

# ALGEBRA CONCEPTS PA CORE 8 – COURSE 3

## STUDENT WORKBOOK

### UNIT 5 – STATISTICS AND PROBABILITY

Before								After		
  								  		
			Unit 5	Statistics and Probability	PURPLE	GREEN	RED			
			9.1	Scatter Plots	8.5	B-7				
			9.2	Lines of Best Fit						
			9.3	Two Way Tables						
			9.4	Descriptive Statistics						
			9.5	Measures of Variation			16.3			
			9.6	Analyze Data Distributions			16.4			

#### STUDY ISLAND TOPICS

Scatter Plots  
 Best-Fit Linear Models  
 Two Way Tables

Name: \_\_\_\_\_ 1 \_\_\_\_\_ Period \_\_\_\_\_

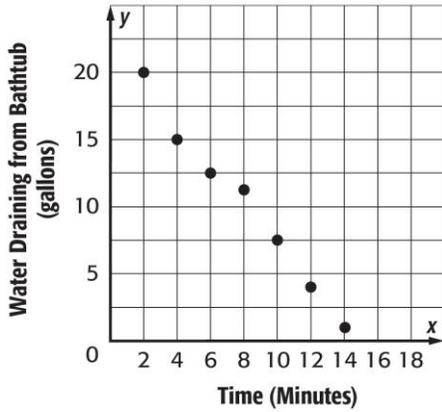
# Lesson 1 Skills Practice

## Scatter Plots

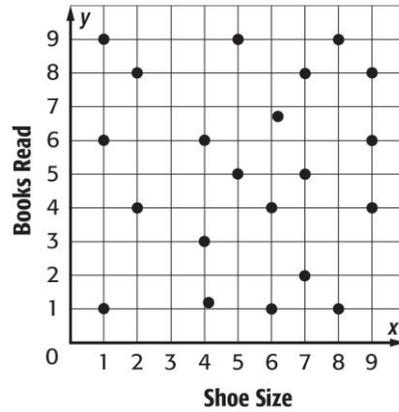
OBJECTIVE:
KEY NOTES:

Explain whether the scatter plot of the data for each of the following shows a *positive*, *negative*, or *no* association. Interpret the scatter plot.

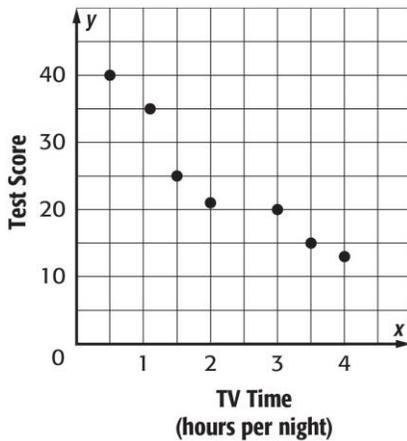
1.



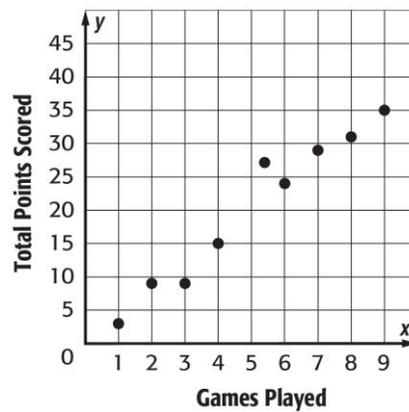
2.



3.



4.



5. E-MAIL Construct a scatter plot of the number of E-mails Vincent received over the past six days. Interpret the scatter plot.

Day	1	2	3	4	5	6
E-mails	16	21	3	11	19	5

# Lesson 1 Problem-Solving Practice

## Scatter Plots

WAGES For Exercises 1 and 2, use the table below.

Years Since 2002	Average Hourly Wage
1	\$12.25
2	\$12.75
3	\$13.50
4	\$14.00
5	\$14.75
6	\$15.25

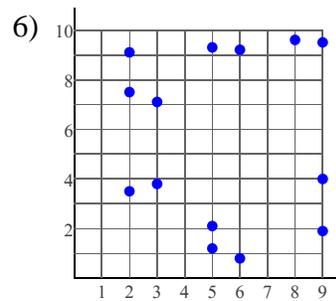
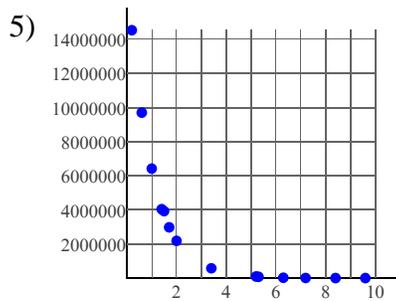
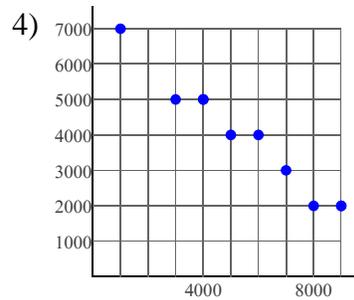
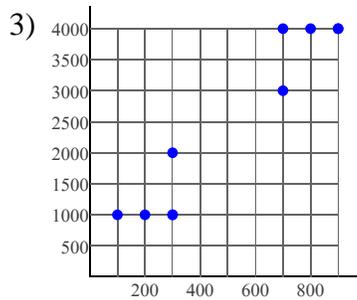
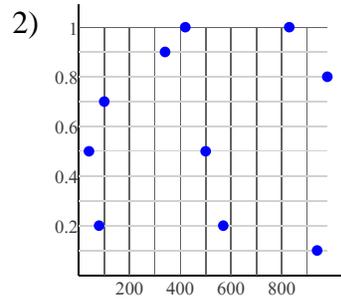
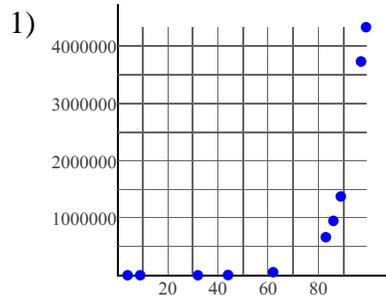
BRICKS For Exercises 3 and 4, use the table below.

Time (minutes)	Bricks Remaining
0	600
10	565
20	530
30	495
40	460
50	425

<p><b>1.</b> Construct a scatter plot of the data.</p>	<p><b>3.</b> Construct a scatter plot of the data.</p>
<p><b>2.</b></p> <p><b>a.</b> Does the scatter plot show a <i>positive</i>, <i>negative</i>, or <i>no</i> association? Explain.</p> <p><b>b.</b> If an association exists, make a conjecture about the hourly wages in 2009.</p>	<p><b>4.</b></p> <p><b>a.</b> Does the scatter plot show a <i>positive</i>, <i>negative</i>, or <i>no</i> association? Explain.</p> <p><b>b.</b> If an association exists, make a conjecture about the number of bricks remaining to be loaded after 1 hour and 10 minutes has passed.</p>

# Scatter Plots

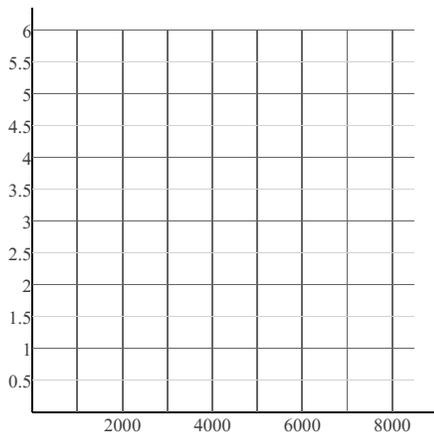
**State if there appears to be a positive correlation, negative correlation, or no correlation. When there is a correlation, identify the relationship as linear or nonlinear.**



**Construct a scatter plot.**

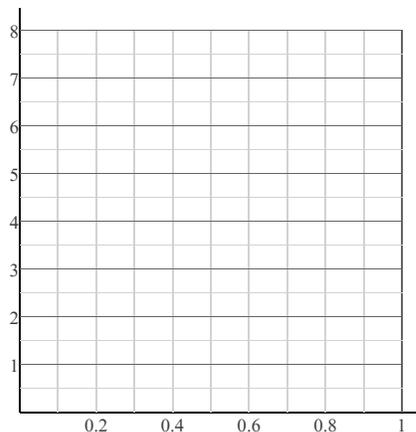
7)

X	Y	X	Y
300	1	1,800	3
800	1	3,400	3
1,100	2	4,700	4
1,600	2	6,000	4
1,700	2	8,500	6



8)

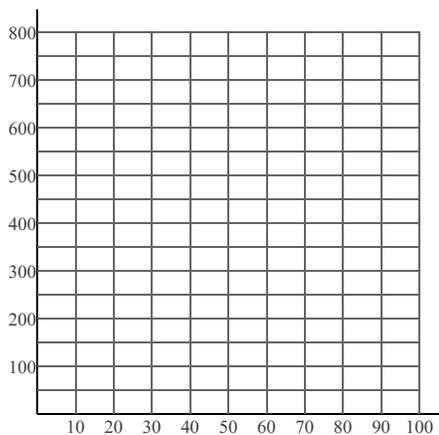
X	Y	X	Y	X	Y
0.1	7.5	0.4	3.3	0.6	1.8
0.1	7.6	0.6	1.4	0.9	1.5
0.3	4.5	0.6	1.7	1	1.7
0.4	3.2				



**Construct a scatter plot. Find the slope-intercept form of the equation of the line that best fits the data.**

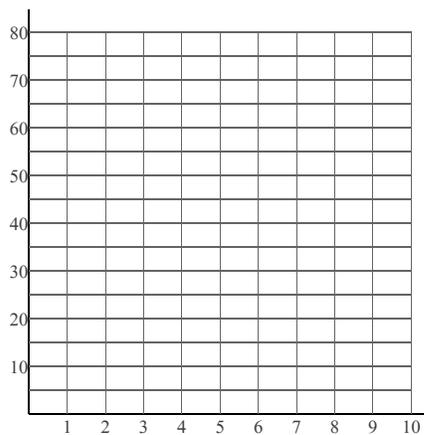
9)

X	Y	X	Y	X	Y
10	700	40	300	70	100
10	800	60	200	80	100
30	400	70	100	100	200
30	500				



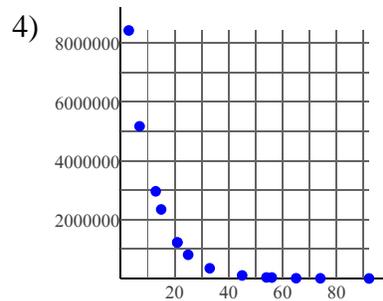
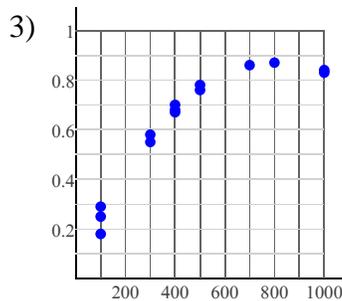
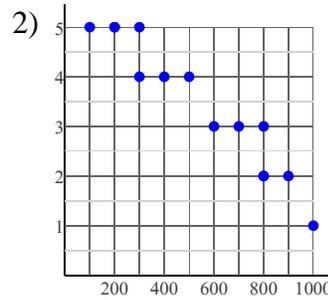
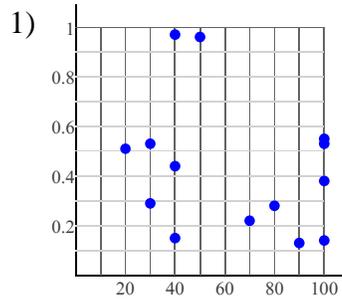
10)

X	Y	X	Y	X	Y
1	20	5	70	7	80
2	40	6	80	9	80
3	50	7	80	10	80
4	60				



# Scatter Plots

State if there appears to be a positive correlation, negative correlation, or no correlation. When there is a correlation, identify the relationship as linear, quadratic, or exponential.



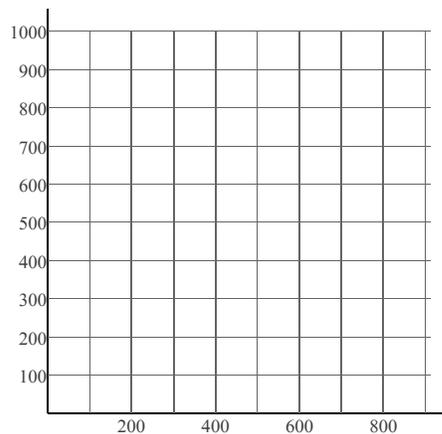
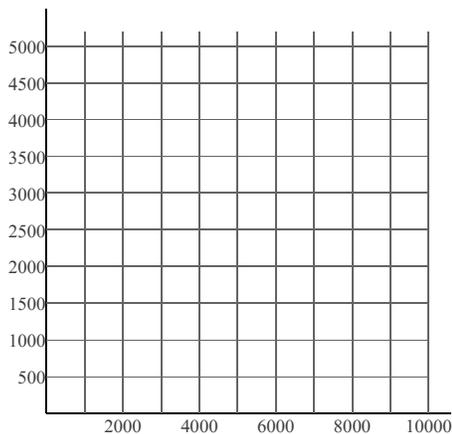
Construct a scatter plot. State if there appears to be a positive correlation, negative correlation, or no correlation. When there is a correlation, identify the relationship as linear, quadratic, or exponential.

5) 

X	Y	X	Y
1,000	1,300	5,000	2,500
2,000	1,500	7,000	3,600
3,000	2,000	7,000	3,700
3,000	2,000	9,000	4,200
4,000	2,400	10,000	5,200

6) 

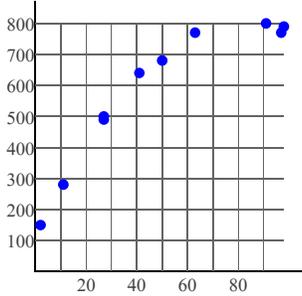
X	Y	X	Y
140	500	280	900
150	1,000	450	500
170	300	450	500
180	100	770	400
270	200	910	600



Find the slope-intercept form of the equation of the line that best fits the data.

7)

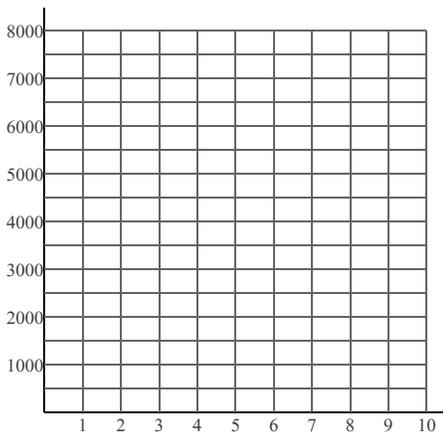
X	Y	X	Y	X	Y
2	150	41	640	91	800
11	280	50	680	97	770
27	490	63	770	98	790
27	500				



Construct a scatter plot. Find the slope-intercept form of the equation of the line that best fits the data and its  $r^2$  value.

8)

X	Y	X	Y
0.1	2,000	5	5,000
0.1	2,000	6.7	6,000
2.6	3,000	7.9	7,000
3.7	4,000	8.5	8,000
3.8	4,000	9.4	8,000



# Lesson 2 Skills Practice

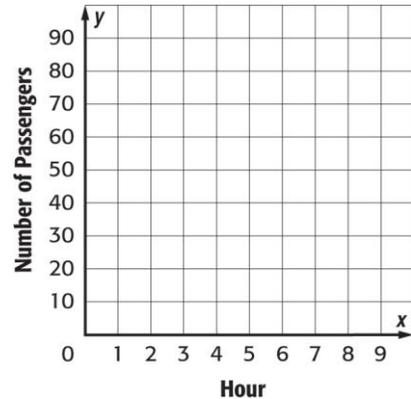
## Lines of Best Fit

OBJECTIVE:
KEY NOTES:

1. **BOATING** Rehan's yacht holds 70 passengers. Each hour he stops at the marina to let some passengers off and on. The table shows how many passengers are on board during each hour of boating.

Hour	1	2	3	4	5
Passengers	30	40	32	40	55

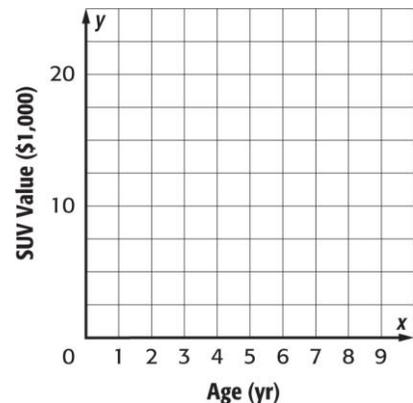
- Construct a scatter plot of the data. Then draw and assess a line that seems to best represent the data.
- Use the line of best fit to make a conjecture about the number of passengers on the boat during hour 8.



2. **RESALE VALUE** The table shows the resale value of six SUVs plotted against the age of the vehicle.

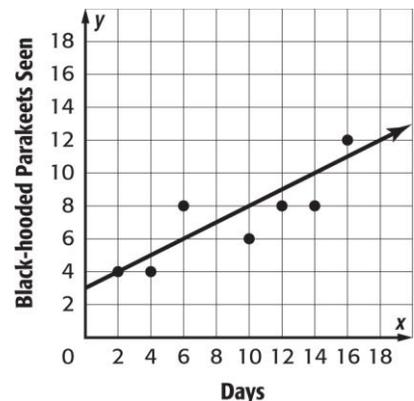
Age (yr)	1	2	3	4	5	6
Value (\$1,000)	24	22	19	17	16	13

- Construct a scatter plot of the data. Then draw and assess a line that seems to best represent the data.
- Use the line of best fit to estimate the resale value of a 7-year-old SUV.



3. **BIRD WATCHING** Sage belongs to a bird-watching club. Every two days, she goes out and counts the number of Black-hooded Parakeets she sees. The scatter plot shows the number of parakeets she saw in the past 12 days.

- Write an equation in slope-intercept form for the line that is drawn.
- Use the equation to make a conjecture about the number of parakeets she saw on the eighteenth day.



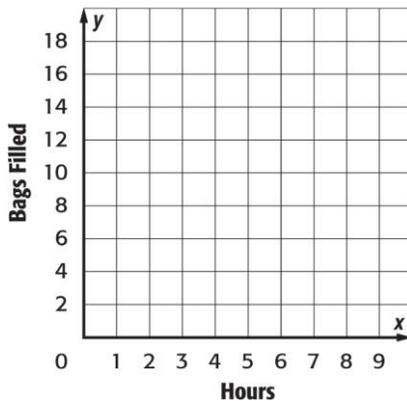
# Lesson 2 Problem-Solving Practice

## Lines of Best Fit

**FALL** Haley has a leaf-raking company to help offset school costs. The table shows how many bags of leaves Haley was able to fill each hour. Use the information in the table to answer Exercises 1 and 2.

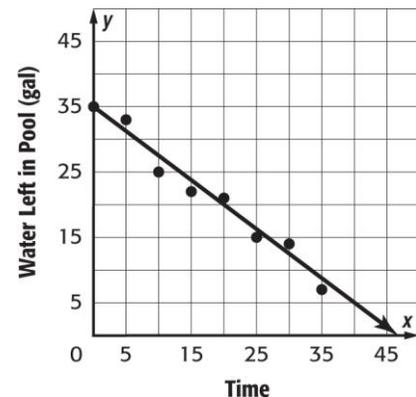
Hour	1	2	3	4	5
Bags Filled	3	4	5	8	14

1. Construct a scatter plot of the data. Then draw and assess a line that represents the data.



2. Use the line of best fit to make a conjecture as to how many bags of leaves Haley will have filled at the end of 7 hours of raking.

**BABY POOL** Cleo's baby pool has a leak. The scatter plot shows the amount of water left in the pool at the end of each 5-minute segment. Use the information in the scatter plot to answer Exercises 3 and 4.



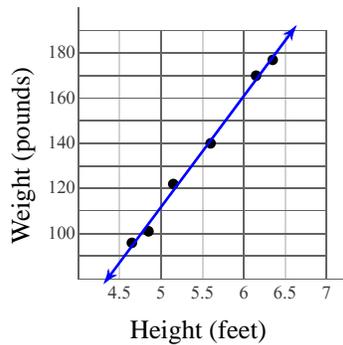
3. Write an equation in slope-intercept form for the line that is drawn.

4. Use the equation to make a conjecture about the amount of water left in the pool after 40 minutes.

## Using Statistical Models

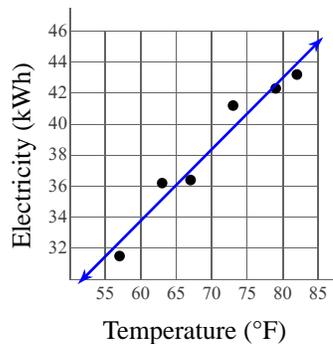
Date \_\_\_\_\_ Period \_\_\_\_\_

- 1) The height and weight of adults can be related by the equation  $y = 49.2x - 134$  where  $x$  is height in feet and  $y$  is weight in pounds.



- a) What does the slope of the line represent?
- b) What does the y-intercept of this function represent?

- 2) The average amount of electricity consumed by a household in a day is strongly correlated to the average daily temperature for that day. This relationship is given by  $y = 0.46x + 6.17$  where  $x$  is the temperature in  $^{\circ}\text{F}$  and  $y$  is the amount of electricity consumed in kilowatt-hours (kWh).

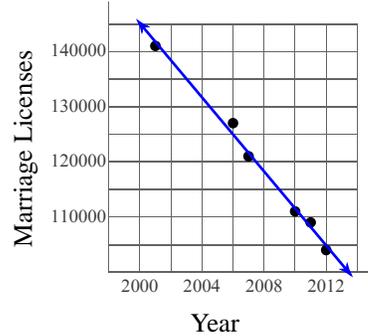


- a) What does the slope of the line represent?
- b) What does the y-intercept of this function represent?

- 3) The number of marriage licenses issued by Clark County Nevada, the county where Las Vegas is located, has been decreasing since the year 2000:

Year	Marriage Licenses
2001	141,000
2006	127,000
2007	121,000
2010	111,000
2011	109,000
2012	104,000

This can be modeled by the equation  $y = -3358.1x + 6861400$  where  $x$  is the year and  $y$  is the number of marriage licenses issued.

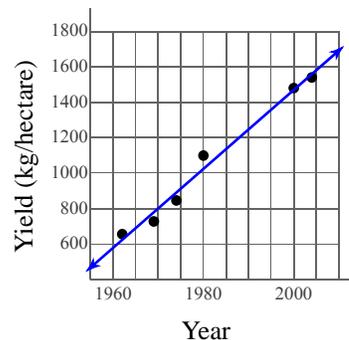


- a) According to the model, how many marriage licenses were issued in 2004? Round your answer to the nearest hundred.
- b) Using this model, how many marriages licenses would you expect to be issued in 2023? Round your answer to the nearest hundred.
- c) According to the model, in what year did Clark County issue 140,000 marriage licenses? Disregard years before 1990. Round your answer to the nearest year.

- 4) With the help of scientists, farmers in Cameroon have been able to produce more and more grain per hectare each year. Here are the crop yields for several years:

Year	Yield (kg/hectare)
1962	656
1969	728
1974	846
1980	1,100
2000	1,480
2004	1,540

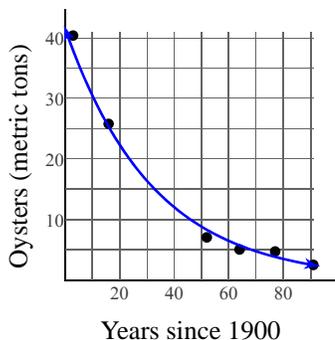
The crop yield can be described by the equation  $y = 22.3x - 43100$  where  $x$  is the year and  $y$  is the grain yield in kilograms per hectare (kg/ha).



- a) According to the model, what was the crop yield in 1988? Round your answer to the nearest whole number.
- b) Assuming that this trend continues, what crop yield is predicted for the year 2022 by the model? Round your answer to the nearest whole number.
- c) The model indicates that a crop yield of 1300 kg/hectare was achieved in what year? Round your answer to the nearest year.

## Using Statistical Models

- 1) The oyster population of the Chesapeake Bay has been in decline for over 100 years. This can be expressed by the equation  $y = 41.6 \cdot 0.969^x$  where  $x$  is the number of years since 1900 and  $y$  is the amount of oysters harvested in metric tons.

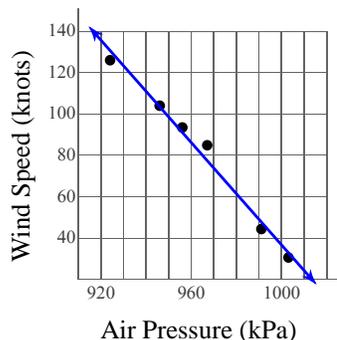


What does the y-intercept of this function represent?

- 2) The Hurricane Hunters took the following measurements from a hurricane over several days as it developed:

Air Pressure (kPa)	Wind Speed (knots)
924	126
946	104
956	93.5
967	84.9
991	44.4
1,003	30.6

They found that the air pressure and wind speed are related in the following way:  $y = -1.24x + 1270$  where  $x$  is the air pressure in millibars (kPa) and  $y$  is the maximum sustained wind speed in knots (nautical miles per hour).

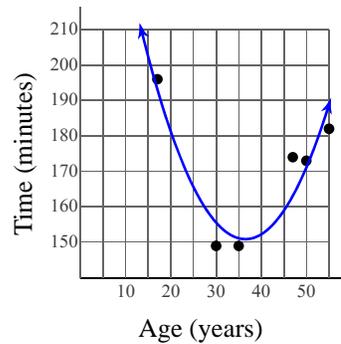


- a) Using the model, what would be the wind speed of a hurricane with an air pressure of 980 kPa? Round your answer to the nearest knot.
- b) According to the model, a hurricane with an air pressure of 891 kPa would have what wind speed? Round your answer to the nearest knot.
- c) The model indicates that a wind speed of 110 knots is associated with what air pressure? Round your answer to the nearest millibar.

- 3) The time for the fastest runner for their age in the Marine Corps Marathon is given for several ages:

Age	Time (minutes)
17	196
30	149
35	149
47	174
50	173
55	182

This can be modeled by the equation  $y = 0.111x^2 - 8.1x + 299$  where  $x$  is the age and  $y$  is the number of minutes taken.

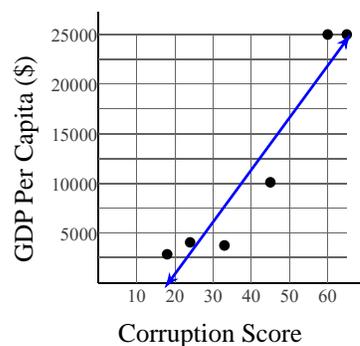


- a) Using this model, what would be the time for the fastest 41-year-old? Round your answer to the nearest hundredth.
- b) According to the model, what would be the time for the fastest 83-year-old? Round your answer to the nearest hundredth.
- c) What age(s) correspond to a time of 171 minutes? Round your answer(s) to the nearest tenth.

- 4) Economists have found that the amount of corruption in a country is correlated to the productivity of that country. Productivity is measured by gross domestic product (GDP) per capita. Corruption is measured on a scale from 0 to 100 with 0 being highly corrupt and 100 being least corrupt:

Corruption Score	GDP Per Capita (\$)
18	2,850
24	4,050
33	3,740
45	10,100
60	25,000
65	25,000

This can be modeled by the equation  $y = 525x - 9640$  where  $x$  is the corruption score and  $y$  is GDP per capita in dollars.



- a) According to the model, what would be the GDP per capita of a country with a corruption score of 38? Round your answer to the nearest dollar.
- b) Using this model, a country with a corruption score of 75 would have what GDP per capita? Round your answer to the nearest dollar.
- c) A GDP per capita of \$17,000 corresponds to what corruption score, according to the model? Round your answer to the nearest whole number.

# Lesson 3 Skills Practice

## Two-Way Tables

OBJECTIVE:
KEY NOTES:

For Exercises 1 and 2, construct a two-way table summarizing each set of data.

1. There are 195 male and 126 female students at McGuffey Junior High. A survey showed that 110 males and 84 females ride the bus.

	Bus	Not Bus	Total
Males			
Females			
Total			

2. The two-way table shows the enrollment in language classes at Carson Middle School. Find and interpret the relative frequencies of students in the survey by row. Round to the nearest hundredth if necessary.

	Spanish	Not Spanish	Total
Chinese	30	65	95
Not Chinese	20	5	25

3. Refer to the table in Exercise 2. Find and interpret the relative frequencies of students in the survey by column. Round to the nearest hundredth if necessary.

	Spanish	Not Spanish
Chinese	30	65
Not Chinese	20	5
Total	50	70

# Lesson 3 Problem-Solving Practice

## Two-Way Tables

Solve.

1. Ricardo surveyed 110 eighth grade students to find out if they have a part time job. There are 60 students who have a part-time job, including 48 honor roll students. Half of the students who do not have a job are on the Honor Roll. Construct a two-way table summarizing the data.

	On Honor Roll	Not on Honor Roll	Total
Job			
No Job			
Total			

Customers entering a store were asked what electronic technology they own. The results of the survey are shown at the right. For Exercises 2 and 3, round relative frequencies to the nearest hundredth if necessary.

	E-Reader	No E-Reader	Total
Laptop	20	8	28
No Laptop	45	22	67
Total	65	30	95

2. Find and interpret the relative frequencies by row.

3. Find and interpret the relative frequencies by column.

# Lesson 4 Skills Practice

## *Descriptive Statistics*

For Exercises 1–3, find the mean, median, mode, and range of each data set.

OBJECTIVE:

KEY NOTES:

1. The points scored by a football team: 21, 24, 14, 14, 0, 16, 21, 28, 6, 20
2. Weekly earnings in dollars: 245, 250, 205, 240, 250, 275, 260, 295, 255, 225, 250
3. Science quiz scores: 61, 96, 97, 87, 84, 91, 98, and 86
4. Find the five-number summary of the data in Exercise 2. Draw a box plot of the data.



5. Find the five-number summary of the data in Exercise 3. Draw a box plot of the data.



# Lesson 4 Problem-Solving Practice

## *Descriptive Statistics*

<p>1. The daily visitors to a carnival for one week in May are 125, 134, 132, 120, 145, 170, and 150. What is the mean number of visitors? Round to the nearest whole number.</p>	<p>2. Carlos read a novel for language arts class. The minutes he read each night are 40, 45, 35, 50, 25, 35, 60, 55, 40, and 30. What is the median number of minutes Carlos read?</p>
<p>3. The ages, in years, of children at a birthday party are 10, 12, 9, 7, 10, 12, 14, 14, 10, and 16. What are the mean, median, mode, and range of ages? Round to the nearest tenth.</p>	<p>4. Latoya is saving to buy a digital camera. Her savings, in dollars, for the last eight weeks are 27, 35, 35, 32, 26, 34, 36, 27, and 38. Which is greater: Latoya's median weekly savings or Latoya's mean weekly savings? Explain.</p>
<p>5. Find the five-number summary of the data in Exercise 3. Draw a box plot to represent the data.</p> <div style="text-align: center;"></div>	
<p>6. What is a conclusion that can be drawn from the box plot in Exercise 5?</p>	

## Center and Spread of Data

**Find the mode, median, mean, range, lower quartile, upper quartile, interquartile range, and mean absolute deviation for each data set.**

- 1) Shoe Size
- 6.5    7    7.5    8    8    8    9
- 10    10.5

- 2) Hits in a Round of Hacky Sack
- 2    3    3    3    4    4    6    7
- 12    18    19

- 3) Academy Awards

Movie	# Awards
The Greatest Show on Earth	2
Gentleman's Agreement	3
The Great Ziegfeld	3
The King's Speech	4

Movie	# Awards
No Country for Old Men	4
Unforgiven	4
It Happened One Night	5
Forrest Gump	6

Movie	# Awards
Mrs. Miniver	6
Lawrence of Arabia	7
On the Waterfront	8

- 4) Average Time to Maturity

Plant	Days
Bok Choi	45
Okra	55

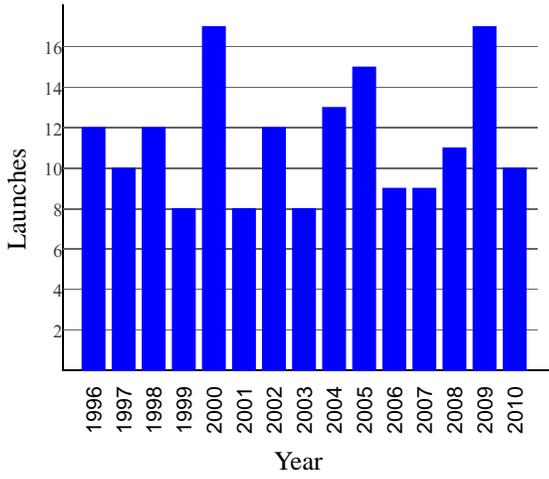
Plant	Days
Swiss Chard	60
Bell Pepper	75

Plant	Days
Sugar Baby Watermelon	75
Cantaloupe	80

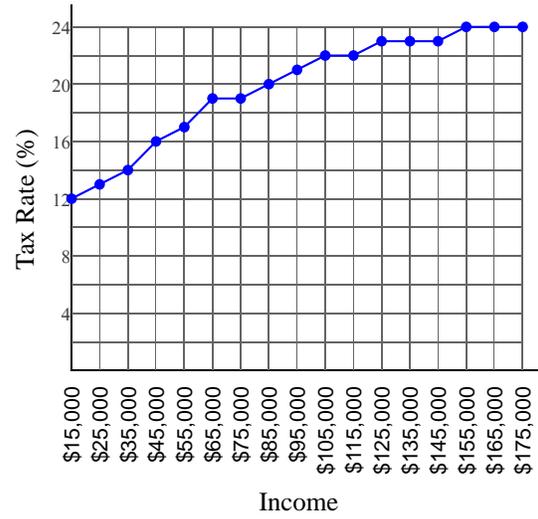
Plant	Days
Honeydew	80
Beefsteak Tomato	80

Plant	Days
Rutabaga	90
Tomatillo	100

5) European Spacecraft Launches



6) Federal Income Tax



7) Goals in a Hockey Game

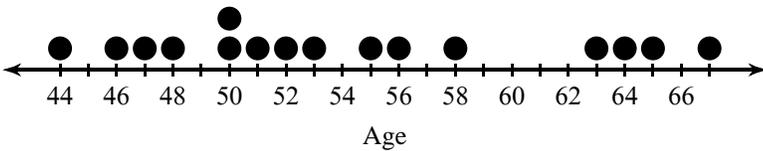
Goals	Frequency
2	1
4	1
5	4
7	4
8	2
9	3

8) Mountain Heights (ft)

Stem	Leaf
23	6 7 8 8 9
24	2 2 2 2 3 4 6 7 8 8
25	
26	3 7

Key: 24|2 = 24,200

9) US Senators When Assuming Office



## Center and Spread of Data

**Find the mode, median, mean, lower quartile, upper quartile, interquartile range, and population standard deviation for each data set.**

- 1) **Test Scores**
- 37 42 48 51 52 53 54  
54 55

- 2) **Mens Heights (Inches)**
- 62 64 69 70 70 71 72  
73 74 75 77

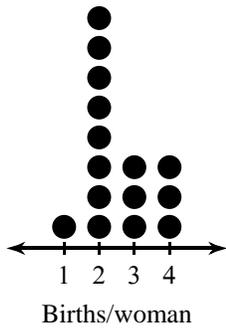
- 3) **Age Assumed Office**

Senator	Age	Senator	Age	Senator	Age	Senator	Age	Senator	Age
Patrick Leahy	34	Carl Levin	44	Tammy Baldwin	50	John Barrasso	54	Mike Johanns	58
Mark Pryor	39	Rand Paul	47	Barbara Boxer	52	Kay Hagan	55	John Boozman	60
Brian Schatz	40	John Cornyn	50	Claire McCaskill	53	Jerry Moran	56	Jim Risch	65
John Thune	43								

- 4) **Sales Tax**

State	Percent	State	Percent	State	Percent	State	Percent
Colorado	2.9	New Mexico	5.125	Maryland	6	Washington	6.5
Louisiana	4	Maine	5.5	South Carolina	6	Indiana	7
Wyoming	4	Florida	6	Kansas	6.15	New Jersey	7
Oklahoma	4.5	Idaho	6	Massachusetts	6.25	Rhode Island	7
North Dakota	5						

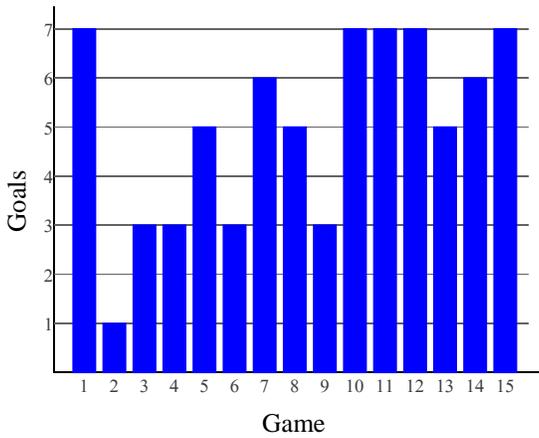
5) Birth Rate by Country



6) Length of Book Titles

# Words	Frequency
2	6
3	3
4	3
5	2
6	2

7) Goals in a Hockey Game

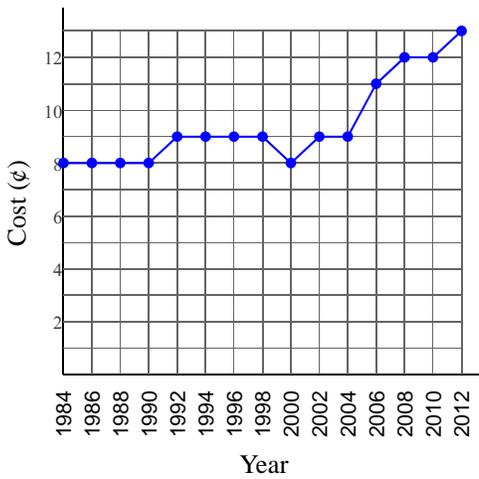


8) Boiling Point (°C)

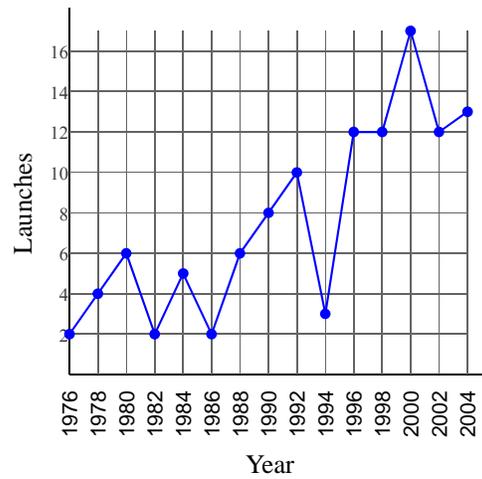
Stem	Leaf
0	1 2 3 3 3 8 9
1	8
2	2 4 9 9
3	2 3 8
4	8

Key: 1|8 = 1,800

9) Cost of Electricity, per kWh



10) European Spacecraft Launches



# Lesson 5 Skills Practice

## Measures of Variation

OBJECTIVE:

KEY NOTES:

For Exercises 1–4, find the mean absolute deviation of each set of data. Round to the nearest tenth if necessary. Describe what the mean absolute deviation represents.

1.

Basketball Scores				
41	37	50	38	46
54	42	56	49	47

2.

Books Read				
15	12	10	24	32
18	23	19	30	27

3.

Miles Traveled		
110	85	90
115	115	80
125	85	95

4.

Bagels Sold			
65	74	91	99
104	93	62	92
75	119	116	54

5. Refer to the table in Exercise 1. The standard deviation is about 6.5 points. Describe the data values that are within one standard deviation of the mean.

6. Refer to the table in Exercise 2. The standard deviation is about 7.5 books. Describe the data values that are within one standard deviation of the mean.

# Lesson 5 Problem-Solving Practice

## *Measures of Variation*

The table shows the number of seventh and eighth graders on the Honor Roll each grading period.

	Grading Period 1	Grading Period 2	Grading Period 3	Grading Period 4	Grading Period 5	Grading Period 6
Seventh Graders	58	77	80	65	81	65
Eighth Graders	70	78	74	83	79	72

1. Find the mean absolute deviation of the number of seventh graders on the Honor Roll. Round to the nearest tenth. Describe what the mean absolute deviation means.
2. Find the mean absolute deviation of the number of eighth graders on the Honor Roll. Describe what the mean absolute deviation means.
3. Which students had less variation? Justify your answer.
4. The standard deviation of seventh graders on the Honor Roll is about 9.6. The standard deviation of eighth graders on the Honor Roll is about 4.9. Describe how this information supports your answer to Exercise 3.

# Lesson 6 Skills Practice

## Analyze Data Distributions

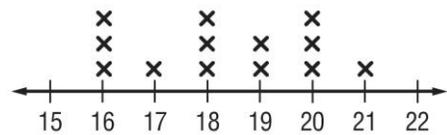
1. **AGES** The graph shows the ages of people in a play.

a. Describe the shape of the distribution. Identify any clusters, gaps, peaks, or outliers.

b. Describe the center and spread of the distribution. Justify your response based on the shape of the distribution.

OBJECTIVE:
KEY NOTES:

**Ages of People in a Play (years)**

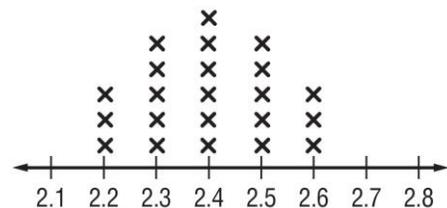


2. **SCIENCE** The graph shows the lengths of tadpoles in a small puddle.

a. Describe the shape of the distribution. Identify any clusters, gaps, peaks, or outliers.

b. Describe the center and spread of the distribution. Justify your response based on the shape of the distribution.

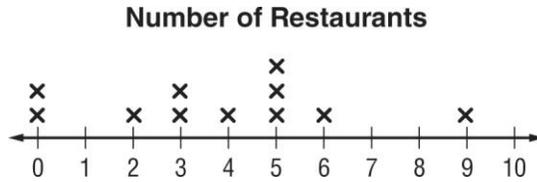
**Lengths of Tadpoles (cm)**



# Lesson 6 Problem-Solving Practice

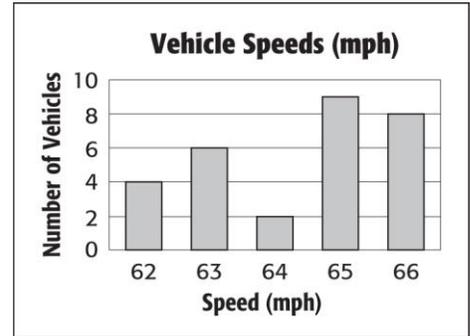
## Analyze Data Distributions

**FALL** The line plot shows the number of restaurants people went to in the past month. Use the information in the line plot to answer Exercises 1 and 2.



- |  |   |
|--|---|
| <p>1. Describe the shape of the distribution shown. Identify any clusters, gaps, peaks, or outliers.</p> | <p>2. Describe the center and spread of the distribution. Justify your response based on the shape of the distribution.</p> |
|--|---|

**SPEED** The graph shows the speeds of several vehicles traveling down a highway. Use the information in the graph to answer Exercises 3 and 4.



- |  |   |
|--|---|
| <p>1. Describe the shape of the distribution shown. Identify any clusters, gaps, peaks, or outliers.</p> | <p>2. Describe the center and spread of the distribution. Justify your response based on the shape of the distribution.</p> |
|--|---|

# Visualizing Data

**Draw a dot plot for each data set.**

- 1) Games per World Series
- 4 4 4 4 5 5 5 6  
 6 7 7 7 7 7 7 7  
 7

- 2) Age Assumed Office

Senator	Age	Senator	Age	Senator	Age	Senator	Age	Senator	Age
Mary Landrieu	41	Jon Tester	50	Mike Enzi	52	Barbara Boxer	52	Lamar Alexander	62
Mike Crapo	47	Tim Johnson	50	Dick Durbin	52	Sherrod Brown	54	Richard Blumenthal	64
John Cornyn	50	Jeff Sessions	50	Bob Menendez	52	John Barrasso	54	Angus King	68

**Draw a stem-and-leaf plot for each data set.**

- 3) Annual Precipitation (Inches)
- 9.2 15.6 15.8 22.4 26.4  
 34 34.4 34.8 38.8 39.6  
 45.2 50.4 51.6 55.6 55.6  
 56.6 69.2

4)

Per Capita Income

Country	US \$
Central African Rep.	604
Djibouti	2,998
Yemen	3,958
Laos	4,812

Country	US \$
Uzbekistan	5,167
Rep. of Congo	5,867
Mongolia	9,433
Grenada	11,498

Country	US \$
Maldives	11,654
South Africa	12,504
Botswana	15,675
Gabon	19,260

Country	US \$
Chile	21,911
Japan	36,315
Belgium	40,338
United Arab Emirates	58,042

**Draw a box-and-whisker plot for each data set.**

5)

Test Scores

37 38 39 44 44 45 46  
 47 47 47 47 48 51 52  
 52 53 54

6)

Life Expectancy

State	Years	State	Years
Arkansas	74.2	Wisconsin	79.8
New Mexico	77.7	Washington	80.3
Alabama	78.1	Colorado	80.9
Louisiana	78.2	Indiana	81.3
Wyoming	78.4	Nevada	81.3
Kansas	78.6	Pennsylvania	81.6
Maine	79.1	Florida	81.7
Hawaii	79.7	Massachusetts	83.8

## Visualizing Data

**Draw a dot plot for each data set.**

1) Hits in a Round of Hacky Sack

2 3 4 5 5 5 5 6  
6 7 7 7 7 8 13

2) Hours Slept

7 4 6 7 9 7 6 7  
6 8 7 7 6 7 6 5

**Draw a stem-and-leaf plot for each data set.**

3) Nobel Laureates

Name	Age
Rudolf Ludwig Mössbauer	32
Wolfgang Ketterle	44
Joseph Leonard Goldstein	45
Aung San Suu Kyi	46
Kenneth Joseph Arrow	51
Barry James Marshall	54

Name	Age
Stanley Ben Prusiner	55
Torsten Nils Wiesel	57
Richard Axel	58
Robert Coleman Richards	59
James Alexander Mirrlees	60

Name	Age
Robert Merton Solow	63
Stanley Cohen	64
Peter Mansfield	70
Vernon Lomax Smith	75
Richard Fred Heck	79

4) Large US Cities

City	Population
Boston	617,594
Gilbert	208,453
Stockton	291,707
Austin	790,390

City	Population
Seattle	608,660
Richmond	204,214
Scottsdale	217,385
Portland	583,776

City	Population
Irving	216,290
Santa Ana	324,528
Fort Worth	741,206
San Francisco	805,235

City	Population
Washington DC	601,723
Columbus	787,033
Aurora	325,078

**Draw a box-and-whisker plot for each data set.**

5) Minutes to Run 5km

26 26.1 27.2 27.6 28.9  
30.2 30.6 31.1 31.5 32.1  
33.4 34 34 34 36.7  
45

6)

Age At Inauguration

President	Age
Calvin Coolidge	51
Lyndon B Johnson	55
Gerald Ford	61
Theodore Roosevelt	42
Martin Van Buren	54

President	Age
James Madison	57
Millard Fillmore	50
Zachary Taylor	64
James K Polk	49

President	Age
Barack Obama	47
Chester A Arthur	51
Grover Cleveland	55
Harry S Truman	60

President	Age
William McKinley	54
James A Garfield	49
William Howard Taft	51
Abraham Lincoln	52

Draw a histogram for each data set.

7)

Average Time to Maturity

Plant	Days
Mesclun	40
Spinach	44
Endive	47

Plant	Days
Turnip	55
Swiss Chard	60
Kale	60

Plant	Days
Romano Pole Bean	60
Yukon Gold Potato	65
Cantaloupe	80

Plant	Days
Sweet Potato	90
Brussel Sprouts	90
Celery	95

Plant	Days
Tomatillo	100
Gooseneck Gourd	120
Pumpkin	120

8)

Average Lifespan

Animal	Years
Lion	35
Cottontail	10
Teal	20
Macaw	50
Painted Turtle	11
Asian elephant	40
Grouse	10
Rhinoceros	40

Animal	Years
Chinchilla	20
Bee (Queen)	5
Congo Eel	27
Pheasant	18
Prarie Dog	10
Nutria	15
Flying Squirrel	14
Pionus Parrot	15