

Manipulatives

Examples of manipulatives to use during math workshop include: (Heuser, 2000a, p. 291)

Everyday Manipulatives	Tools
Spray-painted pasta, seeds, dry beans	Thermometers
Nuts and bolts	Tape measures and rulers
Dominoes, color chips, dice	Balances and scales
Base-ten blocks, unifix cubes, geoboards and rubber bands, attribute blocks, multicolored cubes of various sizes	Measuring cups and spoons
Plastic dinosaurs and animals, buttons, puff balls, plastic boats and airplanes, bones	Hourglasses and stopwatches
Plastic links, plastic beads, bottle caps, feathers, seashells, rods of different sizes	
Pattern blocks, fraction circles and squares, tangrams	

Questions to ask during math workshop or when students use manipulatives include: (Heuser, 2000a, p. 292)

Question prompts for conferencing	
Patterning	If I make a pattern, can you continue the pattern? Can you make a pattern for me to try to continue? Look at my pattern. Can you make it the same way? Can you do it the opposite of mine?
Classifying	Can you put these into groups so that the ones that are alike are together? Why did you put them into those piles? Can you do it another way?
Counting	How many do you have there? Show me how you count them. Can you think of a way to arrange them so that if you lost count, you would not have to start all over again? Which pile has more? Can you make this pile with one more? One less?
Calculating	What if I take away ten from this pile? Add twenty? How many will there be then? You said that five plus two was eight. Can you show me with these objects? What is one more than this? One less? How many dinosaurs do you have? Close your eyes. I just hid some of them in my hand. Can you tell me how many I am holding? How did you know?
Ordering	Can you put them in order from shortest to longest? Close your eyes. If I take one away, can you put it back where it was before? Here is a new thing. Can you put it in with these things that you have already ordered?
Measuring	How tall (heavy, wide, etc.) is that? How can you find out? What is about the same size? Can you use this string to make a drawing that is exactly the same size as your tower? Do you think that this chain will make it all the way to my desk? How many more links will you have to add? Which one is bigger? How tall is it? Can you make this one the same size?
Estimating	Estimate how many are here in all. Next find out how close you are. Did you estimate high or low? Where you close? How close?

From Heuser, D. (2000). Mathematics class becomes learner centered. *Teaching Children Mathematics*, 6(5), 288-295.

General Thoughts about Manipulatives

1. Always allow students “*free play*” time with manipulatives the first couple of times they are introduced.
2. Establish *specific rules* for the use of hands-on manipulatives.
3. Establish a *routine* for the distribution and collection of the manipulatives.
4. Do **NOT** ask students to memorize procedures with manipulatives!
5. Remember manipulatives are only *tools* for *understanding*, not the focus of the lesson.
6. Students do not inherently learn simply because they are using manipulatives.
7. Not every child will understand every manipulative.
8. Work with teachers in your building to *collaborate and share* manipulative resources and ideas.

Adapted from Brahier, D. J. (2009). Teaching tools and strategies. *Teaching secondary and middle childhood mathematics* (pp. 179-180). Boston: Pearson.