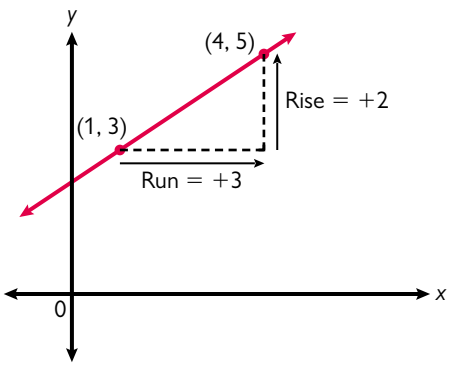
A TEACHER REFLECTS

Some Thoughts on Teaching Slope

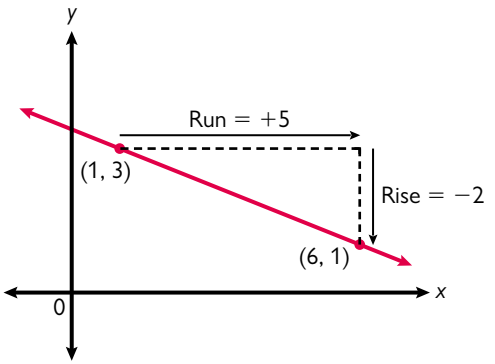
In order to help students calculate slopes, I introduced the idea of "directional" rises and runs. For example, to find the slope of the line through (1, 3) and (4, 5), I showed students how they could start at (1, 3) and move to (4, 5) with a positive run and a positive rise.



The slope is the ratio of rise to run, and students were immediately able to see that the slope of this line would be a fraction with a positive numerator and a positive denominator. Therefore, the slope of the line is positive.

In the case of the line through (1, 3) and (6, 1), we can go from (1, 3) to (6, 1) with a positive run and a negative rise. This shows that the slope ratio is negative, because it has a negative numerator and a positive denominator.

One of the nice things about this method is that it works regardless of which point is chosen as the starting point.



The Slope of Vertical Lines

I asked students to tell me what they thought the slope of the line $x = 4$ should be. Some students said it was zero because they found that the run is zero. I reminded these students that the run is in the denominator—not the numerator—of the slope ratio. I explained that the slope is undefined since division by zero is not defined.

Students often seem to find this unsatisfactory. One student said the slope of this line should be "infinity." I asked him why. He replied that anything divided by zero is infinity. This is a common misconception, especially since many students think of infinity as an actual number that is "really big."