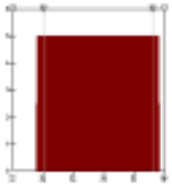
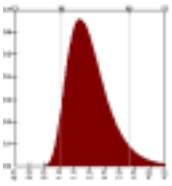
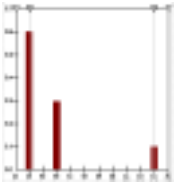
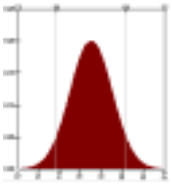
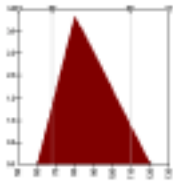
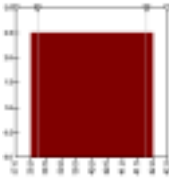
Two Ways to Approach a Problem

In the original problem, the naive approach ignored uncertainty. The realistic approach, however, recognizes that uncertainty is present in most problems. Note: The table below also displays pictures of distributions that will be used to describe the random variables.

Naïve Approach	Realistic Approach	Distribution
After surveying potential customers, Marketing indicates a new widget can be priced at $200.	Marketing is uncertain what the selling price will be because it doesn't know what its competitors will do. The price could be as low as $200 or as high as $400; the values are equally likely. (When all outcomes are equally likely, we call this a **uniform distribution**.)	
Production indicates the labor cost to build one widget will be $30.	Production believes past labor costs will reflect future costs. It has extensive experience in building widgets. Based on its analysis of past data, it believes cost is a random variable that follows a **lognormal distribution** with a mean of $30 and a standard deviation of $15.	
Production indicates the material cost to build one widget will be $20.	Purchasing feels there is a 50% chance material costs will be $14, a 30% chance they could increase to $20, and a 20% chance they could go as high as $27, depending on what OPEC does. We call this is a **discrete distribution** because each cost number is an exact number.	
Quality Control (QC) indicates the cost to check one widget will be $2.	Quality Control (QC) has found its costs per widget follow a **normal distribution** with a mean of $2 per widget and a standard deviation of $0.70 per widget. In a normal distribution, the numbers follow a continuous distribution rather than a discrete distribution.	
Research & Development (R&D) spent $80,000 to design the widget.	Research and Development (R&D) is sure its cost will not be below $60,000, and most likely it will be $80,000; however, there is a chance it could cost $120,000 but no higher. This could be modeled as a **triangular distribution**.	
Facilities spent $156,000 to build a production facility.	Facilities is certain the cost to build a production facility will be between $150,000 to $160,000 with all values equally likely in a **uniform distribution**.	
Purchasing indicates they will spend $60,000 for equipment to build the widgets.	The company has negotiated an agreement to purchase equipment at a guaranteed price of $60,000. While equipment is a constant, we show it as a **discrete distribution** so it will be included in the @RISK analysis.