

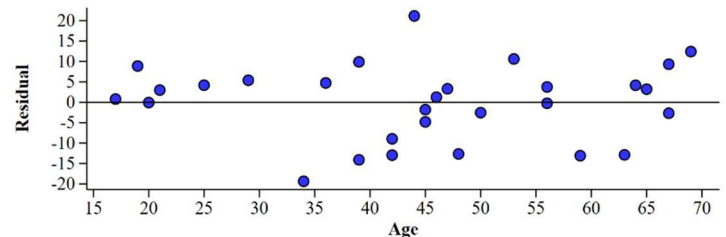
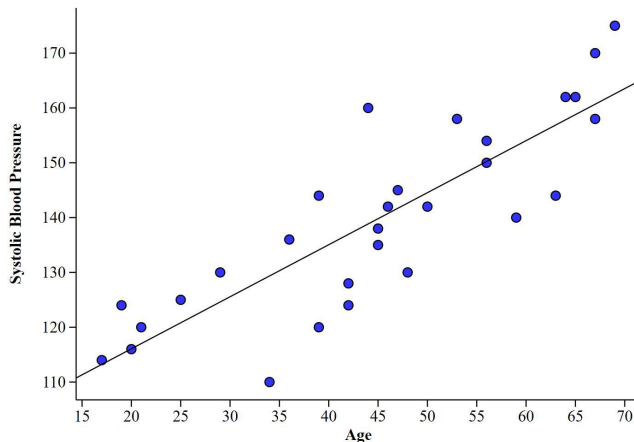
Mock FRQ #7

A random sample of 29 employees of a large company have their systolic blood pressure checked. Summary statistics are provided in the table below. Assume that the systolic blood pressure of all U.S. adults follows a normal distribution with a mean of 122 mm Hg and a standard deviation of 20 mm Hg.

n	mean	SD	min	Q_1	med	Q_3	max
29	139.862	17.505	110	124.5	140	156	175

- Approximately what percent of all U.S. adults have a systolic blood pressure greater than 142 mm Hg?
- Describe the distribution of systolic blood pressure for the 29 employees of this company that were sampled.
- The company CEO wants to know if the mean systolic blood pressure of employees at her company is higher than the national average. State the hypotheses for testing this concern.
- The conditions for the hypothesis test in part (c) were satisfied. The hypothesis test resulted in a t-score of 5.495 and a p-value of 3.591×10^{-6} . Interpret the p-value in the context of this hypothesis test. What would this p-value lead you to conclude?
- Explain in context what it would mean to make a type II error for the hypothesis test in parts (c) and (d).

In addition to recording the systolic blood pressure of the 29 employees at the company, their ages were also recorded. A linear regression model was fit to these data. Graphical and numerical summaries of this analysis are given below. Use this information to answer the questions that follow.



Predictor	Coef	SE Coef	T	P
Constant	97.0771	5.5272	17.562	.000
Age	0.9493	0.1161	8.174	.000
S = 9.563		R-Sq = 0.712		

- Interpret the slope of the regression line in this context.

(g) Comment on the strength, direction, and form of the relationship between age and systolic blood pressure. Explain.