Geometry–Do, First Day Exam

The first task of the American high-school geometry teacher is to rid the students of the notion that geometry is just a boring review of Algebra I. (Nothing new here. *Blah!!!*) Ask for the perimeter of a triangle with vertices $(-2,3), (-4,-4), (-7,-1)$ and make it a race.
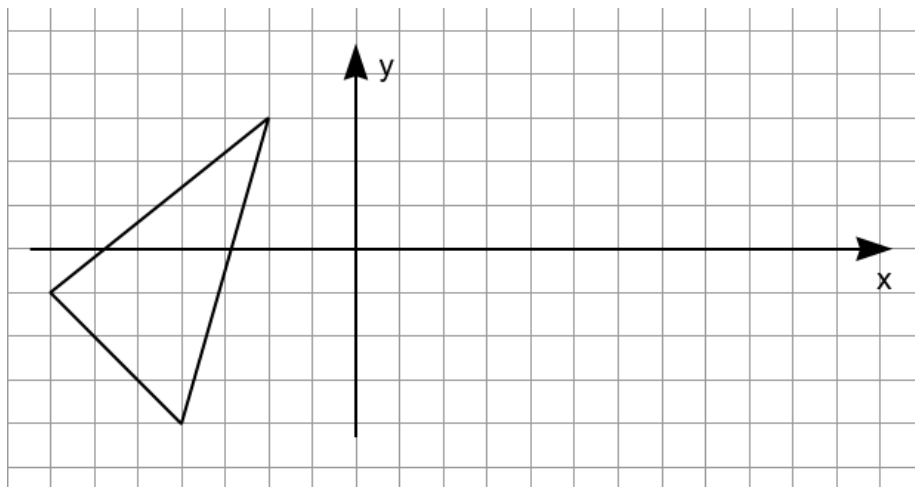
The easy way is to lay the three sides end-to-end on a line. Put the compass pin at $(-7,-1)$ and rotate it to lay off the lower left side on the horizontal. Without moving the pin, measure the upper left side and lay it off on the horizontal past the one you just did. Finally, measure the upper right side and lay it off on the horizontal past the one you just did. *It's segment addition!*

17.9
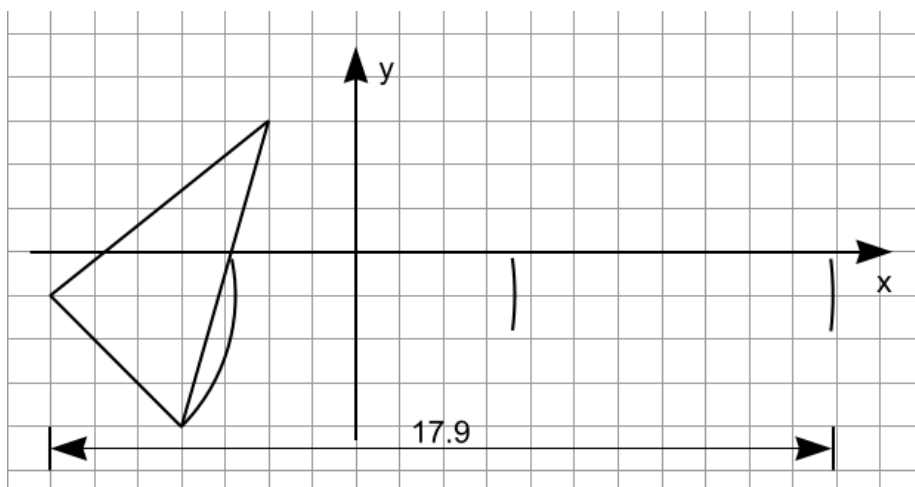
Taking the sum of three applications of the algebraic distance formula is the hard way to do this.

$$\sqrt{(-2-(-7))^2 + (3-(-1))^2} + \sqrt{(-2-(-4))^2 + (3-(-4))^2} + \sqrt{(-7-(-4))^2 + (-1-(-4))^2}$$
$$= \sqrt{(5)^2 + (4)^2} + \sqrt{(2)^2 + (7)^2} + \sqrt{(-3)^2 + (3)^2}$$
$$= \sqrt{25 + 16} + \sqrt{4 + 49} + \sqrt{9 + 9}$$
$$= \sqrt{41} + \sqrt{53} + \sqrt{18}$$
$$= 6.40 + 7.28 + 4.24$$
$$= 17.92$$

Is that the most boring and error-prone method *ever?* It's a good thing we are in geometry class! Here we learn easy and powerful methods to put that slow and boring Algebra I behind us! *Yay!*