



## Academic Activity Chapter 4

# Mathematical Modeling

There are different types of modeling that engineers can use to perform, test, or demonstrate an item. Go online and research the following questions.

- 1. What is a mathematical model?**

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- 2. Mathematical and theoretical models usually include variables. What are the six types of variables?**

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- 3. Computer modeling or simulation is a combination of mathematical and theoretical modeling. Engineers can now design and test many constraints before they spend the money or personnel hours prototyping an item. Look for at least two examples of computer modeling that most people use on a daily basis.**

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- 4.** Mathematical models are often presented as graphs and charts. You're the researcher for a company that wants to design a crossover writing utensil.
- a.** Survey 50 people. Ask whether they prefer to use pen or pencil. Eliminate extraneous answers—only accept pen, pencil, or both. A quick way to survey many people at the same time is to do it as a mass text or email. Create a tally chart like the one modeled below.

Pen	Pencil	Both
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- b.** Use the data you collect to create a mathematical model such as a bar graph or a pie chart of your results. If you have experience with Excel, you can create these charts on the computer. Make sure to label all of the elements in your graph, assign colors to your data (for example, pen=yellow, pencil=blue and both=green) and include a key that explains the graph. Present your mathematical model to your teacher.