Connecting Cubes

What are Connecting Cubes?

Interlocking cubes are available in different sizes and different colours. In a 1-cm cube set, each cube has a mass of 1 g, which is useful for mass explorations.

How do Connecting Cubes help students?

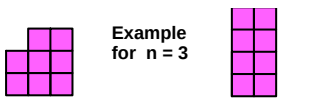
Interlocking cubes help students develop spatial sense. They are also used to develop understanding of number and measurement concepts. Students can use cubes to create, identify, and extend patterns. The patterns can be used to develop algebraic models. The variety of colours also allows cubes to be used in probability experiments.

How many are recommended?

Students usually work in pairs or small groups when using connecting cubes. A class set of about 700 to 1000 pieces allows students enough cubes to do a variety of activities. When interlocking cubes are introduced to the class, allow students time to explore. Note: When students finish an activity, consider instructing students to connect the cubes in "trains" of 10 linked cubes to facilitate collection after an activity, storage between activities, and preparation for the next activity.

Sample Activities

1. Build a cube train. What colour is the 200th cube in the train?
2. Represent 347 in expanded form using single cubes, trains of 10 cubes, and large "squares" of 100 cubes.
3. Create a model of one quilting square (or floor tile) using nine cubes of different colours. If four squares are used to form one larger square, how many different patterns can be formed?
4. How many different ways can you illustrate $\frac{3}{4}$ (or a decimal, or a percent)?
5. Use two different colours of cubes to model integer questions. (Note: the number of cubes represents size and the colour of cubes represents sign.)
6. Design a sequence of patterns. Analyse the pattern and determine an attribute of the 100th term in the sequence (connect to algebraic modelling).
7. Explore relationships between perimeter and area, and between surface area and volume.
8. Build a structure then draw the top, front, and side views (or draw the structure on isometric paper).
9. Put different coloured cubes into a paper bag. Determine the probability of choosing a yellow cube.
10. Let *b* represent the mass of one cube. Determine representations for the masses of different structures.
11. Build an object out of interlocking cubes. Write instructions for making the object. Trade instructions with another group.
12. Create different "staircase" models to investigate slope.
13. Use connecting cubes to create histograms or frequency charts.
14. Determine how many different structures can be built with four cubes.
15. Use cube links to model different ways to decompose shapes to find area and perimeter.
16. Use cubes to model algebraic rules. Example: $n^2 - 1 = (n - 1)(n + 1)$



Recommended Websites

http://illuminations.nctm.org/Activities.aspx?grade=all&srchstr=isometric Interactive Isometric Drawing Tool

http://nlvm.usu.edu/en/nav/search.html?qt=blocks Space Blocks, Algebra. 6-8 (interactive 3-D blocks)

http://www.edu.gov.on.ca/eng/curriculum/elementary/math8ex/pattern.pdf Grade 8 Exemplar, Patterning and Algebra activity

www.otrnet.com.au/IntegratedMathsModules/B06/B06ApplicationF.pdf Box Design Activity