



Problem of the Week

Problem B

A Directional Challenge

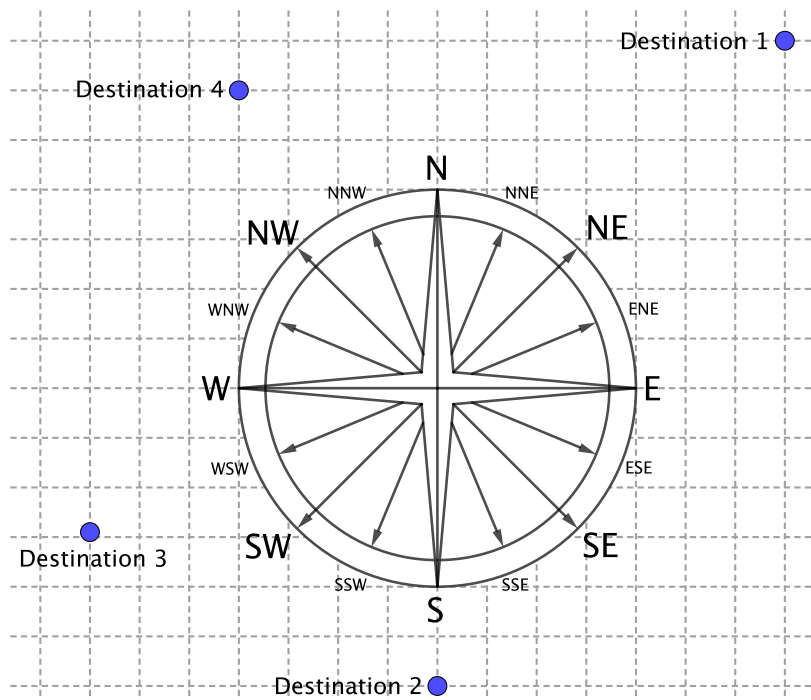
Prior to the 10th century, sailors travelled solely by using the known positions of planets and stars. The magnetic compass was first used for navigation during the Song dynasty in China, about a thousand years ago. It provided a way to determine direction even on foggy days and at night.

a) On the compass represented on the grid below, the range of possible directions is divided into sixteen segments, each consisting of $360^\circ \div 16 = 22.5^\circ$. Each direction is named, e.g., N, NE, SSW, etcetera. Calculate the (smaller) angle between each pair of directions given in the table. Verify your answers by measuring the angles with a protractor.

Angle	Number of Degrees
N and E	
N and NE	
N and S	
N and SE	
SW and WSW	

b) Suppose that a schooner starts from the location at the centre of the compass. Using a protractor with 0° along North, measure the angle (clockwise) of the direction the schooner should travel to each of the four destinations indicated by the solid dots. If the direction is one of the labelled directions, state the name of that direction.

c) Use a ruler to measure the distances from the centre of the compass to each of the four destinations. What is the ratio of the distance to Destination 1 to the distance to Destination 3? What is the ratio of the distance to Destination 4 to the distance to Destination 2?



STRANDS GEOMETRY AND SPATIAL SENSE, MEASUREMENT

