



## **CONSTRUCTING TASK: No, You Can't**

Approximately 1-2 Days

### **STANDARDS FOR MATHEMATICAL CONTENT**

**MCC2.OA.4.** Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

### **STANDARDS FOR MATHEMATICAL PRACTICE**

- 1 Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

**\*\*\*Mathematical Practices 1 and 6 should be evident in EVERY lesson\*\*\***

### **BACKGROUND KNOWLEDGE**

(Information quoted from Van de Walle, Karp, and Bay-Williams, Elementary and Middle School Mathematics: Teaching Developmentally, page 266-267)

This task requires the students to build conjectures of their own and then participate in meaningful discussion. This is a direct reflection of the Standards of Mathematical Practices which should be incorporated within every task. While the

“It is important that all students initiate conjectures. It is important that all students actively consider the validity of all conjectures made by classmates. When deciding if s conjecture is always true, have students write their ideas before sharing with the class. If you begin with a class discussion, only a few students are likely to participate, with others content to listen whether or not they are following the arguments. You can then use both what the students write as well as their input in discussions to assess what level of reasoning they are at: authority, use of examples, or an appeal to logic.”

### **ESSENTIAL QUESTIONS**

- What is an array?
- What is repeated addition?
- How can rectangular arrays help us with repeated addition?
- How are arrays and repeated addition related?
- How does skip counting help us solve repeated addition problems?

- How can we use model repeated addition equation with an array?

## **MATERIALS**

- Recording Sheet with table

## **GROUPING**

Small Group, Partners

## **TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION**

### **Part I**

Within a small group, provide students with the problem:

*Lou, Stu, and Moe are triplets who love to argue. They always argue until one would prove the other two wrong. This time they're stuck and need your help.*

- *Lou says every number (0 to 25) can be represented in an array that has two or more rows.*
- *Stu says you can make an array with 2 or more rows for less than 16 of the numbers (0 to 25).*
- *Moe says you can make an array with 2 or more rows for more than 16 of the numbers (0 to 25).*

*Who is right? If you know a brother is wrong, you must prove it to them using numbers, pictures and words to show your thinking! Otherwise they will keep arguing!!!!*

### **Part II**

Have groups create an anchor chart stating which brother they feel is right and what lead them to this understanding. After all the students have created their anchor charts, allow each group to present their discoveries. Once all the groups have shared their thoughts, open the class to a group discussion in which they can carry on a constructive, respectful, debate. This will directly enforce the Standards for Mathematical Practices.

## **FORMATIVE ASSESSMENT QUESTIONS**

- What information is important?
- Which brother do you think will be correct?
- Can you see any mistakes that the brothers made?

## **DIFFERENTIATION**

### **Extension**

- What do all the numbers that have an array with 2 or more rows have in common?  
Create a rule and test it with larger numbers.

### **Intervention**

- Provide students with a limited list of numbers 1-10. This will allow the students to still see the patterning,



Name: \_\_\_\_\_

### No, You Can't

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- Stu says you can make an array with 2 or more rows for less than 16 of the numbers (0 to 25).
- Moe says you can make an array with 2 or more rows for more than 16 of the numbers (0 to 25).

Who is right? If you know a brother is wrong, you must prove it to them using numbers, pictures and words to share your thinking! Otherwise they will keep arguing!!!!

Name: \_\_\_\_\_

Write the repeated addition sentence for the numbers that can be modeled in an array with 2 or more rows

Equation		Equation	
0		13	
1		14	
2		15	
3		16	
4		17	
5		18	
6		19	
7		20	
8		21	
9		22	
10		23	
11		24	
12		25	