

Athletics records

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This activity pretends to pass from a routine and non-interesting exercise to an interesting one. The original activity just involves one action: calculate. The evolved one involves many more: reason, sketch a graph, place points in cartesian plane, read a graph, calculate, express your own opinion.

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Part 1. Relation speed/distance

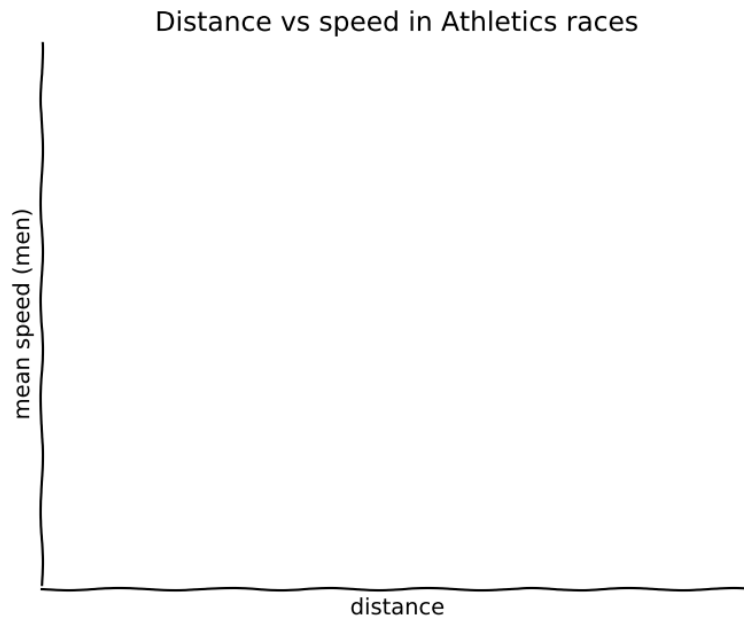


Figure 1: blank cartesian plane

Can you sketch the relation between the distance of races and the speed of athletes?

Part 2. Race speed estimation

- Which Athletics races do you know?
- Can you estimate the position of the indicated races in the following graph?

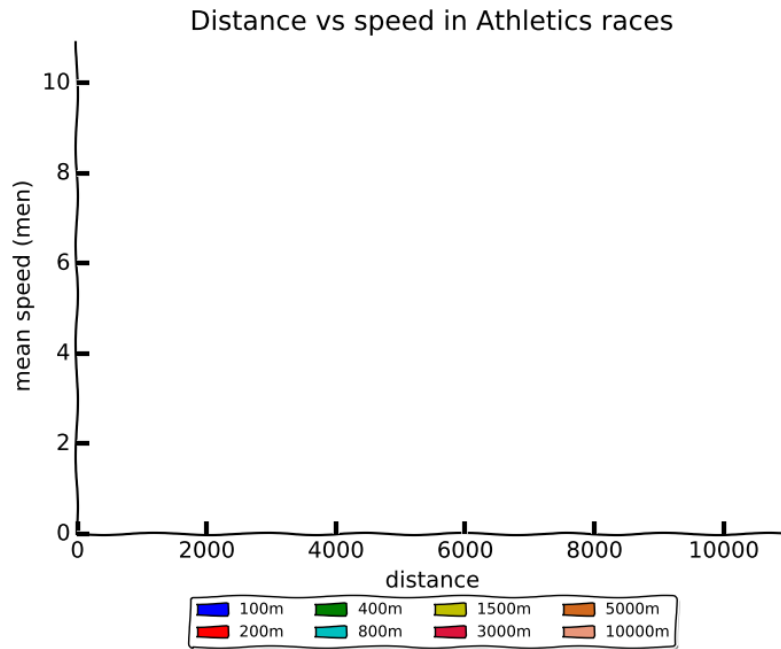


Figure 2: cartesian plane and main athletics races

Part 3. Speed calculation

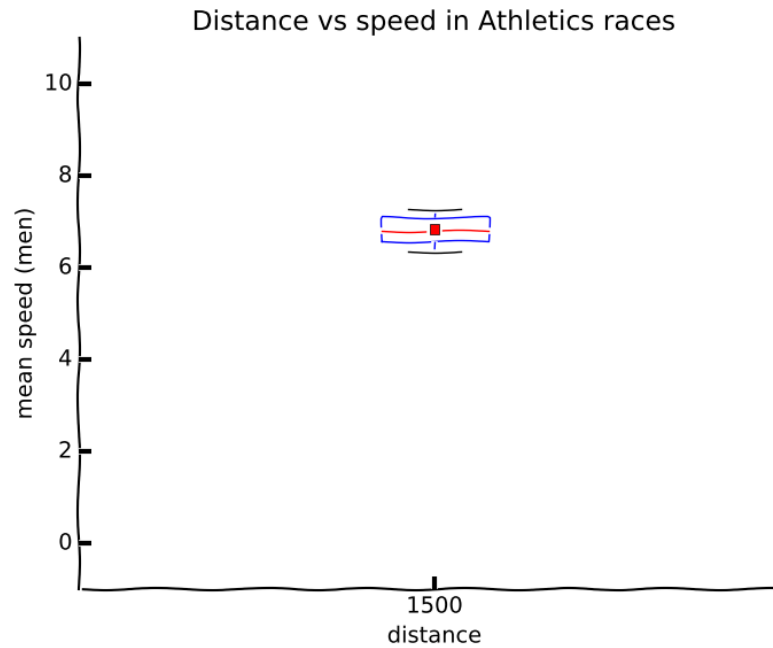


Figure 3: stat box of 1500m world records

This is a partial graphic (the red line is the median, the red point is the arithmetic mean and the lines of the box are quartils $Q1$ and $Q3$)

- Can you predict the speed in which the runner would run in 5000 meters race (at least/at most)?
- How much time she would spend?
- Can you predict the speed for other races?

Part 4. Goodness of our estimation

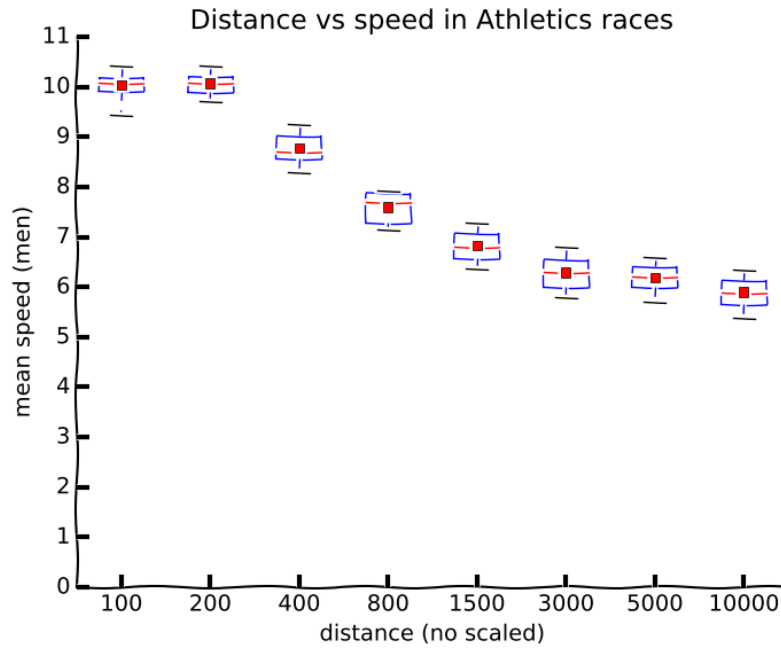


Figure 4: stat box of world records of main courses

This is the completed graphic. From this graphic, can you know which is the error you committed? In percentage? (if you need, there is available the whole data of world records here))

Part 5. The classification of races

Races of athleticism are classified in:

- sprints: running a short distance at maximum or near at maximum speed
- medium distance races: more longer than sprints and at most 3000 meter long
- long distance races: 5 km longer. They are aerobic races.

Do you think this classification comes natural way or it is arbitrary. Do you think it could be deduced from the previous graphics? Reason your answer.