

## Following Directions: A No Fuss, Paper and Pencil Lab Activity

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This no-fuss exercise is one of my favorite labs and has been adapted from an *American Biology Teacher* article by Brett (1989) — who is Chair of the Life Sciences Department at Indiana State University. It is a seemingly simple activity that challenges students to read and reread the provided directions and to translate the language into a visual figure. Terms and definitions are listed with requisite directions for constructing a two-dimensional hypothetical insect. The only materials required are pencil, eraser, paper, metric ruler, protractor, simple geometry aid, and the instructions.

I use this exercise as an introductory activity to impress upon the students the importance of reading to extract the most precise meaning of terms. Students work together in groups of two to four and while it encourages cooperative learning, this type of project enables them to informally become acquainted and to expose their varied thinking skills and resources. It enables the instructor to passively observe the different abilities and approaches as the students tend to think out loud while discussing their interpretations of the directions.

The instructions in the original article entitled *Insect singularis* do indeed challenge the students. The ambiguities that students criticize in the outline emphasize the need for clear descriptions using clean language. When students complain, I usually nod agreeably and suggest they produce an improved version which I will gratefully adapt. As the wordy blueprint becomes graphically visible, the students respond by accelerating their efforts and smiling in satisfaction. With non-majors, this exercise usually requires a 3-hour laboratory period; about half the time with majors.

I have rewritten this exercise to allow more space between the directions and to enable the students to pause between instructions. While the text is identical to the original article, the style is more student-friendly. I will be glad to share a copy upon request.

Brett, W. J. 1989. *Insect singularis*. *American Biology Teacher*, 51:43–45.