Spatial Sense, Measurement, and Geometry

2.01 Use formulas and algebraic expressions (from science, geometry, statistics, etc.) to solve problems.

A. Ask the students to talk to their parents and others to find out what kinds of formulas they use in life. In groups during class compile a list of the formulas used. Match the formula to who uses it. Have each group design a poster to illustrate the formula. Solve for different variables in the formula.

B. Hand out formulas on index cards. Ask the students to write a problem for the formula he/she receives. Switch cards and repeat the process.

C. Sports offer a particularly rich context for using formulas. Let students investigate formulas in sports where they are most interested and create problems based on those formulas. Here is an example.

According to the NCAA, Richie Williams, Appalachian State University, was the highest rated quarterback in North Carolina during the 2004 football season. The NCAA uses the following formula to measure the passing efficiency of quarterbacks.

(yards per attempt) • 8.4 + completion percentage + touchdown percentage • 3.3
- interception percentage • 2

For Williams that would be:

$$\frac{3109}{350} \bullet 8.4 + (100 \bullet \frac{234}{350}) + (100 \bullet \frac{24}{350}) \bullet 3.3 - (100 \bullet \frac{10}{350}) \bullet 2 = 158.4$$

Find the appropriate statistics for the college quarterbacks in North Carolina from the most recent football season. Rank them using the formula for passing efficiency.