

# Jumping Your Hurdles

## 4. Crack the Code

**Spatial Requirements:** Regular classroom setup: little or no space required

**Activity Type:** Group

**Grades:** 5-12

**Group Size:** 2 or more

**Time:** 10 minutes

**Introduction:** Getting over a hurdle often requires collaboration and thinking outside the box. This activity will illustrate the value of creative thinking while also showing the importance of plugging in to solve problems.

**Materials:**

- Blackboard or whiteboard

**Activity:**

Give your students the first three lines of the sequence or pattern as follows:

1  
1 1  
2 1

Have them work alone for a while, trying to figure out the rule of the pattern and writing what they think the next line would be in the sequence or pattern. After a few minutes of working on it, give them the next line of the sequence or pattern as follows:

1 2 1 1

Once again, have them work alone for a few minutes with this added information to see if they can figure out the rule. Then have them get into small groups and discuss ideas and theories that they may have come up with. If no group has found a solution after a few minutes, give them the next line as follows:

1 1 1 2 2 1

Give the groups a few minutes more to try to solve the sequence. Then give students the solution.

**Solution:** Level one is simply 1. The next level, and each subsequent level, will tell what was in the level preceding it. For example, level two will have two 1s because it tells us that the top level contains one 1 (1 1). Level three tells us that the level above it has two 1s (2 1), and the following level is one 2 and one 1 (1 2 1 1). The extended sequence will appear as follows:

1  
1 1  
2 1  
1 2 1 1  
1 1 1 2 2 1  
3 1 2 2 1 1  
1 3 1 1 2 2 2 1  
1 1 1 3 2 1 3 2 1 1

After giving students the solution, let them work for a few minutes and see how many lines they can add to the sequence or pattern.

**Processing the Experience:**

- How hard was it to find the sequence rule when you were working by yourself?
- Was it easier working as a group? Did you come closer to solving it as a group? Did you have more possible solutions?
- Why is it important to “think outside the box” when jumping our own personal hurdles?
- Which of the “Jumping Your Hurdle” steps might be easier with the help and support of someone else?

Additional activity: As a homework assignment, have students give someone else this activity and report back on how it went.