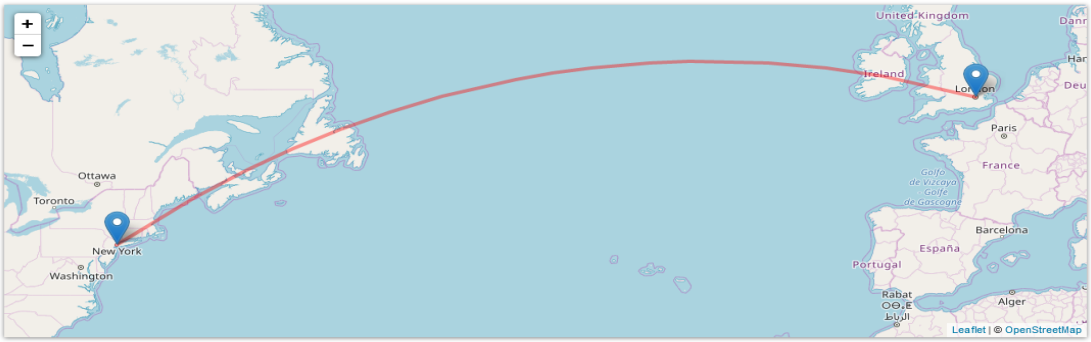
Speed, distance and time calculations

1. Calculate the speed of a car that takes 40 s to travel 800 m.

2. A runner completed a certain race in 240 s with an average speed of 6.25 m/s.
   Calculate the race distance.

3. The length of a tenpin bowling alley is 19.16 m.
   A bowling ball has an average speed of 7.4 m/s.
   Calculate the time taken for the bowling ball to travel the length of the alley.

4. The image below was taken from https://www.distancefromto.net/distance-from-new-york-to-london-gb



   The shortest flight distance between New York and London is 5580 km.
   The flight time is typically about six hours.
   Calculate the speed of the aircraft…
   a. in kilometres-per-hour
   b. in metres-per-second

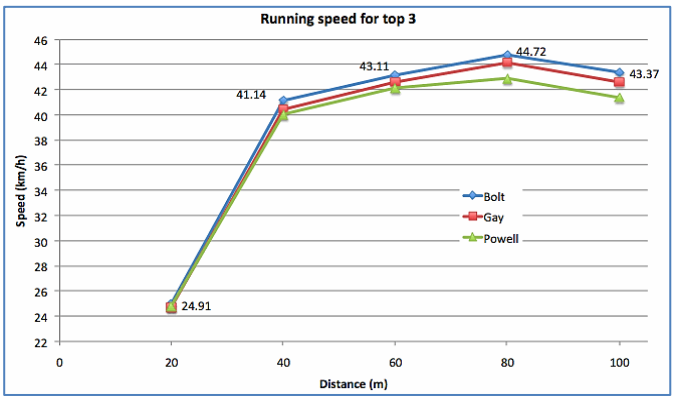
5. A different aircraft covers a distance of 28 000 m in 3 minutes.
   a. Calculate the speed of the aircraft in kilometres-per-hour.
   b. Calculate the speed of the aircraft in metres-per-second.

6. In 2009, Usain Bolt won the 100 m sprint in a World Record time of 9.58 s.
   a. Calculate Bolt's average speed for the 100 m race (in m/s).
   b. Convert your answer to Part (a) into km/h.

7. The graph, taken from http://www.sportsscientists.com/wp-content/uploads/2009/08/usain-bolt-100m-WR-Speed-for-intervals.png, shows how Usain Bolt's speed varied during his record-breaking 100 m race.

   Explain why none of Usain Bolt's speeds during the race (listed in the table) match the speed that you calculated in Part (b) of Q6.

Distance (m)	Speed (km/h)
20	24.91
40	41.14
60	43.11
80	44.72
100	43.37



NOTE: Ensure that <u>all</u> your answers are to an appropriate number of significant figures.