ANSWER KEY For Online Materials, Visit: www.actuarialfoundation.org/cultivatingdata
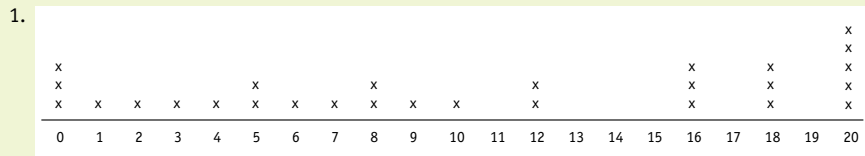
Worksheet 1.1: "More Rutabagas, Please!"

1.

```
                                                                    x
                                                                    x
  x                                           x     x         x     x
  x                 x           x             x     x         x     x
  x   x   x   x   x   x   x   x   x   x   x    x     x         x     x
  0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20
```

2. **Median:** 9.5 pounds
   Mode: 20 pounds
   Range: 20 pounds

NOW TRY THIS: Wunderbar's biggest orders come on the weekends, when his restaurant is busier than on weeknights. He places much larger orders (16, 18, or 20 pounds) on those days alone. The lower weekday orders bring down the median.

## Worksheet 1.2: "Love Those Leafy Greens!" (online)

1.
Stem	Leaves
2	44
3	467
4	02567899
5	00000022244566
6	002

2. **Median:** 50; **Mode:** 50; **Range:** 38

NOW TRY THIS: The median and mode of 50 are reasonable measures of the typical number of customers. Although there are a number of lower values, it can be attributed to slow business during the first few days of operation.

Worksheet 1.3: "Box It Up!" (online)

1. Daikon Radishes

Sweet Potatoes

Baby Arugula

Heirloom Rutabagas
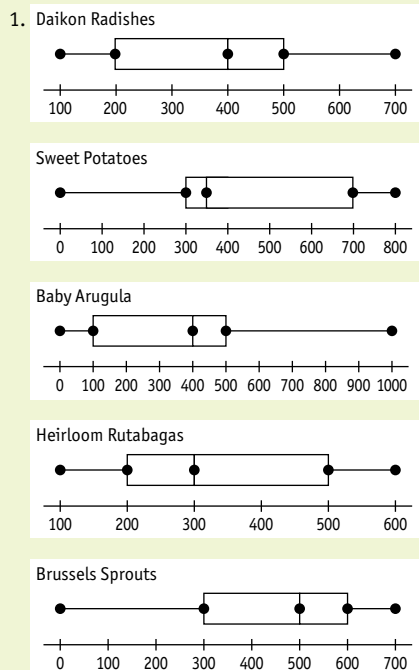
Brussels Sprouts

2. Sweet potatoes and Brussels sprouts have the highest interquartile ranges.

NOW TRY THIS: Answers will vary, depending on the vegetables selected. Although the box-and-whisker plot takes longer to prepare, it has the advantage of providing information about interquartile ranges.

## Worksheet 2.1: "That's a Lotta Lettuce!"

1.
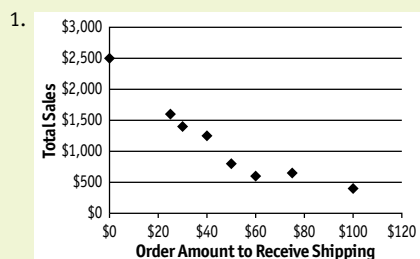
2. There is a negative correlation. The lower the order amount to receive free shipping, the higher total sales are.

3. The order amount for free shipping is the independent variable. Total sales is the dependent variable.

NOW TRY THIS: It's impossible to tell for sure. Sales might decline further, but it may also be possible that some customers simply want the finest vegetables and would continue to buy even without free shipping.

Worksheet 2.2: "Pounding the Pavement!" (online)

1.
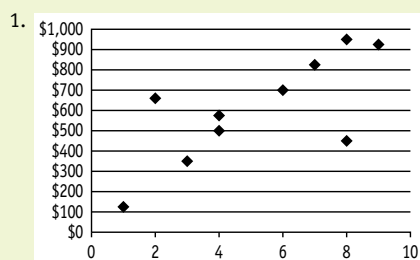
2. Although there are outliers, there is a positive correlation between hours worked and sales.

NOW TRY THIS: Answers will vary, but the day with eight hours worked with only $450 in sales might have been a rainy, slow day while the day with only two hours worked and $660 in sales might have been right before July 4, with chefs stocking up for a busy weekend.

Worksheet 2.3: "The Future of Our Farm" (online)

1. & 2.
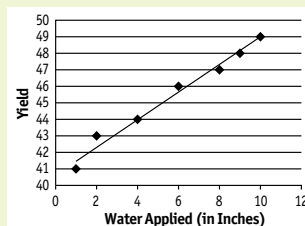
3. 3 inches of water = a yield of approximately 43.5
   7 inches of water = a yield of approximately 46.5

NOW TRY THIS: Answers will vary, but it is important for students to realize that the line of best fit is a model used to make predictions but it can't be followed blindly. Common sense dictates that the relationship between applying water and increasing yields can't continue forever.

Advanced Worksheet: "You Say Tomato!"

1. Frequency tables:
Red Ready

Number of Tons	Frequency of Number	Probability of Number = Frequency / Total
10	1	5%
11	2	10%
12	2	10%
14	2	10%
15	1	5%
16	6	30%
18	2	10%
19	2	10%
20	2	10%

Crimson Champ

Number of Tons	Frequency of Number	Probability of Number = Frequency / Total
0	2	10%
10	3	15%
12	1	5%
14	1	5%
16	2	10%
17	4	20%
20	1	5%
26	3	15%
28	2	10%
30	1	5%

2. Expected values:
   Red Ready = 15.45
   Crimson Champ = 17.0

3. Answers will vary, but could include mention that current crop yields might differ from yields in prior years due to drought, excessive rain, extreme temperatures, pests, etc. Additionally, students might mention that a sample of 20 might not be large enough to ensure a high level of comfort.

NOW TRY THIS: Crimson Champ has a higher expected value than Red Ready. However, Red Ready has a more "dependable" yield in that, in prior years, yields stayed fairly close to the mean while yields for Crimson Champ deviate more widely from the mean. Additionally, with Crimson Champ, there is a 10% chance of no yield at all. Crimson Champ offers higher potential reward, but at the price of higher risk.