PRE ALGEBRA – PA CORE – COURSE 2

STUDENT WORKBOOK

Unit 5 Probability and Statistics

Before

After

5	**Probability and Statistics**	PURPLE	GREEN	RED
9.1	Probability of Simple Events			
9.2	Theoretical and Experimental Probability			
9.3	Probability of Compound Events			
9.4	Simulations			
9.5	Fundamental Counting Principle			
9.6	Permutations			
9.7	Ind and Dependent Events			
10.1	Make Predictions			
10.2	Unbiased and biased Samples			
10.3	Misleading Graphs and Statistics			
10.4	Compare Populations			
10.5	Select and Appropriate Display			

STUDY ISLAND TOPICS

Sampling Analysis
Comparing Statistics – Central Tendency and Variability
Probability

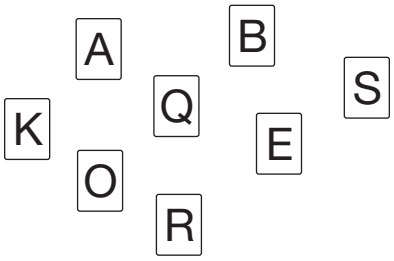
Name: _____ Period ____

NAME _____ DATE _____ PERIOD _____

Lesson 1 Skills Practice

Probability of Simple Events

A card is randomly chosen. Find each probability. Write each answer as a fraction, a decimal, and a percent.



1. *P*(B)

2. *P*(Q or R)

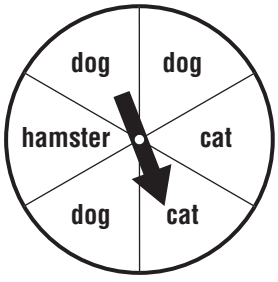
3. *P*(vowel)

4. *P*(consonant or vowel)

5. *P*(consonant or A)

6. *P*(T)

The spinner shown is spun once. Write a sentence explaining how likely it is for each event to occur.



7. *P*(dog)

8. *P*(hamster)

9. *P*(dog or cat)

10. *P*(bird)

11. *P*(mammal)

WEATHER The weather reporter says that there is a 12% chance that it will be moderately windy tomorrow.

12. What is the probability that it will not be windy?

13. Will tomorrow be a good day to fly a kite? Explain.

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Lesson 1 Extra Practice

Probability of Simple Events

A set of 30 event tickets are placed in a bag. There are 6 baseball tickets, 4 hockey tickets, 4 basketball tickets, 2 football tickets, 3 symphony tickets, 2 opera tickets, 4 ballet tickets, and 5 theater tickets. One ticket is selected without looking. Find each probability. Write each answer as a fraction, percent, and decimal.

1. *P*(basketball)

2. *P*(sports event)

3. *P*(opera or ballet)

4. *P*(soccer)

5. *P*(*not* symphony)

6. *P*(theater)

Use the spinner at the right to find each probability. Write each answer as a fraction, percent, and decimal.

7. *P*(even number)

8. *P*(prime number)

9. *P*(factor of 12)

10. *P*(composite number)

11. *P*(greater than 10)

12. *P*(neither prime nor composite)

A package of balloons contains 5 green, 3 yellow, 4 red, and 8 pink balloons. Suppose you reach in the package and choose one balloon at random. Find the probability of each event. Write each answer as a fraction, percent, and decimal.

13. *P*(red balloon)

14. *P*(yellow balloon)

15. *P*(pink balloon)

16. *P*(orange balloon)

17. *P*(red or yellow balloon)

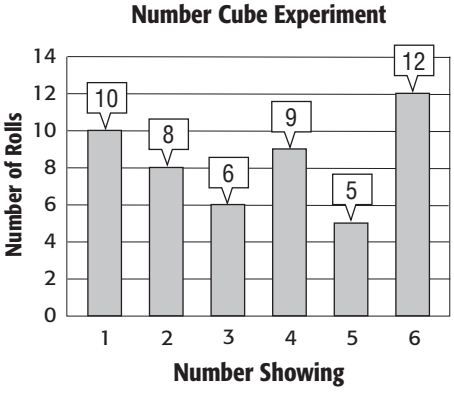
18. *P*(*not* green balloon)

NAME _____ DATE _____ PERIOD _____

Lesson 2 Skills Practice

Theoretical and Experimental Probability

1. A number cube is rolled 50 times and the results are shown in the graph below.



a. Find the experimental probability of rolling a 2.

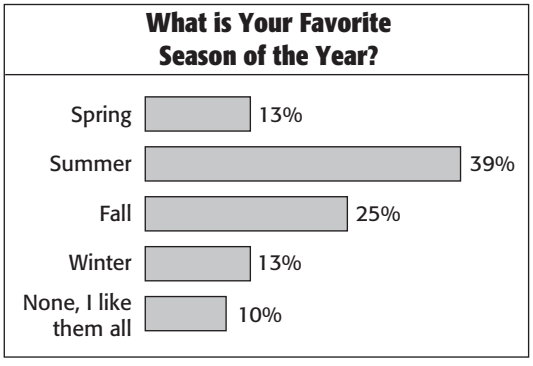
b. What is the theoretical probability of rolling a 2?

c. Find the experimental probability of *not* rolling a 2.

d. What is the theoretical probability of *not* rolling a 2?

e. Find the experimental probability of rolling a 1.

2. SEASONS Use the results of the survey at the right.



a. What is the experimental probability that a person's favorite season is fall? Write the probability as a fraction.

b. Out of 300 people, how many would you expect to say that fall is their favorite season?

c. Out of 20 people, how many would you expect to say that they like all the seasons?

d. Out of 650 people, how many more would you expect to say that they like summer more than they like winter?

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Lesson 2 Extra Practice

Theoretical and Experimental Probability

The table shows the results of a fair number cube rolled 40 times.

Number	Frequency
1	5
2	9
3	2
4	8
5	12
6	4

1. Find the experimental probability of rolling a 4.

2. Find the theoretical probability of not rolling a 4.

3. Find the theoretical probability of rolling a 2.

4. Find the experimental probability of not rolling a 6.

5. Suppose the number cube was rolled 500 times. Based on the results in the table, about how many times would it land on 5?

The table at the right shows the results of a survey about favorite pizza toppings.

Favorite Pizza Topping	
Topping	Number
pepperoni	45
sausage	25
green pepper	15
mushrooms	5
other	10

6. What is the probability that a person's favorite pizza topping is pepperoni?

7. Out of 280 people, how many would you expect to have pepperoni as their favorite pizza topping?

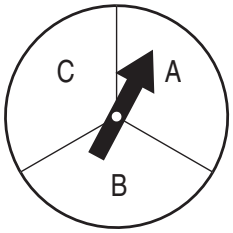
8. What is the probability that a person's favorite pizza topping is pepperoni or sausage?

NAME _____ DATE _____ PERIOD _____

Lesson 3 Skills Practice

Probability of Compound Events

The spinner at the right is spun twice.



1. Draw a tree diagram to represent the situation.

2. What is the probability of getting at least one A?

For each situation, make a tree diagram to show the sample space. Then give the total number of outcomes.

3. choosing a hamburger or hot dog and potato salad or macaroni salad

4. choosing a vowel from the word COMPUTER and a consonant from the word BOOK

5. choosing between the numbers 1, 2 or 3, and the colors blue, red, or green

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Lesson 3 Extra Practice

Probability of Compound Events

For each situation, find the sample space.

1. choosing an ice cream cone from waffle, plain, or sugar and a flavor of ice cream from chocolate, vanilla, or strawberry

2. choosing one math class from Algebra and Geometry and one foreign language class from French, Spanish, or Latin

3. making a sandwich from white, wheat, or rye bread, cheddar or Swiss cheese, and ham, turkey, or roast beef

4. choosing a car that comes in white, black, or red with standard or automatic transmission and with a 4-cylinder or 6-cylinder engine

For each situation, find the sample space. Then find the indicated probability.

5. rolling 2 number cubes; *P*(rolling doubles)

6. tossing a penny twice; *P*(two tails)

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Lesson 4 Skills Practice

Simulations

1. **QUIZZES** Describe a situation that you could use to answer a 15-question quiz, if five questions are true or false questions.

2. **PRIZES** During the grand opening of a fast food restaurant, every person that comes to the the restaurant receives a prize. There are 6 different prizes. Describe a model that could be used to simulate which prizes the first 75 customers will receive.

3. **STUDENT COUNCIL** Mrs. Corley wants to randomly choose 3 students to represent her homeroom on student council. There are 30 students in the class. Describe a model that could be used to simulate this situation.

4. **SALES** A music store has determined that 65% of customers who buy a compact disc buy a pop music compact disc. Describe a model that you could use to simulate a CD purchase.

5. **SANDWICHES** A sandwich shop offers 6 different types of sandwiches on either white or wheat bread. If each type of sandwich and bread is equally likely to be chosen by a customer, describe a model that could be used to simulate the orders of the next 10 customers.

NAME _____ DATE _____ PERIOD _____

Lesson 4 Extra Practice

Simulations

1. A restaurant offers six kids-meal prizes. The prizes are placed in the meals at random. Describe a model that could be used to simulate selecting one of the prizes.

2. A pizza parlor offers three different types of crust. Each crust type is equally likely to be ordered. Describe a model that could be used to simulate this situation. Based on your simulation, how many customers must order a pizza in order to sell all possible combinations?

3. A weather forecaster has predicted a 25% chance of precipitation for the next 4 days. Describe a model that could be used to find the experimental probability of rain all 4 days.

4. Fifty percent of the clothes a local charity receives are coats. Describe a model that could be used to find the experimental probability of the charity receiving coats during the next 10 donations.

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Lesson 5 Skills Practice

Fundamental Counting Principle

Use the Fundamental Counting Principle to find the total number of outcomes in each situation.

1. rolling two number cubes and tossing one coin

2. choosing rye or Bermuda grass and 3 different mixtures of fertilizer

3. making a sandwich with ham, turkey, or roast beef; Swiss or provolone cheese; and mustard or mayonnaise

4. tossing 4 coins

5. choosing from 3 sizes of bottled water and from distilled, filtered, or spring water

6. choosing from 3 flavors and 3 sizes of juice

7. choosing from 35 flavors of ice cream; one, two, or three scoops; and sugar or waffle cone

8. picking a day of the week and a date in the month of April

9. rolling 3 number cubes and tossing 2 coins

10. choosing a 4-letter password using only 5 letters that may each be used more than once

11. choosing a bicycle with or without shock absorbers; with or without lights; and 5 color choices

12. a license plate that has 3 numbers from 0 to 9 and 2 letters where each number and a letter may be used more than once

NAME _____ DATE _____ PERIOD _____

Lesson 5 Extra Practice

Fundamental Counting Principle

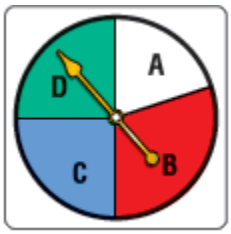
Use the Fundamental Counting Principle to find the total number of outcomes for each situation.

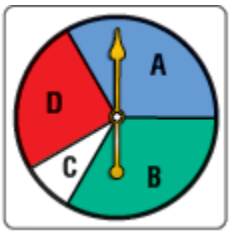
1. choosing a local phone number if the exchange is 398 and each of the four remaining digits is different

2. choosing a way to drive from Lodi to Akron if there are 5 roads that lead from Lodi to Miami, 3 roads that connect Miami to Niles, and 4 highways that connect Niles to Akron

3. tossing a quarter, rolling a number cube, and tossing a dime

4. spinning the spinners shown below





5. spinning a spinner with six different sections and tossing a coin

6. rolling a number cube and selecting a letter from the word tiger

7. selecting one sweater from three different sweaters and one pair of pants from two different pairs of pants

8. selecting one piece of fruit from four different types of fruit and one drink from a choice of five different drinks

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Lesson 6 Skills Practice

Permutations

Find each value. Use a calculator if needed.

1. $P(2,2)$

2. $P(4,3)$

3. $P(5,4)$

4. $P(9,5)$

5. $P(8,7)$

6. $P(12,13)$

7. $P(11,3)$

8. $P(10,4)$

9. $P(6,5)$

10. $P(5,3)$

11. $P(7,4)$

12. $P(6,4)$

13. How many ways can you arrange the letters in the word *prime*?

14. How many ways can you arrange 8 different crates on a shelf if they are placed from left to right?

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Lesson 6 Extra Practice

Permutations

1. Eight runners are competing in a 100-meter sprint. In how many ways can the gold, silver, and bronze medals be awarded?

2. Five-digit locker combinations are assigned using the digits 1–9. In how many ways can the combinations be formed if no digit can be repeated?

3. In how many ways can the classes math, language arts, science, and social studies be ordered on student schedules as the first four classes of their day?

4. At a teddy bear workshop, customers can select from black, brown, gold, white, blue, or pink for their bear's color. If a father randomly selects two bear colors, what is the probability that he will select a white bear for his son and a pink bear for his daughter? The father cannot pick the same color for both bears.

5. If you randomly select three of your last seven writing assignments to submit to an essay contest, what is the probability that you will select your first, fourth, and sixth essays in that order?

Find each value. Use a calculator if needed.

6. $P(7, 4)$ **7.** $P(4, 3)$ **8.** $P(5, 5)$ **9.** $P(3, 1)$

10. $P(9, 4)$ **11.** $P(6, 2)$ **12.** $P(10, 3)$ **13.** $P(12, 4)$

14. $P(1, 1)$ **15.** $P(12, 5)$ **16.** $P(10, 2)$ **17.** $P(6, 4)$

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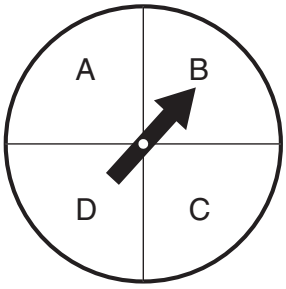
Lesson 7 Skills Practice

Independent and Dependent Events

For Exercises 1–6, a number cube is rolled and the spinner at the right is spun. Find each probability.



1. *P*(1 and A)

2. *P*(odd and B)

3. *P*(prime and D)

4. *P*(greater than 4 and C)

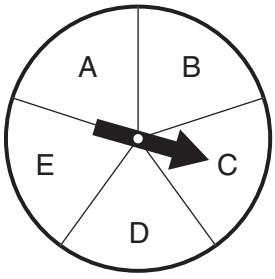
5. *P*(less than 3 and consonant)

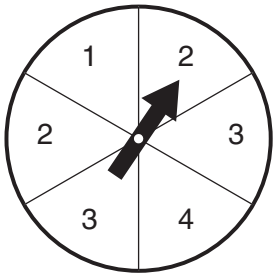
6. *P*(prime and consonant)

7. What is the probability of spinning the spinner above 3 times and getting a vowel each time?

8. What is the probability of rolling a number cube 3 times and getting a number less than 3 each time?

Each spinner at the right is spun. Find each probability.





9. *P*(A and 2)

10. *P*(vowel and even)

11. *P*(consonant and 1)

12. *P*(D and greater than 1)

There are 3 red, 1 blue, and 2 yellow marbles in a bag. Once a marble is selected, it is not replaced. Find each probability.

13. *P*(red and then yellow)

14. *P*(blue and then yellow)

15. *P*(red and then blue)

16. *P*(two yellow marbles)

17. *P*(two red marbles in a row)

18. *P*(three red marbles)

GAMES There are 13 yellow cards, 6 blue, 10 red, and 8 green cards in a stack of cards turned face down. Once a card is selected, it is not replaced. Find each probability.

19. *P*(2 blue cards)

20. *P*(2 red cards)

21. *P*(a yellow card and then a green card)

22. *P*(a blue card and then a red card)

23. *P*(two cards that are *not* red)

24. *P*(two cards that are neither red or green)

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Lesson 1 Extra Practice

Probability of Simple Events

Two socks are drawn from a drawer which contains one red sock, three blue socks, two black socks, and two green socks. Once a sock is selected, it is not replaced. Find each probability.

1. *P*(a black sock and then a green sock)

2. *P*(two blue socks)

3. *P*(a green sock and then a red sock)

4. *P*(two green socks)

There are three quarters, five dimes, and twelve pennies in a bag. Once a coin is drawn from the bag, it is not replaced. If two coins are drawn at random, find each probability.

5. *P*(a quarter and then a penny)

6. *P*(a nickel and then a dime)

7. *P*(two pennies)

8. *P*(a dime and then a quarter)

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Lesson 1 Skills Practice

Make Predictions

For Exercise 1–4, use the table and the following information. A survey of students' favorite sports was taken from a random sample of students in a school. The results are shown in the table.

Students' Favorite Sports	
Soccer	8
Baseball/Softball	3
Volleyball	5
Track & Field	4

1. What is the size of the sample?

2. What is the probability that a student will prefer soccer?

3. What is the probability that a student will prefer volleyball?

4. There are 550 students in the school. Predict how many students at the school prefer track and field.

Use the percent equation to help you solve.

5. **GARDENING** A survey showed that 74% of a nursery's mail-order customers spent more than $100 on plants each spring. Predict how many of 125,000 mail-order customers will spend less than $100 on plants next spring.

6. **SAVING MONEY** A survey of high school students with jobs asked whether the students saved some of the money they earned. 82% of the students said they saved some money. Out of 340 students, predict how many would save some of their earnings.

7. **TRAVEL COMPANY CUSTOMERS** A survey showed that 55% of a travel company's customers were planning an overseas vacation the following year. Predict how many of the travel company's 12,400 travelers will vacation overseas the following year.

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Lesson 1 Problem-Solving Practice

Make Predictions

MOVIES For Exercises 1–3, use the table of results of Jeremy's survey of favorite kinds of movies.

Favorite Movie Type	
Type	**People**
Drama	12
Foreign	3
Comedy	20
Action	15

1. **MOVIES** How many people did Jeremy use for his sample?

2. If Jeremy were to ask any person to name his or her favorite type of movie, what is the probability that it would be comedy?

3. If Jeremy were to survey 250 people, how many would you predict would name comedy?

4. **HAIRCUT** Survey results show that 68% of people tip their hairdresser when they get a haircut. Predict how many people out of 150 tip their hairdresser.

5. **GOLF** A survey showed that 28% of adults play golf in their free time. Out of 1,550 adults, predict how many would say they play golf.

6. **GOLF** Use the information in Exercise 5 to predict how many adults out of 1,550 would say they do not play golf.

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Lesson 2 Skills Practice

Unbiased and Biased Samples

Determine whether each conclusion is valid. Justify your answer.

1. To evaluate the defect rate of its memory chips, an integrated circuit manufacturer tests every 100th chip off the production line. Out of 10 chips tested, one chip is found to be defective. The manufacturer concludes that 3 chips out of 3,000 will be defective.

2. Students who wish to represent the school at a school board meeting are asked to stop by the office after lunch. After lunch, 5 students wish to represent the school.

3. To determine if the class understood the homework assignment, the math teacher checks the top 3 papers in the pile of collected homework. The teacher finds that all students understood the homework assignment.

4. A member of the cafeteria staff asks every fifth student leaving the cafeteria to rank 5 vegetables from most favorite to least favorite. She finds that corn is one of the favorite vegetables.

5. One bead for every member of the school orchestra is placed in a bag. All but 2 of the beads are white. Each member draws a bead from the bag, and the members who pick the non-white beads will represent the orchestra. It is predicted that two different instrument players will choose the white beads.

6. A real estate agent surveys people about their housing preferences at an open house for a luxury townhouse. He finds that most people prefer townhomes.

7. To determine the most popular children's programs, a television station asks parents to call in and complete a phone survey. The television station finds that the children's programs that are animated are the most popular.

NAME _____ DATE _____ PERIOD _____

Lesson 2 Problem-Solving Practice

Unbiased and Biased Samples

FUNDRAISING For Exercises 1 and 2, use the survey results in the table at the right. Members of the Drama Club plan to sell popcorn as a fundraiser for their Shakespeare production. They survey 75 students at random about their favorite flavors of popcorn.

Flavor	Number
butter	33
cheese	15
caramel	27

1. Is the sample valid? What percent of the students prefer caramel popcorn?

2. If the club orders 400 boxes of popcorn to sell, how many boxes of caramel popcorn should they order? Explain how you found your answer.

DINING OUT For Exercises 3 and 4, use the following information. As people leave a restaurant one evening, 20 people are surveyed at random. Eight people say they usually order dessert when they eat out.

3. Is the sample valid? What percent of those surveyed say they usually order dessert when they eat out?

4. If 130 people have dinner at the restaurant tomorrow, how many would you expect to order dessert?

RECREATION For Exercises 5 and 6, use the table at the right which shows the responses of 50 people who expect to purchase a bicycle next year.

Bicycle Type	Number
mountain	11
touring	8
comfort	9
juvenile	19
other	3

5. Is the sample valid? What percent of those planning to buy a bicycle next year think they will buy a mountain bike?

6. If Mike's Bike Shop plans to order 1,200 bicycles to sell next year, how many mountain bikes should be ordered?

Center and Spread of Data

Date_____ Period____

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

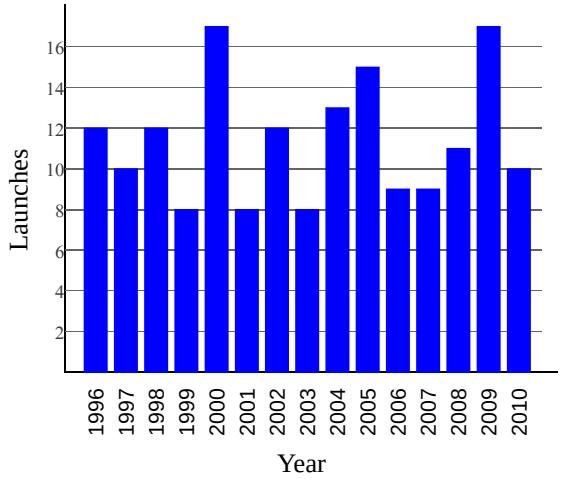
Plant	Days
Swiss Chard	60
Bell Pepper	75

Plant	Days
Sugar Baby Watermelon	75
Cantaloupe	80

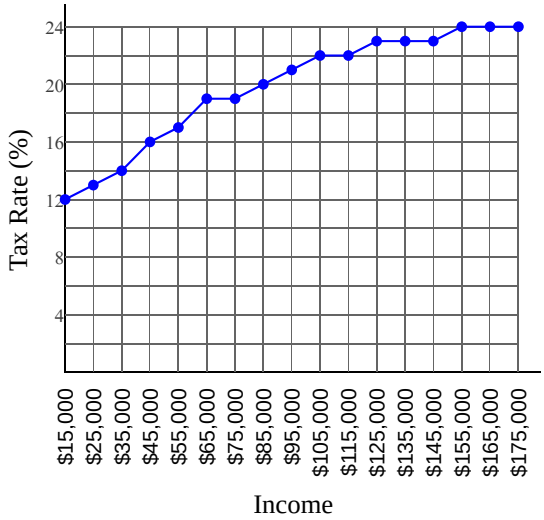
Plant	Days
Honeydew	80
Beefsteak Tomato	80

Plant	Days
Rutabaga	90
Tomatillo	100

5) European Spacecraft Launches



6) Federal Income Tax



7) Goals in a Hockey Game

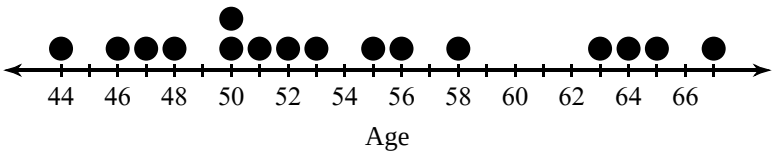
Goals	Frequency
2	1
4	1
5	4
7	4
8	2
9	3

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

Date_____ Period____

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
Patrick Leahy	34
Mark Pryor	39
Brian Schatz	40
John Thune	43

Senator	Age
Carl Levin	44
Rand Paul	47
John Cornyn	50

Senator	Age
Tammy Baldwin	50
Barbara Boxer	52
Claire McCaskill	53

Senator	Age
John Barrasso	54
Kay Hagan	55
Jerry Moran	56

Senator	Age
Mike Johanns	58
John Boozman	60
Jim Risch	65

4) Sales Tax

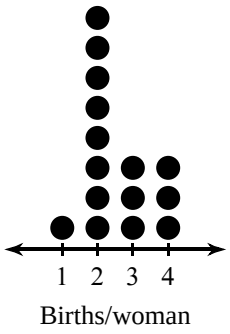
State	Percent
Colorado	2.9
Louisiana	4
Wyoming	4
Oklahoma	4.5
North Dakota	5

State	Percent
New Mexico	5.125
Maine	5.5
Florida	6
Idaho	6

State	Percent
Maryland	6
South Carolina	6
Kansas	6.15
Massachusetts	6.25

State	Percent
Washington	6.5
Indiana	7
New Jersey	7
Rhode Island	7

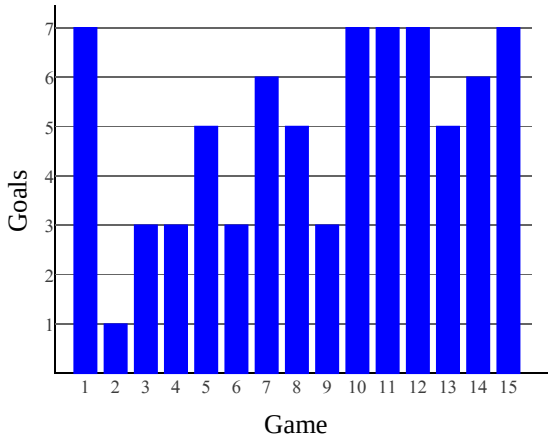
5) Birth Rate by Country



6) Length of Book Titles

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

7) Goals in a Hockey Game

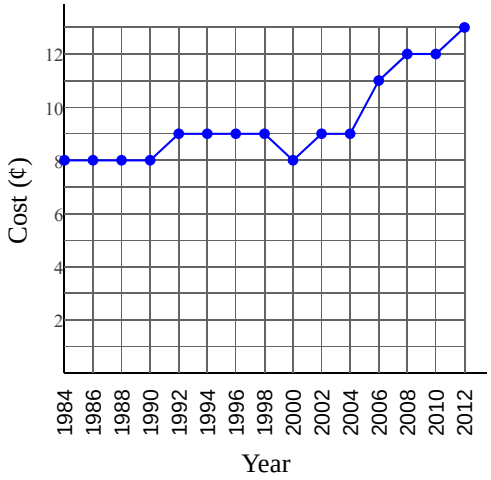


8) Boiling Point (°C)

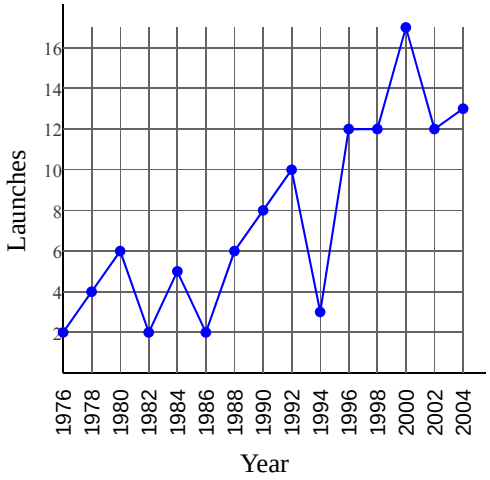
Stem	Leaf
0	1 2 3 3 3 8 9
1	8
2	2 4 9 9
3	2 3 8
4	8

Key: 1|8 = 1,800

9) Cost of Electricity, per kWh



10) European Spacecraft Launches

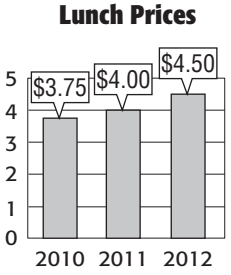


NAME _____ DATE _____ PERIOD _____

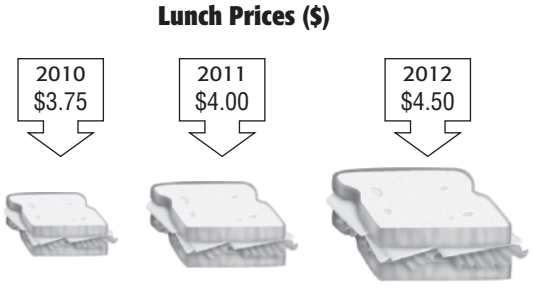
Lesson 3 Skills Practice

Misleading Graphs and Statistics

1. LUNCH Which graph could be used to indicate a greater increase in yearly lunch prices? Explain.



Graph A



Graph B

GEOGRAPHY For Exercises 2–4, use the table that shows the miles of shoreline for five states.

Miles of Shoreline	
State	**Length of Shoreline (mi)**
Virginia	3,315
Maryland	3,190
Washington	3,026
North Carolina	3,375
Pennsylvania	89

2. Find the mean, median, and mode of the data.

3. Which measure of center is misleading in describing the miles of shoreline for the states? Explain.

4. Which measure of center most accurately describes the data?

NAME _____ DATE _____ PERIOD _____

Lesson 3 Problem-Solving Practice

Misleading Graphs and Statistics

QUIZ SCORES For Exercises 1 and 2, use the data shown in the table below. The table shows the quiz grades for Ms. Andrey's and Mr. Luna's classes.

Quiz Scores	
Ms. Andrey's Class	**Mr. Luna's Class**
10	20
15	20
25	25
25	29
12	26

BOOK SALES For Exercises 3 and 4, use the table below. It shows the number of books sold each day for 20 days.

Book Sales Per Day			
23	18	23	15
24	16	0	11
19	10	13	17
12	23	11	16
36	24	12	27

1. Ms. Andrey claims the average score on a quiz in her class was 25. Mr. Luna claims the average score on a quiz in his class is 25. Explain how they arrived at these figures.

2. What additional information could be useful in analyzing the data?

3. Find the mean, median, and mode of the data. Which measure of central tendency would be misleading in describing the book sales? Explain.

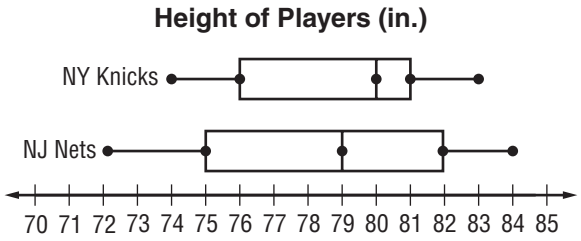
4. Which value would most accurately describe the data? Explain.

NAME _____ DATE _____ PERIOD _____

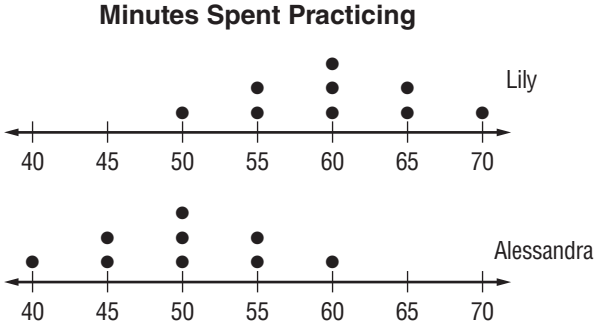
Lesson 4 Skills Practice

Compare Populations

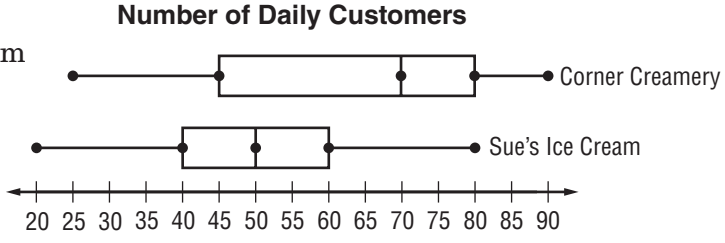
1. The double box plot shows the heights in inches for the players on two professional basketball teams. Compare their centers and variations. Write an inference you can draw about the two populations.



2. The double dot plot shows the number of minutes two students spent practicing the piano. Compare their centers and variations. Round to the nearest tenth. Write an inference you can draw about the two populations.



3. The double box plot shows the daily number of customers for two ice cream parlors. Compare the centers and variations of the two populations. Which ice cream parlor has the greater number of daily customers?

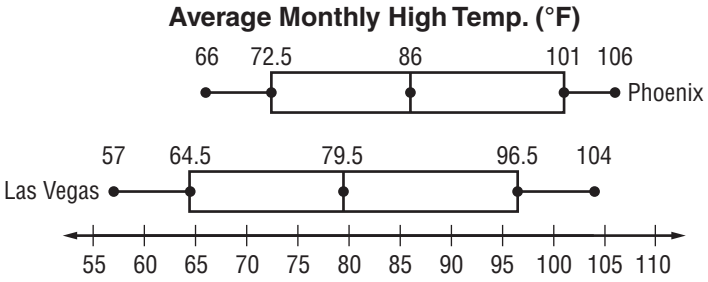


NAME _____ DATE _____ PERIOD _____

Lesson 4 Problem-Solving Practice

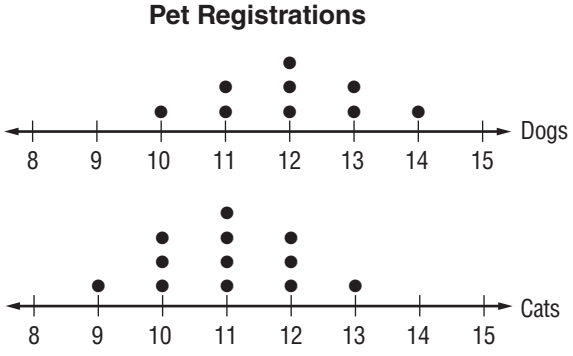
Compare Populations

The double box plot shows the average monthly high temperatures for Phoenix, Arizona, and Las Vegas, Nevada.



1. Compare the centers and variations of the two populations.	**2.** Write an inference you can draw about the two populations.

The double dot plot shows the number of city pet registrations for several days.



3. Compare the centers and variations of the two populations. Round to the nearest tenth.	**4.** In general, which type of pet has the greater number of registrations? Explain.

 Name_____

Visualizing Data

Date_____ Period____

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
Mary Landrieu	41
Mike Crapo	47
John Cornyn	50

Senator	Age
Jon Tester	50
Tim Johnson	50
Jeff Sessions	50

Senator	Age
Mike Enzi	52
Dick Durbin	52
Bob Menendez	52

Senator	Age
Barbara Boxer	52
Sherrod Brown	54
John Barrasso	54

Senator	Age
Lamar Alexander	62
Richard Blumenthal	64
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 $	Country	US $	Country	US $	Country	US $
Central African Rep.	604	Uzbekistan	5,167	Maldives	11,654	Chile	21,911
Djibouti	2,998	Rep. of Congo	5,867	South Africa	12,504	Japan	36,315
Yemen	3,958	Mongolia	9,433	Botswana	15,675	Belgium	40,338
Laos	4,812	Grenada	11,498	Gabon	19,260	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

Date_____ Period____

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

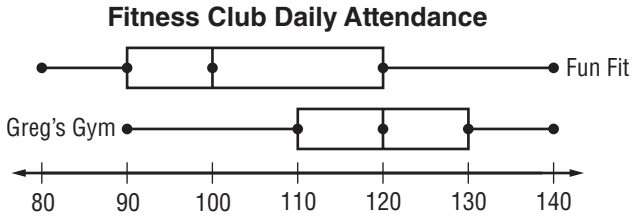
NAME _____ DATE _____ PERIOD _____

Lesson 4 Homework Practice

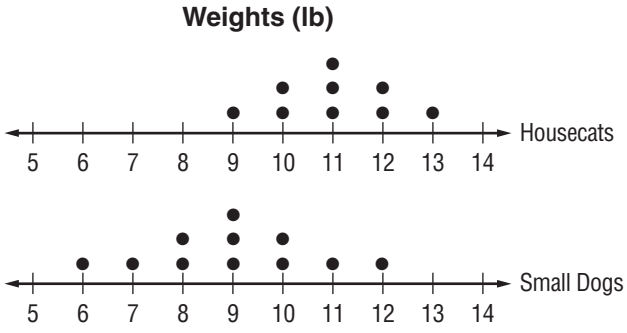
Compare Populations

Compare the centers and variations of the two populations in each exercise. Round to the nearest tenth if necessary. Write an inference you can draw about the two populations.

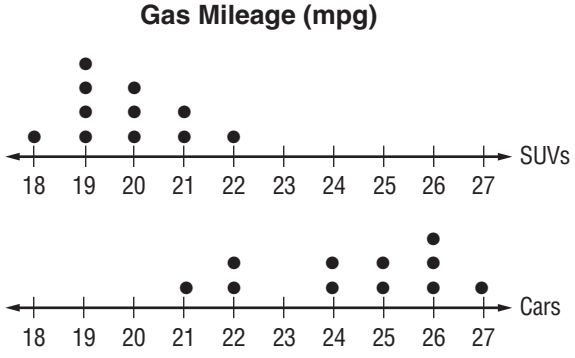
1. **FITNESS** The double plot shows the daily attendance for two fitness clubs for one month.



2. **ANIMALS** The double dot plot shows the weights in pounds of several housecats and small dogs.



3. **GAS MILEAGE** The double dot plot shows the gas mileage, in miles per gallon, for several cars and SUVs.



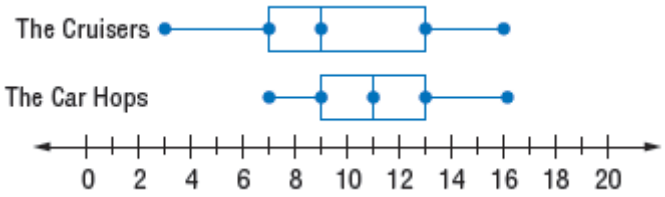
4. **NUTRITION** The double box plot shows the number of Calories per serving for various fruits and vegetables.

NAME _____ DATE _____ PERIOD _____

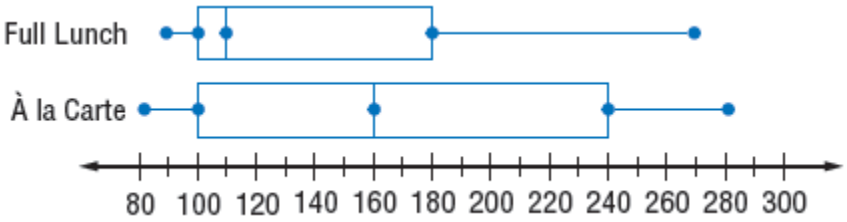
Lesson 4 Extra Practice

Compare Populations

1. The double box plot below shows the number of car shows attended by two car clubs each year. Compare the centers and variations of the two populations. Which car club attends more car shows?



2. The double box plot below shows the results of a school survey about types of lunch purchased. Compare the centers and variations of the two populations. Which type of lunch was preferred by more students?



NAME _____ DATE _____ PERIOD _____

Lesson 5 Skills Practice

Select an Appropriate Display

Select an appropriate type of display for each situation. Justify your reasoning.

1. sales of a leading brand of cereal for the last 12 years

2. test grades for a class, arranged in intervals

3. average weight of wildcats, categorized by species

4. ages of all students at a summer camp

5. points scored by members of a basketball team as compared to the team total

6. energy usage in your home for the past year, categorized by month

Select an appropriate type of display for each situation. Justify your reasoning. Then construct the display. What can you conclude from your display?

7.

Dwyane Wade's Points per Game	
Season	**Points per Game**
2003–2004	16.2
2004–2005	24.1
2005–2006	27.2
2006–2007	27.4
2007–2008	24.6

8.

Time to Walk to School	
Time (min)	**Percent of Students**
Fewer than 10	20
10–20	46
21–30	18
31–40	10
More than 40	6

NAME _____ DATE _____ PERIOD _____

Lesson 5 Problem-Solving Practice

Select an Appropriate Display

AGE For Exercises 1 and 2, use the following information. The table shows the ages of people at a roller-skating rink.

Ages of People Roller Skating	
Age	**Number of People**
10 and under	19
11–20	22
21–30	14
31–40	7
over 40	6

1. Select an appropriate display for the data. Justify your reasoning.

2. Construct the display.

3. VEGETABLES A survey asked students which vegetable they prefer. Of those who responded, 17 said corn, 22 said carrots, 9 said green beans, and 7 said sweet potatoes. Select an appropriate display for this data.

4. Construct the display in Exercise 3.

5. TELEVISIONS The table shows the number of televisions that were sold. Select an appropriate display for this data.

Television Sales by Screen Size	
Size (in.)	**Percent**
20	10
27	39
42	36
46	15

6. Construct the display in Exercise 5.