Teacher notes

Working at play : World records

Description

Working with elite athletes means understanding how prowess in sport changes over time. The world record time provides a vital benchmark of performance against which all athletes may aspire.

Activity 1: Women's marathon

Activity 2: Record differences

Activity 3: World record match

For Women's marathon, pupils will need the Women's marathon data sheet which shows the progression of world record times from 1967 to the present day.

A grid is provided for the pupils to use but, depending on the pupils, you may prefer to provide a plain sheet of graph paper so that they need to engage with deciding how to scale and label their axes appropriately.

This graph shows the data points plotted:

Pupils might notice:

- There was a fairly steady decline in record times between 1967 and 1985.
- There was no improvement from 1985 to 1998.
- The reduction in times again progressed in 2002 and 2003: it can be seen from the data sheet that this was due to one woman, Paula Radcliffe.

Pupils are invited to predict what the world record might be in 2020 and 2050. Draw out in the discussion that such a prediction is very difficult – the long period where there was no improvement points to the fact that data from the past may not always allow accurate prediction. Nevertheless, it might be fair to suggest that the times are likely to continue to decrease slightly. If pupils wish to look at other events, appropriate data is readily available on the Internet.

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Record differences presents some world record times and distances for a range of athletics and swimming records for men and for women. Pupils are invited to find a way to analyse the difference between men and women. Use a class discussion to draw out that this is best done by considering the difference between the sexes as a ratio perhaps expressed as a percentage. In running and swimming events, men are about 10% faster, whilst in jumping events, the difference appears to be more like 20%.

Organise the pupils into small groups with a set of cards for each group for World record match as discussion will help them develop strategies to complete all the matches.

Some hints which might prove useful are:

- Think about the units – this might enable you to arrange the events, and records in sets.
- What records do you know? For example, some pupils may know that the record for the 100m race is under 10 seconds and just over 2 hours for the marathon.
- What comparisons can you make? For example, if you know the record for the 100m track race, how long might you expect the 400m race record would be?

The correct matches, together with other brief details are shown below:

Athletics – Track	Perf	Units	Athlete	Date
100m	9.58	s	Usain Bolt	16/08/2009
400m	43.18	s	Michael Johnson	26/08/1999
1,500m	03:26.0	min:s	Hicham El Guerrouj	14/07/1998
3Km	07:20.7	min:s	Daniel Komen	01/09/1996
20Km	56:26.0	min:s	Haile Gebrselassie	27/06/2007
Marathon	02:03:59	h:min:s	Haile Gebrselassie	28/09/2008
110 Metres Hurdles	12.87	s	Dayron Robles	12/06/2008
Athletics – Field				
High Jump	2.45	m	Javier Sotomayor	27/07/2019
Pole vault	6.14	m	Sergey Bunka	31/07/1994
Long jump	8.95	m	Mike Powell	30/08/1991
Shot put	23.12	m	Randy Barnes	20/05/1990
Javelin throw	98.48	m	Jan Zelezný	25/05/1996
Decathlon	9026	points	Roman Šebrle	27/05/2001
Swimming (men's)				
50m freestyle	20.94	s	Frederick Bousquet	27/04/2009
50m breaststroke	26.67	s	Cameron Van Der Burgh	29/07/2009
1,500m freestyle	14:34.6	min:s	Grant Hackett	29/07/2001

The mathematics

This topic gives opportunities to explore real data. Women's marathon involves constructing a statistical chart whilst ratio and percentage are used in Record difference. Logical thinking is needed in World record match.