



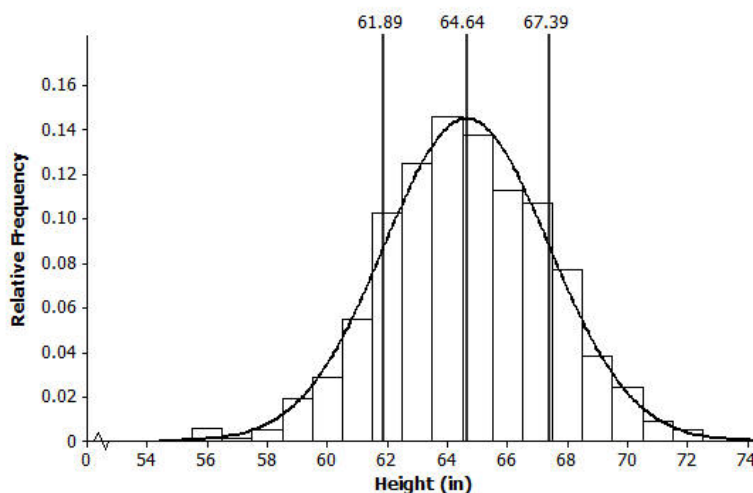
Topic B:

Modeling Data Distributions

S-ID.A.4

Focus Standard:	S-ID.A.4	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.
Instructional Days:	4	
Lesson 8:	Distributions—Center, Shape, and Spread (P) ¹	
Lesson 9:	Using a Curve to Model a Data Distribution (P)	
Lessons 10–11:	Normal Distributions (P,P)	

This topic introduces students to the idea of using a smooth curve to model a data distribution, eventually leading to using the normal distribution to model data distributions that are bell shaped and symmetric. Many naturally occurring variables, such as arm span, weight, reaction times, and standardized test scores, have distributions that are well described by a normal curve.



¹ Lesson Structure Key: **P**-Problem Set Lesson, **M**-Modeling Cycle Lesson, **E**-Exploration Lesson, **S**-Socratic Lesson

Students begin by reviewing their previous work with shape, center, and variability. Students use the mean and standard deviation to describe center and variability for a data distribution that is approximately symmetric. This provides a foundation for selecting an appropriate normal distribution to model a given data distribution.

Students learn to draw a smooth curve that could be used to model a given data distribution. A smooth curve is first used to model a relative-frequency histogram, which shows that the area under the curve represents the approximate proportion of data falling in a given interval. Properties of the normal distribution are introduced by asking students to distinguish between reasonable and unreasonable data distributions for using a normal distribution model. Students use tables and technology to calculate normal probabilities. They work with graphing calculators, tables of normal curve areas, and spreadsheets to calculate probabilities in the examples and exercises provided (**S-ID.A.4**).