

Lesson Plan

NEUROHEADWAY

Neuroscience Into Education

Math

Mini Module – Square and Cubed Numbers

Page (Reference Document)	Subject	Description	Timing
Page 1	Intro to Square and cube	Ask students first what they think of when they hear “square” and “cube.” – Discuss with peers beside them Square and cubed are a special type of exponent. Exponents tell you how many times to multiply a number or numerical expression times itself. To square a number is to multiply a number times itself. Ex. 2 squared is 2×2 To cube a number is to multiply a number times itself 3 times. Ex. 2 cubed is $2 \times 2 \times 2$ Think of a square (the shape) as it is 2-dimensional, so multiply 2 times. A cube, in contrast, is 3 dimensional, so multiply 3 times.	3 min
Page 1	Activity	Practice squaring and cubing - Divide students into pairs - o Ask them to group themselves into 2 squared - o Students should be in 2 groups of 2 for 2 squared - Count the number of students in their groups, and they will have squared - o 2 squared would be 4 students - o Why doesn't this work for cubing? - Tell students to think about how they did 2×2 (two groups of 2 students) - o When cubing, the second part of the equations becomes 4×2 (so it would be 2 groups of 4 students) - Work together in pairs/groups to figure out 3 squared, and 3 cubed	10 min

Discussion/ Takeaway		When you square or cube a number or expression, you multiply that number (or mathematical expression) by itself (however many times the exponent says). For squared, it is twice. For cubed, it is 3 times. Think of square as 2 dimensional, so you multiply 2 times. A cube is the same a square, but 3 dimensional, so you multiply 3 times.	2 min
Extra:		For bright students, think about what squaring and cubing algebraic equations would look like. Eg. $(x+2)$ squared would look like $(x+2)*(x+2)$	

Squared and Cubed Numbers

Learning outcomes:

1. Understand what it means to “square” or “cube”
 2. Apply to different types of numbers
 3. Practice squaring and cubing numbers
 4. For Bright students, squaring algebraic equations and letters
- What does it mean to square or cube a number?
 - Ask students first what they think.
 - Square and cubed are a special type of exponent. Exponents tell you how many times to multiply a number or numerical expression times itself.
 - To square a number is to multiply a number times itself
 - Ex: 2 squared is $2*2$
 - To cube a number is to multiply a number by itself 3 times
 - Ex: 2 cubed is $2*2*2$
 - Activity: Practice squaring and cubing
 - Divide students into pairs
 - Ask them to group themselves into 2 squared
 - Students should be in 2 groups of 2 for 2 squared
 - Count the number of students in their groups, and they will have squared
 - 2 squared would be 4 students
 - Why doesn't this work for cubing?
 - Tell students to think about how they did $2*2$ (two groups of 2 students)
 - When cubing, the second part of the equations becomes $4*2$ (so it would be 2 groups of 4 students)
 - Work together in pairs to figure out 3 squared, and 3 cubed
 - For bright students:
 - Square algebraic equations
 - What would $(x+2)^2$ look like?
 - Should write down $(x+2)*(x+2)$

- Discussion:
 - When you square or cube a number or expression, you multiply that number (or mathematical expression) by itself (however many times the exponent says). For squared, it is twice. For cubed, it is 3 times. Think of square as 2 dimensional, so you multiply 2 times. A cube is the same a square, but 3 dimensional, so you multiply 3 times.