

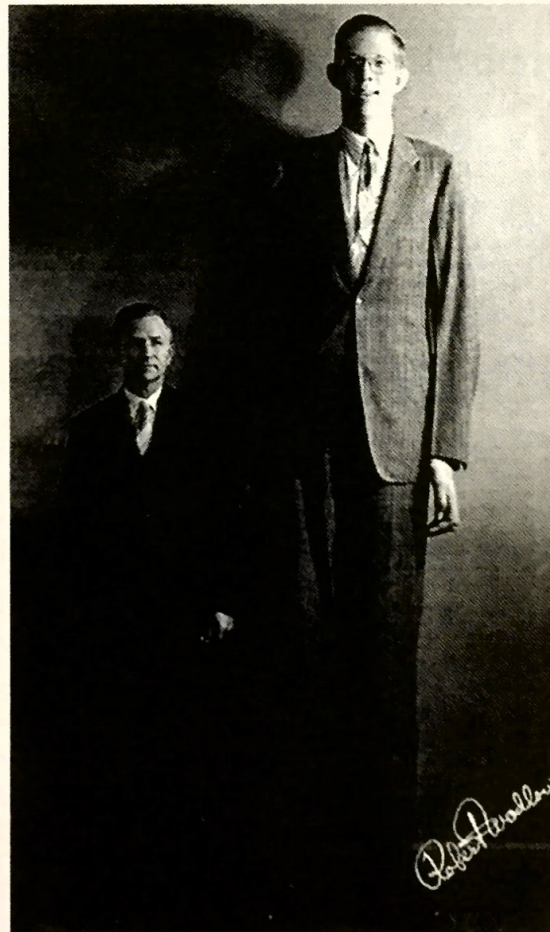
Vocabulary: Linear Regression-**Ex. 1: World's Tallest Man – Robert Pershing Wadlow (1918-1940)**

The tallest man in medical history for whom there is irrefutable evidence is Robert Pershing Wadlow. He was born at Alton, Illinois, USA, on February 22, 1918, and when he was last measured on June 27, 1940, was found to be 2.72 m (8 ft 11.1 in) tall. His great size and his continued growth in adulthood were due to hypertrophy of his pituitary gland which results in an abnormally high level of human growth hormone. He showed no indication of an end to his growth even at the time of his death.

Wadlow died at 1:30 a.m. on July 15, 1940, in a hotel in Manistee, Michigan, as a result of a septic blister on his right ankle caused by a brace, which had been poorly fitted only a week earlier. He was buried in Oakwood Cemetery, Alton, in a coffin measuring 3.28 m (10 ft 9 in) long, 81 cm (32 in) wide and 76 cm (30 in) deep.

Tallest Man Data

Age in years	Height in inches	
5	64	5.3 ft
8	72	
9	74.5	
10	77	
11	79	6.5 ft
12	82.5	
13	85.75	
14	89	
15	92	7.7 ft
16	94.5	
17	96.5	
18	99.5	
19	101.5	
20	102.75	
21	104.25	
22.4	107.1	8.9 ft



Robert next to his father

a) Make a scatter plot of the data on the graphing calculator.

b) Together, we will calculate the linear regression line.

$$y = 2.57x + 51.85$$

c) What is the slope? What does the slope tell you about the situation?

2.57 inches per yr y per x $\frac{y}{x}$

d) What is the y-intercept? What does the y-intercept tell you about the situation?

words for the y's

51.85 inches

e) Use your linear regression line to estimate how tall Robert would have been at age 25? At 40 years?

$x=25, y=116.1 \text{ in}$
9.7 ft $y = 2.57x + 51.85$
 $2.57(25) + 51.85$

$x=40, y=154.65 \text{ in}$ (12.9 ft)

$x=70, y=231 \text{ in}$ (19.3 ft)

f) Use your linear regression line to estimate how old Robert would have been when he reached a height of 15 feet tall?

$y \rightarrow$ inches

$y = 180$ inches

$$\begin{array}{r} y = 2.57x + 51.85 \\ 180 = 2.57x + 51.85 \\ -51.85 \quad -51.85 \\ \hline 128.15 = 2.57x \end{array}$$

$x = 50$ yrs