



### Checking a Bag

A large plane flying across the ocean can weigh almost 1 million pounds! The heavier an airplane is, the more fuel it needs for a flight. The cost of fuel has led many airlines to add a weight restriction on luggage.

If you were to fly somewhere, what would you bring? What would you leave at home to minimize the weight of your luggage? Packing light is important, not only to avoid a fee but also to do your part to conserve fuel. Think about this during the 3-Act Mathematical Modeling lesson.



**TUTORIALS** Get help from *Virtual Nerd*, right when you need it.



**KEY CONCEPT** Review important lesson content.



**GLOSSARY** Read and listen to English/Spanish definitions.



**ASSESSMENT** Show what you've learned.

### Additional Digital Resources



**MATH TOOLS** Explore math with digital tools.



**GAMES** Play Math Games to help you learn.



**ETEXT** Interact with your Student's Edition online.

# 3-ACT MATH



## 3-Act Mathematical Modeling: Checking a Bag



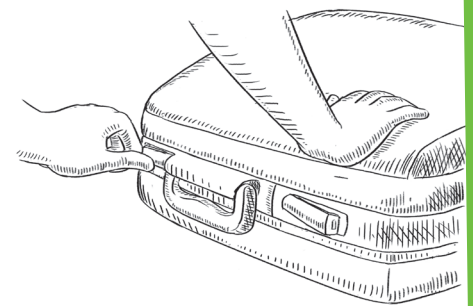
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### ACT 1

1. After watching the video, what is the first question that comes to mind?

2. Write the Main Question you will answer.

3. **Construct Arguments** Predict an answer to this Main Question.  
Explain your prediction.



4. On the number line below, write a number that is too small to be the answer. Write a number that is too large.

Too small



Too large

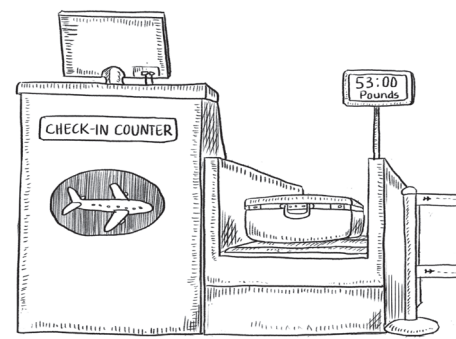


5. Plot your prediction on the same number line.



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6. What information in this situation would be helpful to know?  
How would you use that information?



7. **Use Appropriate Tools** What tools can you use to get the information you need? Record the information as you find it.

8. **Model with Math** Represent the situation using the mathematical content, concepts, and skills from this topic. Use your representation to answer the Main Question.

9. What is your answer to the Main Question? Is it higher or lower than your prediction? Explain why.

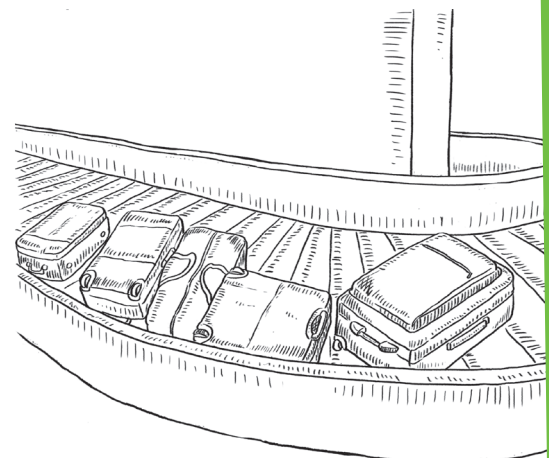


10. Write the answer you saw in the video.

11. **Reasoning** Does your answer match the answer in the video?  
If not, what are some reasons that would explain the difference?



12. **Make Sense and Persevere** Would you change your model now that you know the answer? Explain.



## Reflect

**13. Model with Math** Explain how you used a mathematical model to represent the situation. How did the model help you answer the Main Question?

**14.** Was an *equation* or an *inequality* more useful to answer the Main Question? Explain.

## SEQUEL

**15. Be Precise** A different airline has a weight limit of 40 pounds for a checked bag. Explain how the answer would change for this airline.

