same number.

Examples of Skills Accomplished:

1) N/A

Setup:

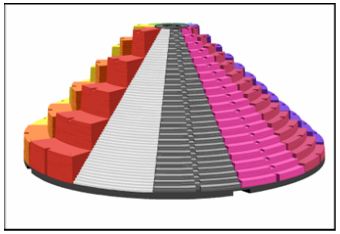
1) Put staircases in counterclockwise sequence 1x → 12x.
2) No tokens will be used for this introductory lesson.



Maximum Number of Players for Small Group Activities: 6

Players Positions: Standing

Grey Foam Logs: Out



Activities:

1) Begin by asking students to tell you as much about the structure as possible. Talk about the shapes, the scale, the design and the purpose.
2) Beginning with the 12x staircase, ask how many steps does it take to get to the top?
3) Rotate Zillio and ask how many steps to the top on the 10x staircase? The 6x staircase? The 3x staircase? The 1x staircase?
4) Ask why does it only take 5 steps on the 12x staircase but it takes 60 steps to get to the top of the 1x staircase?
5) If students do not recognize that each staircase represents a staircase and their multiples, ask each student to count the lines on the face of a step and compare it to the number on the 1st step (that is followed by an x).
6) Ask why the fifth step on the 3x staircase is lower than the fifth step on the 4x

Hints:

- Refer to the visual dictionary additional terms if desired.

staircase? What is the difference in height (measured in units)? Answer: Each line on the face of a step represents a unit so the difference is 5. Also (5 x 4) – (5 x 3) = 5. 7) Ask them if all steps on a staircase are the same height? Answer: Yes, except for the top step on each of the 7x, 8x, 9x, and 11x staircases. 8) Ask students about these steps and why are they different? Answer: Each of these steps represents a partial step because 60 is not divisible by 7, 8, 9, or 11. 9) Ask if anyone knows how high Zillio would have to be if each of those staircases ended on a complete step? Answers: 63, 64, 63, and 66 on the 7x, 8x, 9x, and 11x staircases respectively. 10) Teach students how to remove and re-sequence staircases.	This vocabulary may be confusing to some. Divisible means evenly divided by. Of course 60 can be divided by 7, 8, 9, 11 as well, but the quotient for these divisors will include remainders. This may be a good point to introduce that concept briefly if you wish.
Observe and Assess: 1) Whether students have an intuitive feel for how the multiples are represented.	
Group Discussion & Review of Findings: 1) Zillio is based on numbers and their multiples. The staircase represents the size of a group and the number of steps represents the number of groups. The product of the group size and the number of groups represent the elevation. 2) There are a couple of rules on Mountain etiquette: a. The structure can rotate but only with permission. b. The staircases can be reordered but only with permission.	
Transition to Paper: 1) N/A	