

Names:

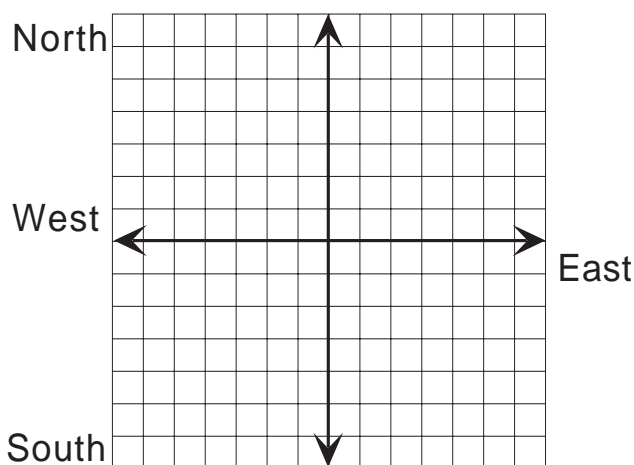
Moving in two dimensions

Imagine a child Emily taking a short walk starting from her front porch. For each of the following situations, calculate two things:

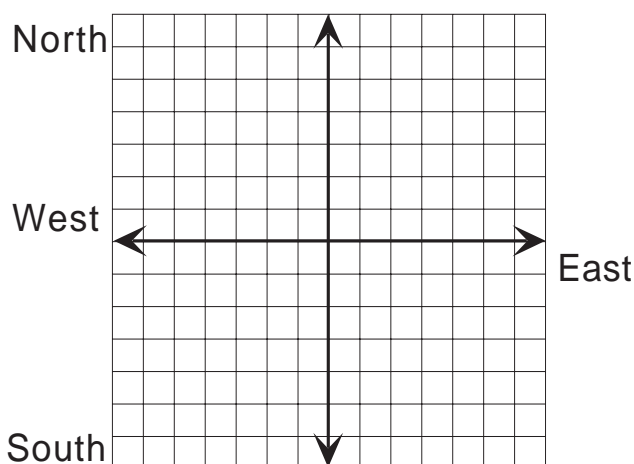
- the total distance that Emily walked,
- how far Emily is from her front porch at the end of the walk, and in what direction.

For each case, draw a sketch of the path she took (take 1 grid= 1 foot). Don't simply estimate the distances from the plot, instead use trigonometry to find the exact values of the distances asked for above.

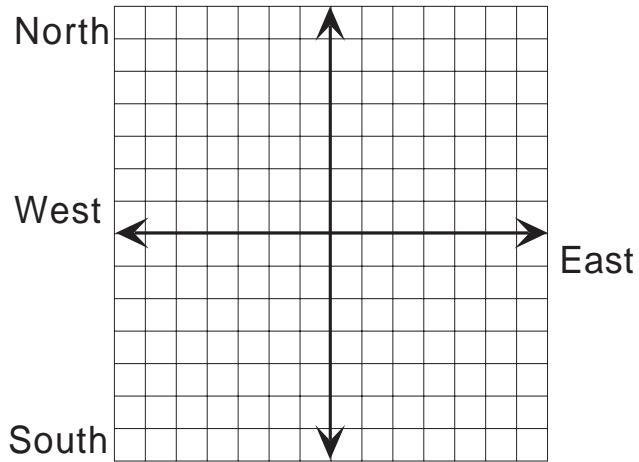
1. She walks 3 feet east, then 4 more feet east.



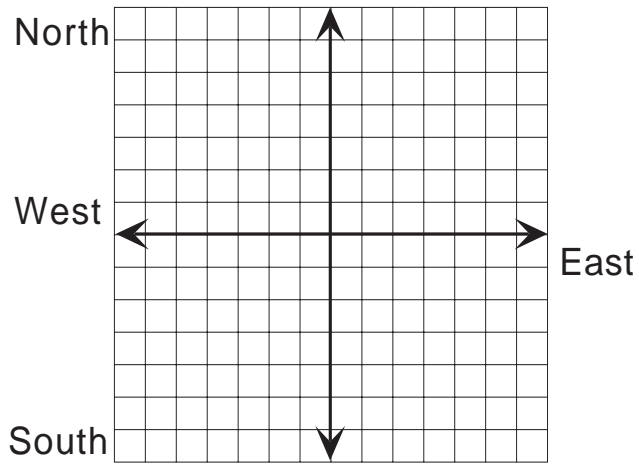
2. She walks 3 feet east, then 4 feet west.



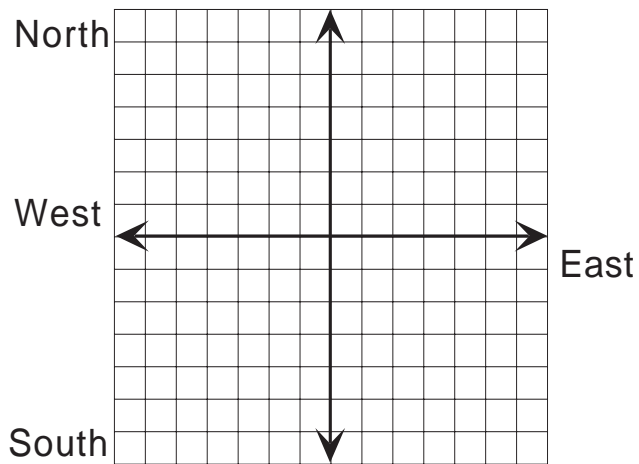
3. She walks 3 feet east, then 4 feet north.



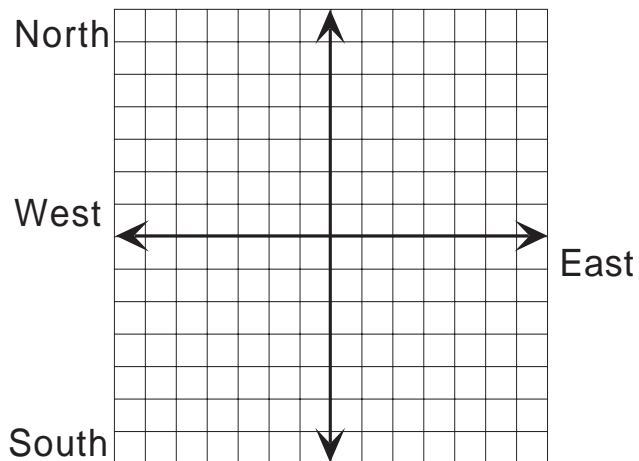
4. She walks 3 feet west, then 4 feet south.



5. She walks 3 feet east, then 4 feet northeast.



6. She walks 3 feet 30 degrees north of east, then 4 feet 80 degrees north of east.



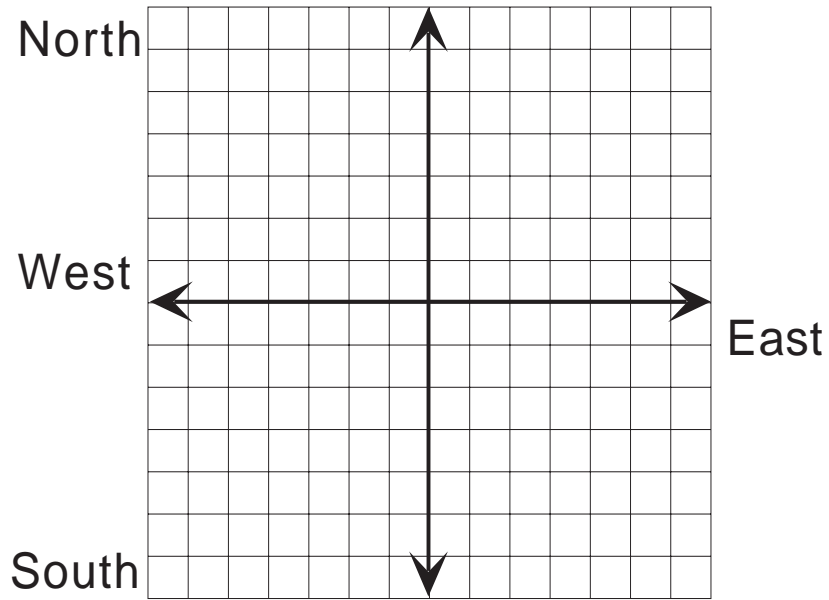
7. Look back on the work you have done to this point.

(a) What procedure have you used to calculate the total distance traveled?

(b) What procedure have you used to calculate the distance she is from her front porch?

(c) If you haven't done so already, state a procedure that will work *that does not rely on drawing a sketch*. Then use this method to calculate the distance from her front porch in the next situation.

8. She walks 3 feet 30 degrees south of west, then 4 feet northeast.



9. In your above procedure, how do you differentiate distances traveled east from those traveled west? North from south?
10. Can you easily calculate the distance from her front porch using the sketch?