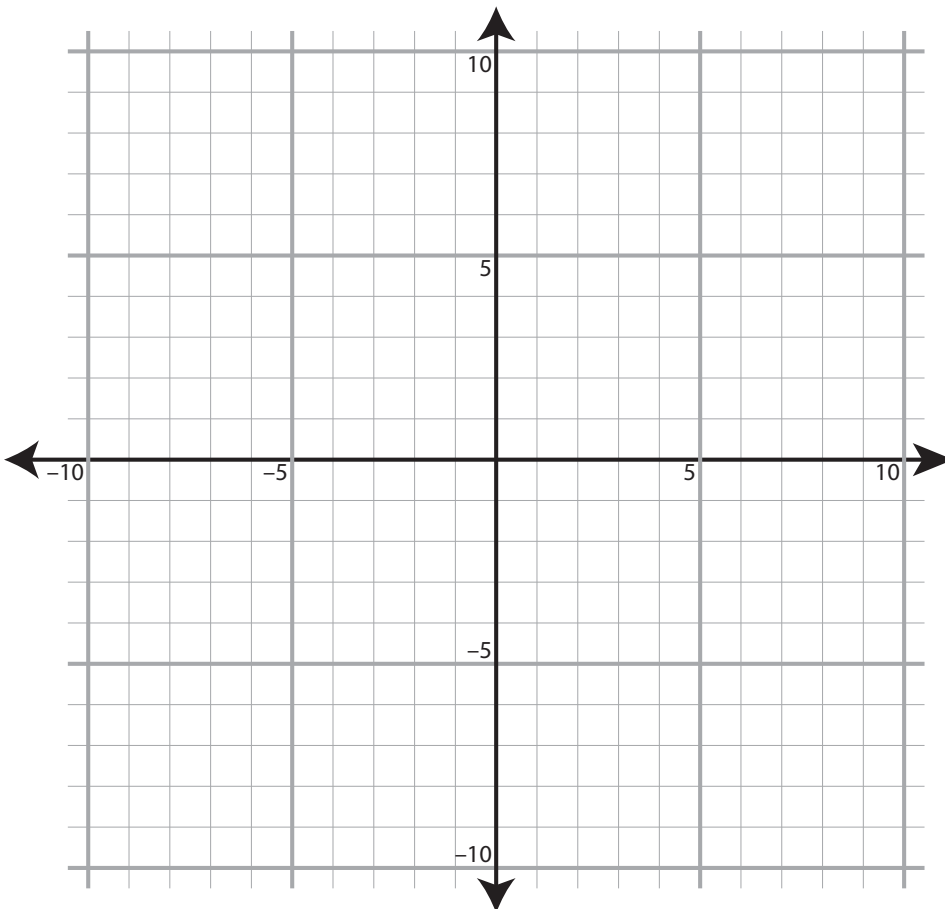


Walking the Line

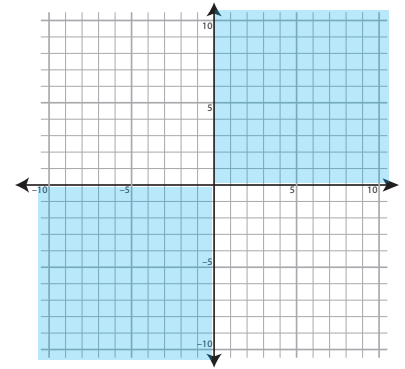
Instructions

1. Choose 12 points scattered on the grid below. Find their coordinates.
2. Calculate the product of the x and y coordinates. For example, if you picked $(-1, 2)$, the product would be -2 .
3. Shade the part of the grid where the products are positive. Explain why you shaded that part.



Answers

1. Answer vary, but students should have points in all four quadrants.
2. Products should be correct. Pay special attention to the signs.
3. The first and third quadrants should be shaded. Note that students do not have to know the numbering of quadrants—but this might be a good time to introduce that system.



The upper-right quadrant has x and y both positive, so x times y will be positive. In the lower left (quadrant III) both x and y are negative, so all of its products are positive no matter which point you choose in the quadrant. The other two quadrants mix positive and negative, so their products are negative.

Extension:

4. Find where on the grid that the product is zero. Mark it.
5. Explain why that region contains all the “zero-product” points.

4. Students should highlight both axes.
5. The products are zero on the axes—and only on the axes—because being on an axis means that one coordinate is zero, and zero times any number is zero.