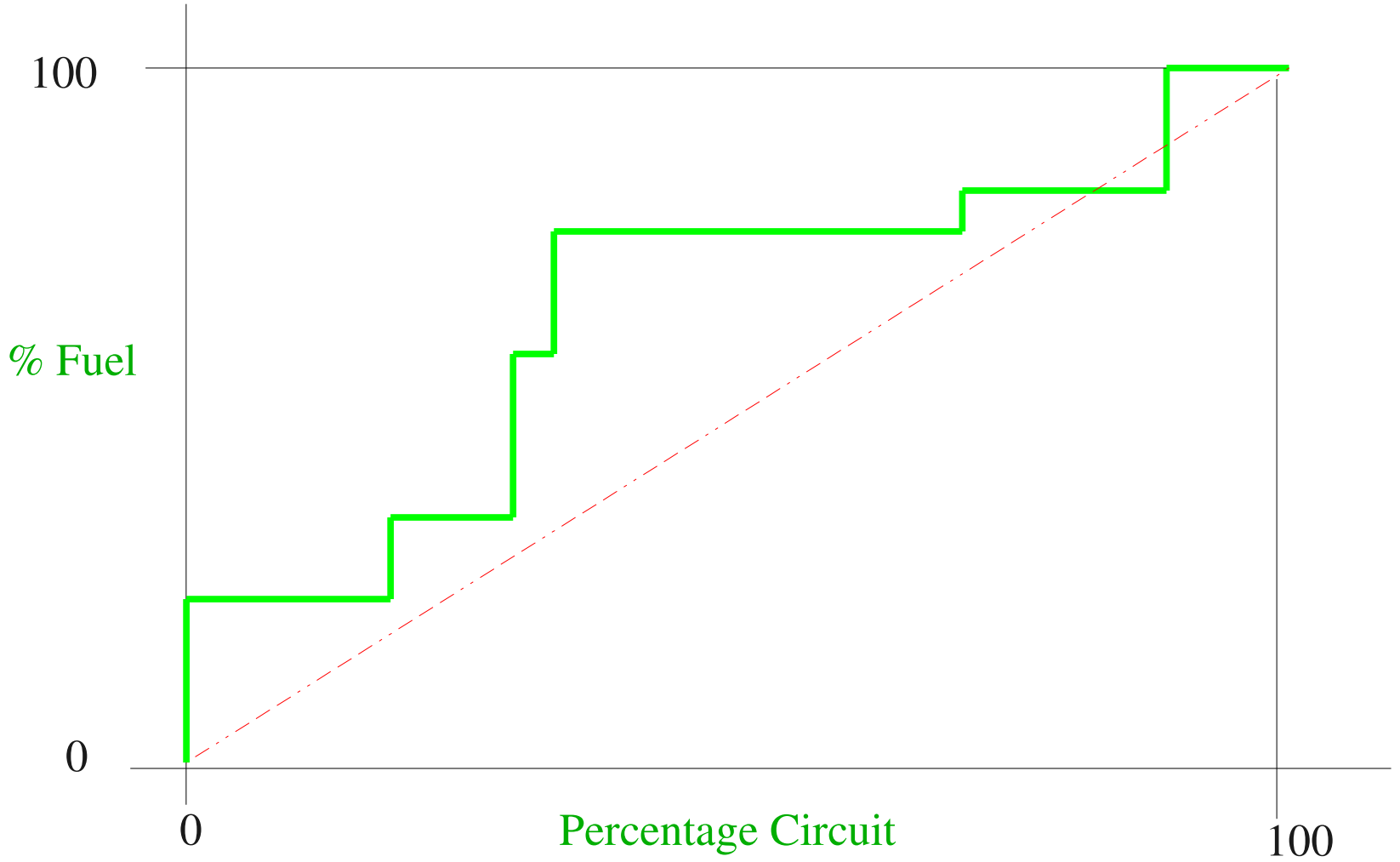
Race Circuit

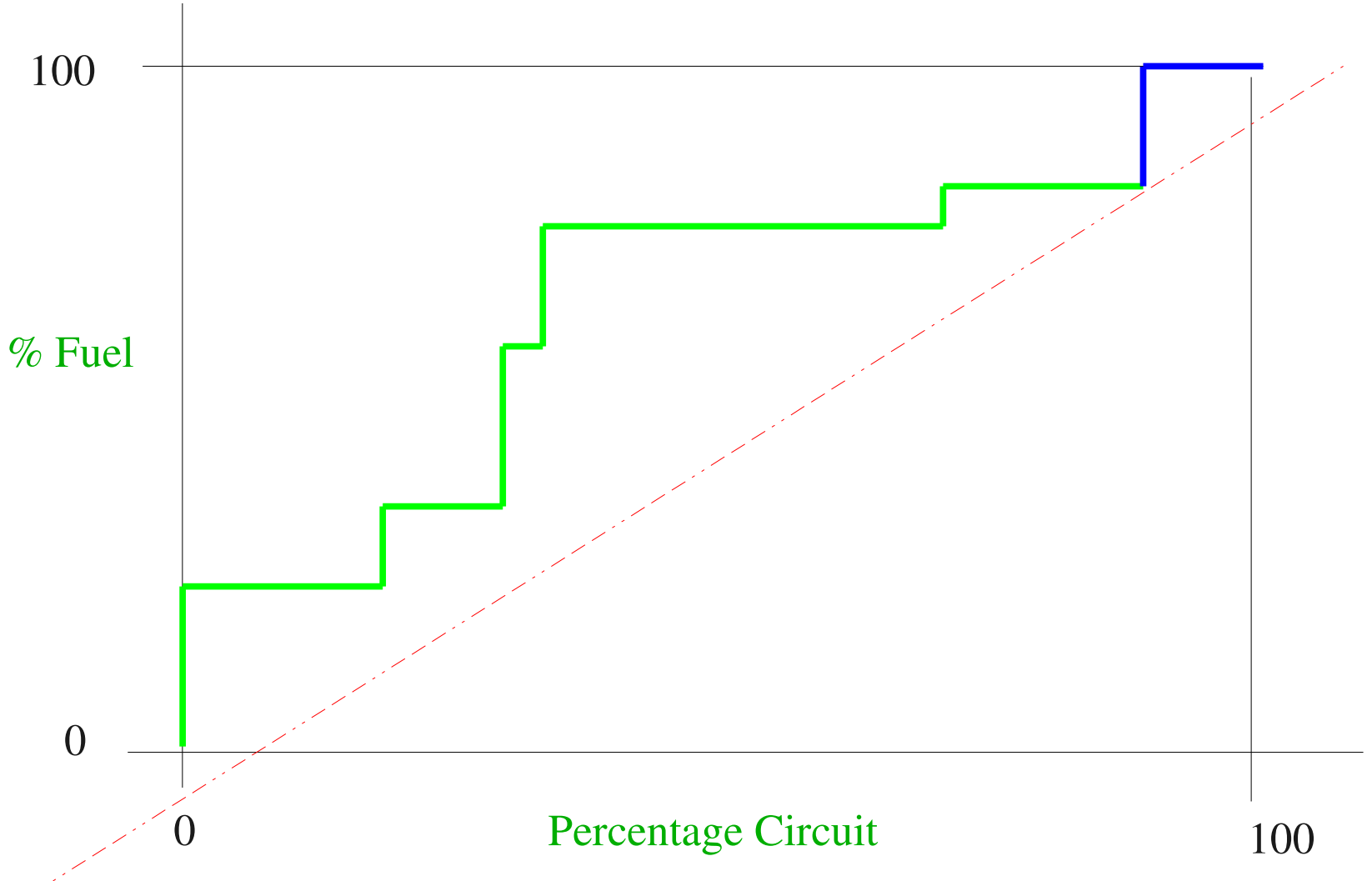
There are a number of fueling stations located at various points around a race circuit. Suppose the amount of fuel at each fueling station is different but that the total fuel around the circuit is exactly what is needed by a race car to make one complete circuit.

Find the point on the circuit from which a race car with an empty tank may make one complete circuit without running out of fuel by tanking up at every fueling station in the circuit. Assume the tank is large enough to hold enough fuel to complete the circuit.

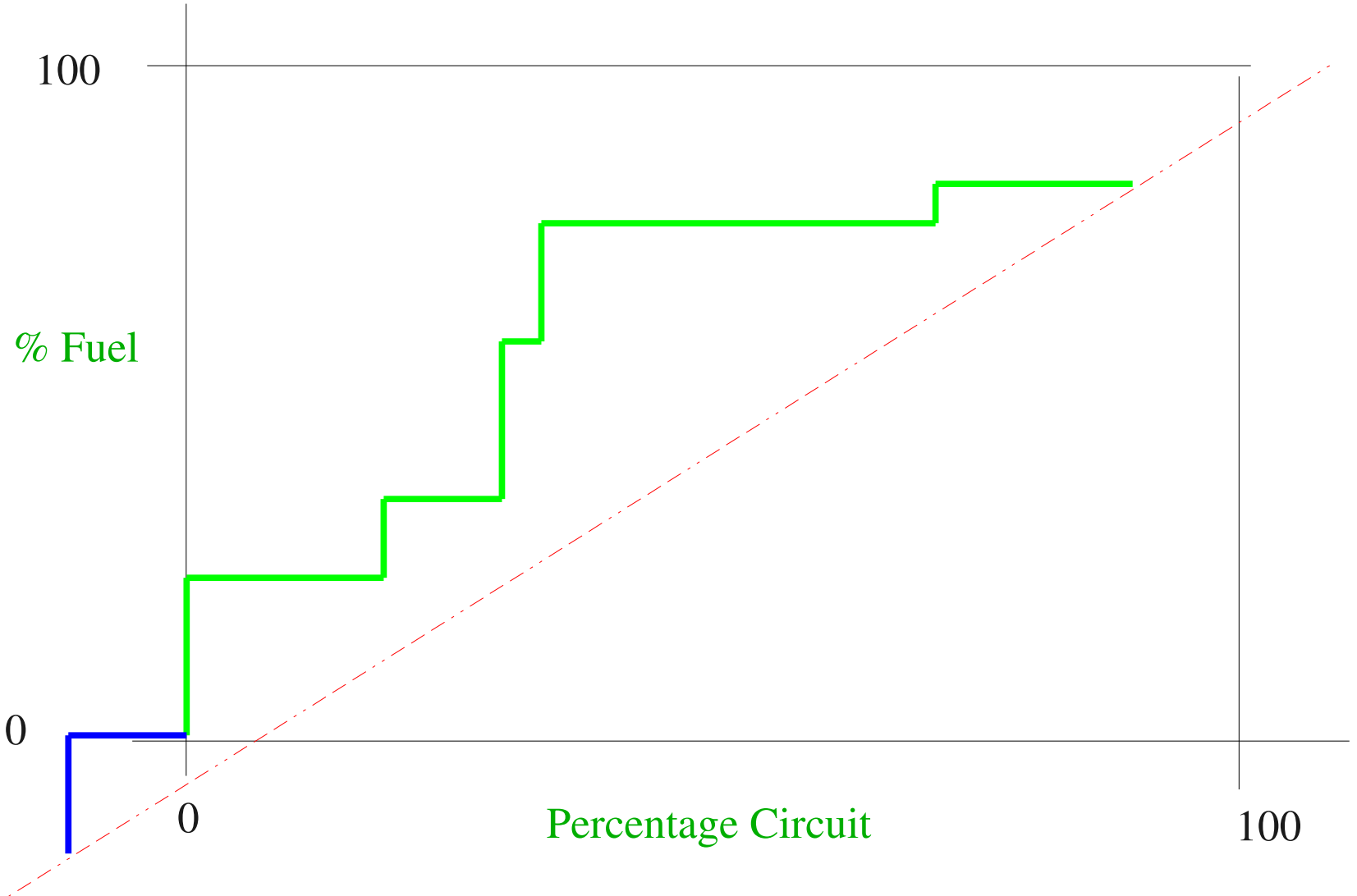
Pick any starting point – draw a graph showing fuel consumption on the y axis and distance covered on the x-axis. Vertical green lines occur at fueling stations, horizontal green lines show the distance between stations. The dotted line shows fuel consumed. If the dotted line crosses the green line, the car runs out of fuel.



Drop the dotted line until it touches one point of the green line.



Move the blue piece to the bottom



Reposition the dotted line and the green line so that the point where they touch is at the origin. The fueling station corresponds to this point.