A TEACHER REFLECTS

In addition to the final project, I decided to assess students on this unit by posing several problems. I gave students ample time to work on these problems both in class and at home. I also gave them the option of pulling together a portfolio of work from earlier lessons that demonstrated their understanding of the concepts in the problems. The problems I assigned were as follows:

- Determine the height of a flagpole, given the distance of its base from a rock (41 ft) and the angle of elevation from the rock to the top of the flagpole (28°). Use calculations and/or scale drawings to find the flagpole's height.
- Calculate the height of a riser on a stairway, given the stairway's slope ($\frac{4}{5}$) and the length of one tread (11 in.).
- Determine the slope angle and the horizontal distance of a road with a vertical rise of 400 ft and a grade of 20%.
- Use calculations and/or scale drawings to find the angle measures and hypotenuse of a right triangle with legs of length 15 cm and 9 cm.
- Describe in your own words and/or by diagrams the relationships between slope angle, tangent, slope ratio, and percent grade.
- Write a letter describing the learning outcomes of this unit, including advice on difficult areas.

Before getting students started on these problems, I prepared a rubric in the form of a chart. It listed the problems down the leftmost column and had assessment standards for various levels across the top. By discussing this rubric with students at the outset, they knew what I would be looking for and really bought into the assessment task.

PROBLEM	STANDARDS		
	Well Done (10 pts)	Acceptable (7 pts)	Needs Work (0 pts)
Determine the height of a flagpole, given the distance of its base from a rock (41 ft) and the angle of elevation from the rock to the top of the flagpole (28°).	Height is correctly calculated (21.8 ft), either with calculations or with a scale drawing clearly showing how this was done.	Height is off by 2 ft. or less. The calculations or drawings were correctly set up, but an error in calculating or drawing was made.	Height is off by more than 2 ft. The calculations or drawings were not correctly set up, resulting in an error.