

World Records

Using the below data for the Women's 100m world record over the past 100 years, find the following using the line of best fit function in Excel.

1. Predict when the world record will go below 10 seconds using:
 - a. A linear line of best fit?
 - b. A quadratic line of best fit?
 - c. A cubic line of best fit?

2. Are any of these realistic? How could we improve our predictions?

Time	Name	Year
13.6	Marie Mejzlíková II	1922
12.8	Mary Lines	1922
12.7	Emmi Haux	1923
12.8	Marie Mejzlíková	1923
12.4	Leni Schmidt	1925
12.2	Leni Junker	1925
12.4	Gundel Wittmann	1926
12.2	Leni Junker	1926
12.1	Gertrud Gladitsch	1927
12.2	Kinue Hitomi	1928
12	Betty Robinson	1928
12	Myrtle Cook	1928
12	Leni Junker	1931
12	Tollien Schuurman	1931
11.9	Tollien Schuurman	1932
11.9	Stanisława Walasiewicz	1932
11.9	Hilda Strike	1932
11.8	Stanisława Walasiewicz	1933
11.9	Käthe Krauß	1934
11.7	Stanisława Walasiewicz	1934
11.9	Helen Stephens	1935
11.8	Helen Stephens	1935
11.6	Helen Stephens	1935
11.5	Helen Stephens	1936

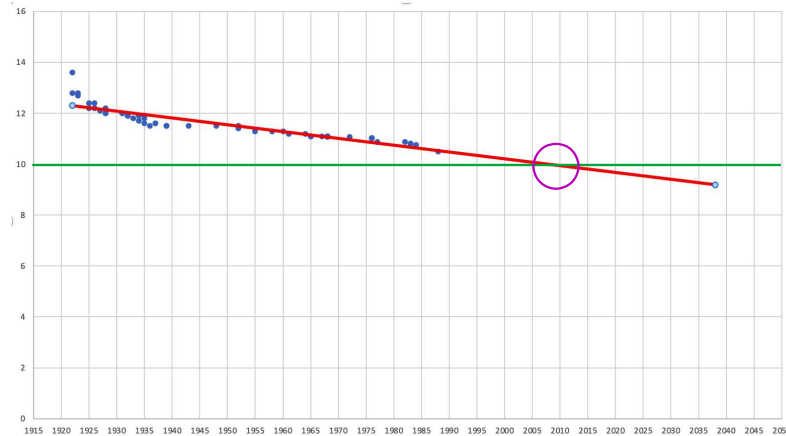
11.6	Stanisława Walasiewicz	1937
11.5	Lulu Mae Hymes	1939
11.5	Rowena Harrison	1939
11.5	Fanny Blankers-Koen	1943
11.5	Fanny Blankers-Koen	1948
11.5	Marjorie Jackson	1952
11.4	Marjorie Jackson	1952
11.3	Shirley Strickland	1955
11.3	Vera Krepkina	1958
11.3	Wilma Rudolph	1960
11.2	Wilma Rudolph	1961
11.2	Wyomia Tyus	1964
11.1	Ewa Klobukowska	1965
11.1	Irena Kirszenstein	1965
11.1	Wyomia Tyus	1965
11.1	Barbara Ferrell	1967
11.1	Wyomia Tyus	1968
11.1	Lyudmila Samotysova	1968
11.1	Margaret Bailes	1968
11.1	Barbara Ferrell	1968
11.1	Irena Szewińska	1968
11.07	Wyomia Tyus	1968
11.07	Renate Stecher (née Meißner)	1972
11.04	Inge Helten	1976
11.01	Annegret Richter	1976
10.88	Marlies Oelsner	1977
10.88	Marlies Göhr	1982
10.81	Marlies Göhr	1983
10.79	Evelyn Ashford	1983
10.76	Evelyn Ashford	1984
10.49	Florence Griffith-Joyner	1988

SOLUTIONS

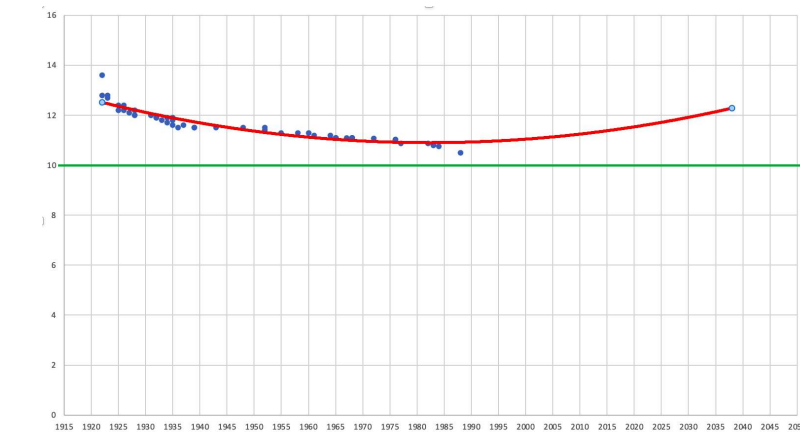
We use Excel to plot world record times against the years they were made. To make our prediction with a line of best fit, we look for the year in which the line crosses below 10 seconds.

1.

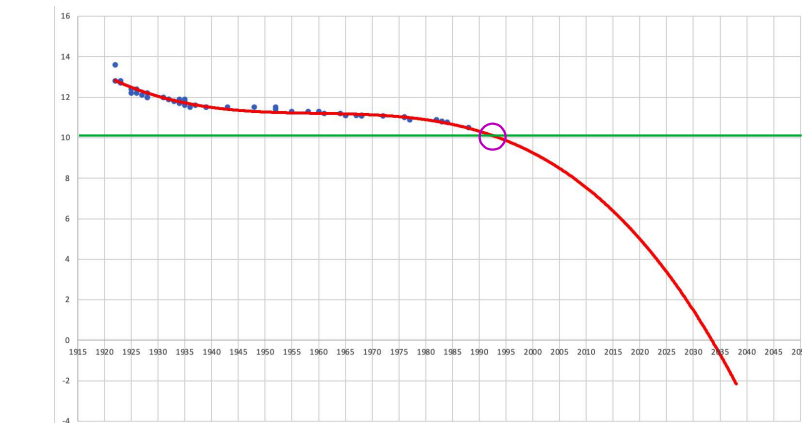
(a) Linear: Somewhere between 2005-2010



(b) Quadratic: Line doesn't go below 10 seconds



(c) Cubic: Somewhere between 1990 and 1995



2. None of them seem very good as the record has remained unchanged until the present day. It is likely we would need to use a different model such as the exponential line of best fit seen in the lecture.