

Who Has the Heaviest Backpacks?

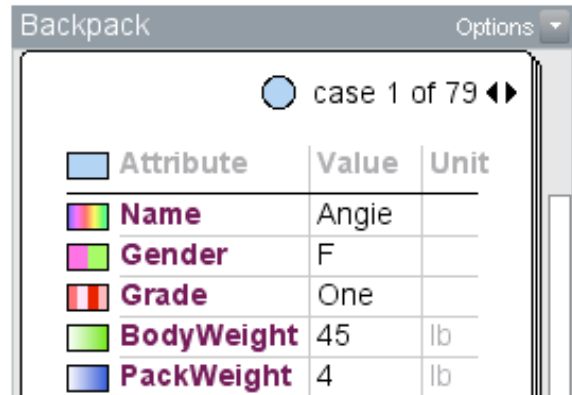
Name(s): _____

Many students develop back problems. Doctors believe that these problems are caused by the heavy backpacks students carry. Sometimes the way students carry their backpacks also hurts their backs.

In this activity you will look at data about students in grades 1, 3, 5, and 7 and decide which students carry the heaviest backpacks.

The data you'll look at were collected by students. They went to one classroom in each grade at a school and had students weigh themselves and their backpacks.

At right is the data for Angie, a girl in first grade. The card shows that she weighs 45 pounds and her backpack weighs 4 pounds. (The "lb" you see in the **Unit** column is the abbreviation for pounds.)



The screenshot shows a data card titled "Backpack" with an "Options" dropdown menu. It displays "case 1 of 79" with navigation arrows. Below is a table with three columns: Attribute, Value, and Unit.

Attribute	Value	Unit
Name	Angie	
Gender	F	
Grade	One	
BodyWeight	45	lb
PackWeight	4	lb

Think About It

Before you look at data, think about what you expect to see. You probably already have some ideas about what these data look like.

1. About how many pounds do you think a student's backpack weighs, on average? (Include the weight of the backpack and everything in it.)
2. Which students do you think usually carry heavier backpacks— students in higher grades (grades 5 and 7) or students in lower grades (grades 1 and 3)? Explain.
3. Which students do you think usually carry heavier backpacks—girls or boys? Explain.

Plot and Investigate

Now you'll look at the data to see what they say.

4. Open the document **Heaviest Backpacks.tp**. You should see a plot and a stack of data cards like the one on the previous page.
5. How many students do you have data for?
_____ students
6. First you'll look at whether students in the higher grades tend to carry heavier backpacks than students in the lower grades. Make a graph that helps you answer this question. Include a copy of your graph with your assignment.
7. Which students usually carry heavier backpacks—students in higher grades or students in lower grades? Explain. Your answer should say how your plot backs up your conclusion.
8. Next you'll look at whether girls or boys tend to carry heavier backpacks. Make a graph that helps you answer this question. Include a copy of your plot with your assignment.
9. Which students usually carry heavier backpacks—girls or boys? Explain. Your answer should say how your graph backs up your conclusion.