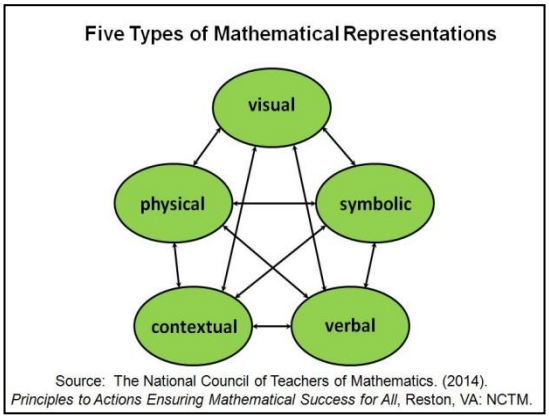
Fostering Connections and Using Representations in the Mathematics Classroom

Mathematical Connections

Students will **relate concepts and procedures** from different topics in mathematics to one another and see mathematics as an integrated field of study. Through the application of content and process skills, students will **make connections between different areas of mathematics and between mathematics and other disciplines, especially science**. Science and mathematics teachers and curriculum writers are encouraged to develop mathematics and science curricula that reinforce each other. (*From the Introduction to the 2009 Virginia Mathematics Standards of Learning)*

Mathematical Representations



Source: The National Council of Teachers of Mathematics. (2014). *Principles to Actions Ensuring Mathematical Success for All*, Reston, VA: NCTM.

Students will **represent and describe mathematical ideas, generalizations, and relationships** with a variety of methods. Students will understand that representations of mathematical ideas are an essential part of learning, doing, and communicating mathematics. Students should **move easily among different representations** – graphical, numerical, algebraic, verbal, and physical – and recognize that representation is both a *process and a product*. (*From the Introduction to the 2009 Virginia Mathematics Standards of Learning)*

Mathematics Classroom LOOK FORS

- Are multiple representations and connections encouraged within the classroom? this lesson?
- What types of representation and/or connections are present in this activity?
- How are students creating and using representations to make sense of the mathematics?
- Are students describing and justifying their reasoning with drawings, diagrams, and other representations?
- How is the classroom discussion enhanced by students' representations and/or connections?
- In what ways does the teacher assess students' abilities to use representations meaningfully to solve problems?

Additional resources for Making Mathematical Connections and Using Representations can be found on the Virginia Department of Education's Web site at: http://www.doe.virginia.gov/instruction/mathematics/professional_development/index.shtml.