

Activity AP4.12a How fast can you run?

First look at these world athletics records (at the end of 2004).

Men's running events

Event	Record	Record (s)	Name	Nation	Date
100 m	9.77 s	9.77 s	Asafa Powell	JAM	11/6/06
200 m	19.32 s	19.32 s	Michael Johnson	USA	1/8/96
400 m	43.18 s	43.18 s	Michael Johnson	USA	26/8/99
800 m	1 min 41.11 s	101.11 s	Wilson Kipketer	DEN	24/8/97
1500 m	3 min 26.00 s	206.00 s	Hicham El Guerrouj	MAR	14/7/98
3000 m	7 min 20.67 s	440.67 s	Daniel Komen	KEN	1/9/96
5000 m	12 min 37.35 s	757.35 s	Kenenisa Bekele	ETH	31/5/04
10 000 m	26 min 17.53 s	1577.53 s	Kenenisa Bekele	ETH	26/8/05

Michael Johnson's average speed in the 400 m race was:

$$\text{average speed (m/s)} = \frac{400 \text{ m}}{43.18 \text{ s}}$$

distance in metres

the time in seconds

$$\text{average speed} = 9.26 \text{ m/s}$$

To do

- 1 Make a table showing the distances and average speeds for all the events.
- 2 What pattern do you see in the table?
- 3 Can you explain this pattern?
- 4 Choose one race and describe how the instantaneous speed of the racer might vary during the race.