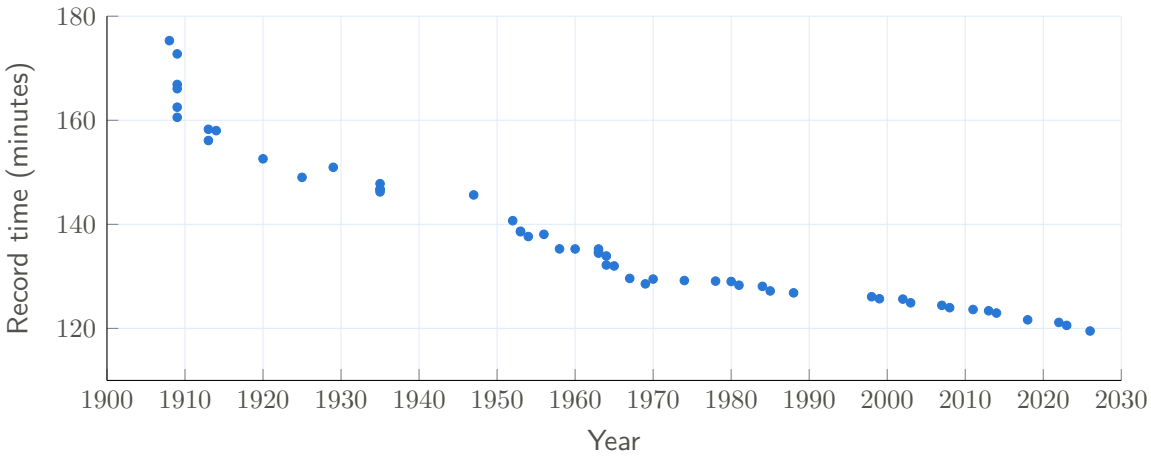
Activity 1: Pick a Model for the Marathon

PAIRS • 10 MINUTES • PHONE OR LAPTOP

The marathon is a 26.2 mile road race. The data are every men's marathon world record, from 1908 to 2026: the year it was set, and the time in minutes. Each new record was the fastest anyone had ever run up to then.

Scan the QR code to open the data in Desmos. You can try different best-fit curves there and see how well each one does.

Link: `desmos.com/calculator/7fkxyv3sou`



Source: Wikipedia, marathon world record progression (men's records).

STEP 1 What do you notice?

Describe the shape. Does it look different before and after about 1950?

STEP 2 What model would you pick for this? Why?

☐ Linear ☐ Exponential ☐ Quadratic ☐ Other: _____

Why that one? Is there a reason the records should behave like that?

STEP 3 Find the best fit for your model.

Use Desmos to fit your model. Will you use all the data, or only part of it? Write your equation, and say what each number means (with units).

Equation: _____

STEP 4 Predict the first 100-minute marathon.

Suppose your goal is to predict when the first 100-minute marathon will happen. How would you do this with your model?

My prediction: the first 100-minute marathon happens in the year _____.

STEP 5 How much do you trust it?

Compare with another pair who picked a different model. How far apart are your years? Which one would you bet on, and why?

IF YOU FINISH EARLY Follow your model far into the future. Does the record time ever reach zero? What *should* happen to marathon records in the long run, and what kind of function would do that?