Math Notes

Southern Nevada Regional Professional Development Program

CCSS MINI-SERIES ES #1.7

A Newsletter from the Elementary Mathematics Team

Look for and Make Use of Structure

Mathematical Practice # 7

Math Resources

www.rpdp.net

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. They are sometimes referred to as the *8 Standards for Mathematical Practice*. In this and subsequent issues you will find excerpts from these practices as well as brief sketches from the **Conference Board of Mathematical Science** of the Common Core State Standards for Mathematical Practice as they apply to teaching in elementary school.

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.

7. Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property.

At elementary school, looking for structure usually involves the following:

- unitizing—finding or creating a unit, such as seeing one hundred as ten groups of ten, viewing a unit fraction such as 1/5 as a new unit, or making a car shape out of several smaller shapes and then repeating the car shape to show traffic on a road;
- decomposing and composing, such as decomposing 1 ten into 10 ones or viewing a rectangular prism as composed of equal layers made of unit cubes;
- relating and ordering, such as putting a collection of sticks in order by length or reasoning that 1/11 is greater than 1/12 because when a cake is cut into 12 equal pieces the pieces are smaller than when it is only cut into 11 equal pieces; and
- looking for patterns and structures and organizing information, such as noticing the repeating pattern of ones digits in the multiples of a number or that when you make quadrilaterals out of sticks so that the opposite sides are the same length, the opposite sides are also always parallel.

Try this! **Solve these sums. Use what you know about the first one to solve the next.**

250+250
249+249
249+248
248+248

Show your work and explain your thinking.

* COMMON CORE STATE STANDARDS FOR Mathematics
http://www.corestandards.org/the-standards/mathematics/introduction/standards-for-mathematical-practice/
Conference Board of Mathematical Science