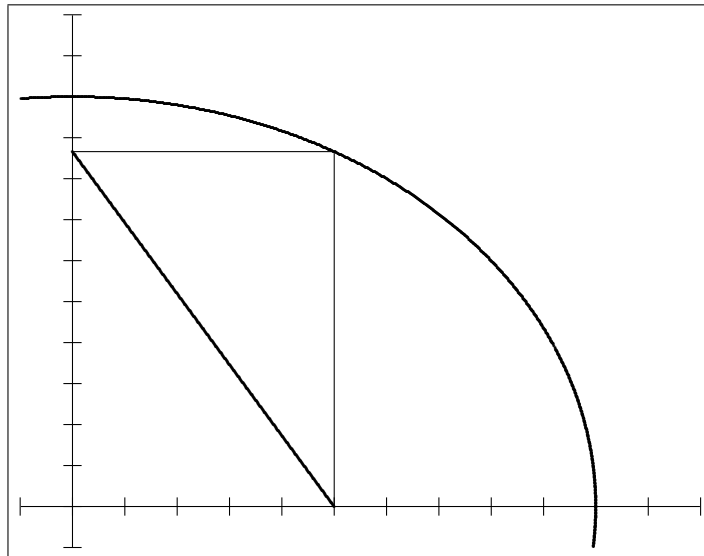


- Four golf balls can be arranged so that each ball touches the other three. Five coins can be arranged so that each coin touches the other four. Is it possible to arrange six pencils so that each one touches the other five? The pencils may not be bent or broken.
- A rectangle is inscribed in a quarter-circle as shown in the diagram. Can you accurately determine the length of the highlighted diagonal?



- A row of minuses is written on the board. Two players take turns in either replacing a single minus by a plus or a pair of adjacent minuses by a pair of pluses. The one who cannot make a move loses. Can the player who starts force win?
- In order to save ink, a manufacturer of six-inch rulers omitted the markings "2", "3" and "5" from their straightedges. Company managers noted correctly that it is still possible to measure all lengths 1in through 6in with their product.

Design a twelve-inch ruler that still allows its user to measure all lengths 1in through 12in using as few markings as possible.