

All elite athletes and their trainers need to know world record times. These provide the benchmark for performance.

Women's marathon

The world record for the women's marathon has gradually got shorter since the race was opened to women in the **late 1960s**.

Draw a graph to show how the world record times for the women's marathon have changed over that past 50 years.

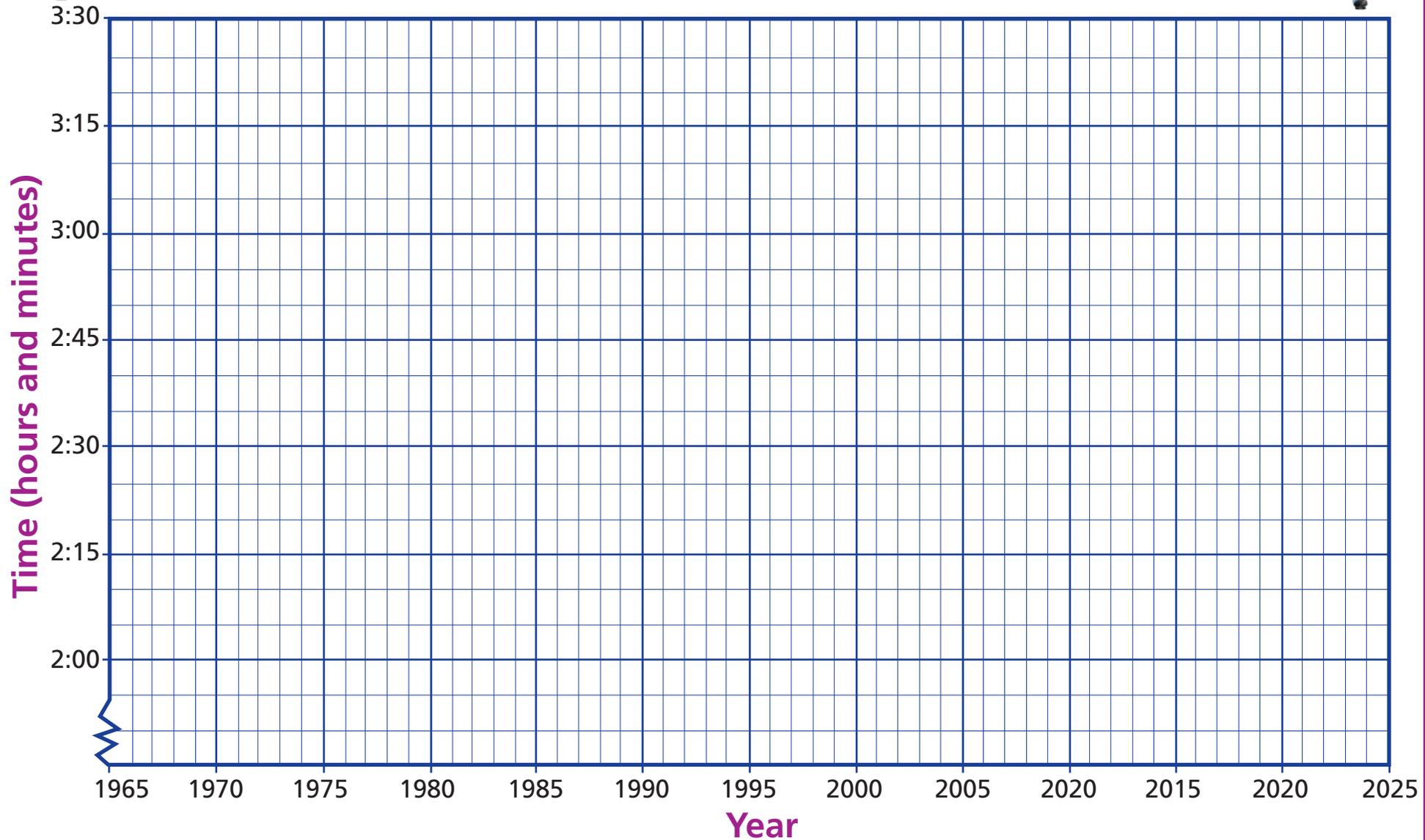
What do you think the **record** might be in 2020?
What about in **2050**?

working at play



How the record for the Women's Marathon race has changed since 1967

working at play



World record times for the Women's marathon from 1967 to 2009

Hrs:Mins:Secs	Name	Country	Date of race	Location of race
03:15:23	Maureen Wilton	Canada	May 6, 1967	Toronto, Canada
03:07:27	Anni Pede-Erdkamp	West Germany	August 16, 1967	Waldniel, Germany
03:02:53	Caroline Walker	United States	February 28, 1970	Seaside, Oregon, USA
03:01:42	Elizabeth Bonner	United States	May 9, 1971	Philadelphia, USA
02:55:22	Elizabeth Bonner	United States	August 19, 1971	New York City, USA
02:49:40	Cheryl Bridges	United States	December 5, 1971	Culver City, USA
02:46:37	Michiko Gorman	United States	December 2, 1973	Culver City, USA
02:46:24	Chantal Langlacé	France	October 27, 1974	Neuf-Brisach
02:43:55	Jacqueline Hansen	United States	December 1, 1974	Culver City, USA
02:40:16	Christa Vahlensieck	West Germany	May 3, 1975	Dülmen, Germany
02:38:19	Jacqueline Hansen	United States	October 12, 1975	Eugene, USA
02:35:16	Chantal Langlacé	France	May 1, 1977	Oiartzun, Spain
02:34:47	Christa Vahlensieck	West Germany	September 10, 1977	Berlin Marathon
02:31:23	Joan Benoit	United States	February 3, 1980	Auckland, NZ
02:30:58	Patti Catalano	United States	September 6, 1980	Montreal, Canada
02:30:27	Joyce Smith	United Kingdom	November 16, 1980	Tokyo, Japan
02:29:57	Joyce Smith	United Kingdom	March 29, 1981	London Marathon
02:29:02	Charlotte Teske	West Germany	January 16, 1982	Miami, USA
02:26:12	Joan Benoit	United States	September 12, 1982	Eugene, USA
02:25:28	Grete Waitz	Norway	April 17, 1983	London Marathon
02:24:26	Ingrid Kristiansen	Norway	May 13, 1984	London Marathon
02:21:06	Ingrid Kristiansen	Norway	April 21, 1985	London Marathon
02:20:47	Tegla Loroupe	Kenya	April 19, 1998	Rotterdam Marathon
02:20:43	Tegla Loroupe	Kenya	September 26, 1999	Berlin Marathon
02:19:46	Naoko Takahashi	Japan	September 30, 2001	Berlin Marathon
02:18:47	Catherine Ndereba	Kenya	October 7, 2001	Chicago Marathon
02:17:18	Paula Radcliffe	United Kingdom	October 13, 2002	Chicago Marathon
02:15:25	Paula Radcliffe	United Kingdom	April 13, 2003	London Marathon

References: **Wikipedia (2009)** Marathon world record progression [online] at http://en.wikipedia.org/wiki/Marathon_world_best_progression

Wikipedia (2009) List of winners of the London Marathon, [online] at http://en.wikipedia.org/wiki/List_of_winners_of_the_London_Marathon

For a particular athletic event, the world record for men is generally faster, longer or higher than the world record for women.

But by how
much?



	Event	Men	women
Track	100m	9.58s	10.49s
	400m	43.18s	47.60s
	1,500m	3:26:00	3:50:46
	5,000m	12:37:35	14:11:15
	Marathon	2:03:59	2:15:25
Field	High jump	2.45m	2.09m
	Long jump	8.95m	7.52m
	Pole vault	6.14m	5.06m
Swimming	50m freestyle	20.94m	23.73s
	400m freestyle	3:40:07	3:59:15
	1,500m freestyle	14:34:56	15:42:54

Find a sensible way to
make comparisons.

Are the differences similar
for all **types of event?**

Sports commentators need to be able to remember lots of facts about the **best athletes** – and the **world** and **national records** for their events.



Match the **men's world record times, distances** and **scores** to the correct events.

working at play

Track
200m

19.19s

Field
Triple jump

18.29m

  <p>Track 100m</p>	 <p>Track 400m</p>	 <p>2h 3min 59s</p>	<p>6.14m</p>
<p>Track 1,500m</p>	 <p>Track 3km</p>	<p>98.48m</p>	<p>3min 26.0s</p>
 <p>Track 20km</p> 	<p>Track Marathon</p>	<p>56min 26.0s</p>	<p>14min 34.6s</p>
<p>Track 110 hurdles</p>	<p>Field Long jump</p>	<p>23.12m</p>	<p>2.45m</p>
 <p>Field Pole vault</p> 	 <p>Field High jump</p>	<p>43.18s</p>	<p>9,026 points</p>
<p>Field Shot put</p>	<p>Field Javelin</p>	<p>20.94s</p>	<p>12.87s</p>
 <p>Field Decathlon</p>	 <p>Swimming 50m breaststroke</p>	<p>9.58s</p>	<p>7min 20.7s</p>
<p>Swimming 50m freestyle</p> 	<p>Swimming 1,500m freestyle</p>	<p>26.67s</p>	<p>8.95m</p>

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

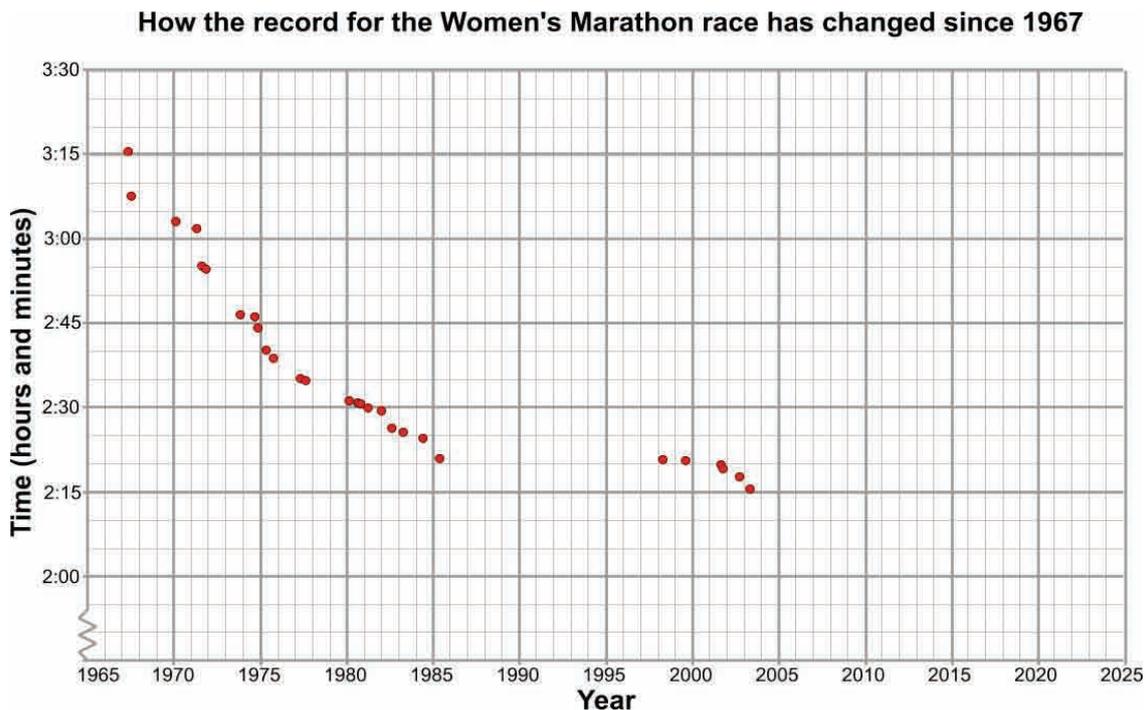
Activity 2: Record differences

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.

Working at play : World records

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 Železný	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**.