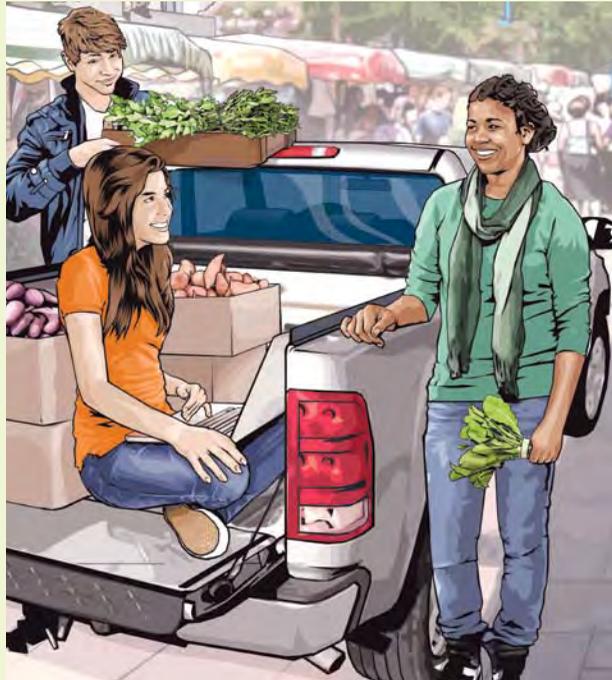


# That's a Lotta Lettuce!

Middle school farmers Jennifer and Lucas Harris have a strong entrepreneurial spirit and want to update their operations by using modern business practices and technology.

One of their early ventures is growing specialty baby arugula that is shipped fresh to customers. While Lucas sells locally, Jennifer has been experimenting with offering free shipping on Internet orders. She tested different minimum order amounts to qualify for free shipping.

After eight weeks, she isn't sure whether her program is working. While setting up their stand at the farmers' market, she shares her questions, as well as a table of sales data, with Priscilla, owner of the Jammin' Jam Shack. Priscilla suggests that a scatterplot might be a good way to determine whether or not the free shipping program was working.



## WORK THE MATH

*Use separate paper to show your work.*

Minimum Purchase to Receive Free Shipping	Total Baby Arugula Sales
\$50	\$800
\$75	\$650
\$100	\$400
\$30	\$1,400
\$25	\$1,600
\$40	\$1,250
\$0	\$2,500
\$60	\$600

1. Create a **scatterplot** to display the data in the table.
2. Is there a positive, negative, or no correlation between total baby arugula sales and the minimum purchase amount to receive free shipping? Explain your thinking.
3. Which variable is independent and which is dependent? Explain your thinking.

## NOW TRY THIS:

What do you think might happen if Jennifer and Lucas didn't offer free shipping at all?



# Pounding the Pavement!

One innovation the siblings are eager to try is selling their premium organic vegetables door-to-door to the chefs at different local restaurants. "If we visit the chefs in person and show them the quality we offer, I'll bet they would love to buy from us," remarked Lucas.

After ten days of going from The Haggis Hut to Yummy Yvonne's to The Hefty Heifer, Lucas wondered if his hard work had been worth it. He kept track of his hours and sales in a table, but wasn't sure whether or not there was a relationship between the two.



## WORK THE MATH

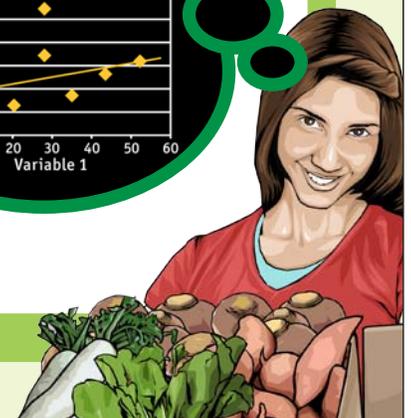
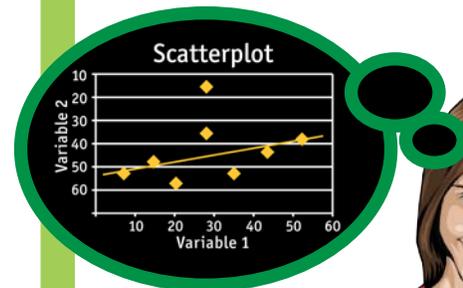
*Use separate paper to show your work.*

Hours Worked	Sales
4	\$575
7	\$825
2	\$660
8	\$450
9	\$925
8	\$950
6	\$700
1	\$125
3	\$350
4	\$500

1. Prepare a **scatterplot** displaying the hours Lucas worked and the sales he made.
2. Is there a positive, negative, or no correlation between the number of hours worked and sales made? Explain your thinking.

## NOW TRY THIS:

Are any of the points on the scatterplot you prepared outliers? Explain your thinking. Considering the real world of restaurants, can you think of a reason why these points didn't follow the same pattern as the other points on the plot?



# The Future of Our Farm

After a successful first year, Jennifer and Lucas were planning their business pitch to convince their parents to let them manage more farm acres next year. "If we did this well with ten acres this year, imagine how much better we'll do if Mom and Dad let us manage additional acreage next year!" exclaimed Jennifer.

"I'd like to see us getting into organic soybeans," offered Lucas. "I've been in touch with Tofu Express, the healthy fast-food chain. They're impressed with the quality of our produce, and they've told me they would buy our entire crop of edamame soybeans if we grew them. Our only problem is that we would need to increase our yield [the amount of a crop per acre] to meet their needs. I've seen a study that shows how irrigation increases organic soybean yield."

To convince their parents, Jennifer and Lucas knew that a data table wouldn't do the trick. They would need a more compelling display to prove their point.



## WORK THE MATH

*Use separate paper to show your work.*

### Data on Organic Soybean Yield

Water Applied in Inches	Soybean Yield per Acre
1	41
2	43
4	44
6	46
8	47
9	48
10	49

1. Prepare a **scatterplot** displaying the data on irrigation and organic soybean crop yield. Do you think there is a correlation between the two variables?
2. Prepare a **line of best fit**.
3. Use the line of best fit to predict organic soybean yield with 3 inches of water applied. Then predict the yield with 7 inches of water applied.

## NOW TRY THIS:

Do you think the line of best fit could be used to predict the effect of applying 20 inches of water? What about 50 inches of water?

