NAME _____ DATE _____ PERIOD ____

2-5 Practice: Skills

Stem-and-Leaf Plots

Make a stem-and-leaf plot for each set of data.

1. 18, 16, 13, 20, 33, 58, 32, 14, 61, 67, 52

2. 61, 75, 62, 63, 74, 71, 75, 82, 64, 81, 91, 65

3. $52, $49, $37, $21, $65, $23, $49, $51, $22, $21, $24, $47, $44, $53, $61

4. 82°, 91°, 80°, 55°, 63°, 54°, 83°, 90°, 84°, 91°, 59°, 62°, 50°, 92°, 85°, 92°, 92°

SPORTS For Exercises 5–8, use the stem-and-leaf plot that shows the total number of points earned by each volleyball team at a tournament.

Stem	Leaf
2	9
3	6 6 7 8 9
4	4 5 5 7 9
5	1 4 9
6	1 3 5

4|5 = 45 points

5. What was the greatest number of points earned?

6. What was the least number of points earned?

7. How many teams earned more than 50 points?

8. Between what numbers are most of the points earned?

Steps to Solving Stem and Leaf Plot

Step 1

12, 14, 19, 23, 24, 30, 32, 41, 45, 46, 48, 50, 51, 55, 57, 58, 63, 65

Step 2

Stem	Leaf
1	2, 4, 9
2	3, 4
3	0, 2
4	1, 5, 6, 8
5	0, 1, 5, 7, 8
6	3, 5

What is a stem-and-leaf plot?

A method of organizing data in order to make comparisons; the ones digits appear horizontally as leaves, and the tens digit and greater appears vertically as stem.

Ten Longest Snakes, in Meters

Stem	Leaf
2	4, 7
3	4, 7
4	9
5	8
6	4
7	6
8	5
9	
9	7

KEY: 4/9=4.9

3. Notice the decimal point in the key.
   Complete 2/4=2.4

4. Write the lengths of the 10 longest snakes.
   2.4, 2.7, 3.4, 3.7, 4.9, 5.8, 6.4, 7.6, 8.5, 10.7

5. How long is the longest snake?
   10.7 meters

Name _____ Date _____ Class _____

LESSON 6-9

Practice C

Stem-and-Leaf Plots

Complete each activity and answer the questions.

1. Use the data in the table to make a stem-and-leaf plot.

Books Read by Read-A-Thon Participants									
50	19	24	45	44	12	32	19	38	43
35	40	15	19	26	30	28	40	12	18

Stem	Leaves

Key: 1 | 2 = _____

Find each value of the data.

2. least value _____

3. greatest value _____

4. mean _____

5. median _____

6. mode _____

7. range _____

Stem	Leaves
1	2 5 8 9
2	0 4 5 6 8 8
3	2 6
5	0 2

Key: 3 | 3 = 33

8. Look at the stem-and-leaf plot you made for Exercise 1. How many students read more than 40 books during the read-a-thon?

_____

_____

9. How would you display a data value of 5 on the stem-and-leaf plot above? What would be the mean of this new data set?

_____

_____

Name _____ Date _____ Class _____

LESSON 6-9

Reading Strategies

Use a Graphic Organizer

Below is a list of high temperatures during a two-week period in Austin, Texas.

75 78 63 79 74 73 83 72 85 62 84 65 68 81

Making a table is one way to organize the temperature data so it is easier to understand.

63	75	83
62	78	85
65	79	84
68	74	81
	72	
	73	

Answer each question about the table.

1. How were the temperatures organized in the table?

_____

_____

2. How many days was the temperature in the 70's?

_____

3. How many days was the temperature above 80? _____

4. Complete: Temperatures were mostly in the _____ during this two-week period.

5. Put the temperatures with 8 in the tens place in order from least to greatest.

_____

6. What was the range of high temperatures during the two-week period?

_____

7. How did organizing the temperatures help you answer the questions above?

_____

_____

Name _____ Date _____ Class _____

Puzzles, Twisters & Teasers

LESSON 6-9

It's a Leaf

Arrange the test scores below in a stem-and-leaf plot from least to greatest. After organizing the data in the plot, count and record the number of leaves per stem. Then find the letter matching the number of leaves. Solve the riddle by arranging the number of leaves from least to greatest.

Test Scores: 56, 70, 100, 65, 48, 92, 84, 95, 97, 100, 68, 75, 81, 85
59, 92, 96, 66, 75, 83, 66, 72, 85, 93, 73, 95, 100, 87

Stem	Leaves

Number of Leaves	Letter
1	

Letters

A = 8	**D** = 10	**I** = 3	**L** = 6	**S** = 13
B = 11	**E** = 0	**J** = 9	**N** = 12	**U** = 2
C = 4	**G** = 14	**K** = 5	**Q** = 1	**Y** = 7

How do hikers dress on cold mornings?

___ ___ ___ ___ ___ ___ ___

Name _____ Date _____ Class _____

LESSON 6-9

Practice A

Stem-and-Leaf Plots

Complete each activity and answer each question.

1. Use the data in the table to complete the stem-and-leaf plot below.

Daily Low Temperatures (°F)	16	21	15	27	30	25

Daily Low Temperature

Stem	Leaves

Key: 1 | 6 = _____

Find each value of the data.

2. smallest value _____

3. largest value _____

4. mean _____

5. median _____

6. mode _____

7. range _____

Stem	Leaves
1	0 5
2	3
3	7
4	5

Key: 2 | 4 = 24

8. In the stem-and-leaf plot for Exercises 2–7, which digit was used for the stems? for the leaves?

_____

9. Look at the stem-and-leaf plot you made for Exercise 1. What are the smallest and largest values in the data set?

_____

Name _____ Date _____ Class _____

LESSON 6-9

Practice B

Stem-and-Leaf Plots

Complete each activity and answer the questions.

1. Use the data in the table to complete the stem-and-leaf plot below.

Richmond, Virginia, Monthly Normal Temperatures (°F)											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
37	39	48	57	74	78	77	76	70	59	50	40

Stem	Leaves

Key: 1 \| 2 = _____

Find each value of the data.

2. least value _____

3. greatest value _____

4. mean _____

5. median _____

6. mode _____

7. range _____

8. Look at the stem-and-leaf plot you made for Exercise 1. How many months in Richmond have a normal temperature above 70°F?

_____

_____

Stem	Leaves
6	1 4
7	1 6
8	2 2
9	0 1 8

Key: 6 \| 5 = 65

9. How would you display a data value of 100 on the stem-and-leaf plot above?

_____

_____

Name _____

Class Period _____

Date _____

The M&M Story

Please use the fun size bag of M&Ms to create a tally chart to classify and determine the number of each color.

Next use the above information to create a bar graph and a line graph. Make sure you have a heading, scale, and intervals for each graph.

Finally calculate the fractional part represented by each color in the bag.

NAME _____ DATE _____ PERIOD ____

2-5 Study Guide and Intervention

Stem-and-Leaf Plots

Sometimes it is hard to read data in a table. You can use a **stem-and-leaf plot** to display the data in a more readable way. In a stem-and-leaf plot, you order the data from least to greatest. Then you organize the data by place value.

EXAMPLE 1 **Make a stem-and-leaf plot of the data in the table. Then write a few sentences that analyze the data.**

Money Earned Mowing Lawns ($)			
60	55	53	41
67	72	65	68
65	70	52	51

Step 1 Order the data from least to greatest.
41 51 52 53 55 60 65 65 67 68 70 72

Step 2 Draw a vertical line and write the tens digits from least to greatest to the left of the line.

Step 3 Write the ones digits to the right of the line with the corresponding stems.

Stem	Leaf
4	1
5	1 2 3 5
6	0 5 5 7 8
7	0 2

In this data set, the tens digits form the stems.

The ones digits of the data form the leaves.

Always write each leaf, even if it repeats.

$6|5 = \$65$

Key

Step 4 Include a key that explains the stems and leaves.

By looking at the plot, it is easy to see that the least amount of money earned was $41 and the greatest amount was $72. You can also see that most of the data fall between $51 and $68.

EXERCISES

Make a stem-and-leaf plot for the set of data below. Write a few sentences that analyze the data.

34 44 51 48 55 41 47 22 55

NAME _____ DATE _____ PERIOD ____

2-5

Practice: Word Problems

Stem-and-Leaf Plots

Lesson 2–5

TRAFFIC For Exercises 1 and 2, use the table. For Exercises 3 and 4, use the stem-and-leaf plot.

Number of Trucks Passing Through the Intersection Each Hour					
5	15	6	42	34	28
19	18	19	22	23	21
32	26	34	19	29	21
10	6	8	40	14	17

Number of Birds at a Watering Hole Each Hour

Stem	Leaf
1	8 9
2	4 8 9
3	3 4 4 4
4	2 5 5 5 5 7 8
5	0 0 3 3 4 6 6 7

3|4 = 34 birds

1. Mr. Chin did a traffic survey. He wrote down the number of trucks that passed through an intersection each hour. Make a stem-and-leaf plot of his data.

2. Refer to your stem-and-leaf plot from Exercise 1. Mr. Chin needs to know the range of trucks passing through the intersection in one hour into which the greatest number of hours fall.

3. What is the least number of birds at the watering hole in one hour? What is the greatest number?

4. What is the most frequent number of birds to be at the watering hole in one hour?

5. **RVs** Make a stem-and-leaf plot for the number of RVs Mr. Chin counted in 12 hours: 3, 4, 9, 13, 7, 9, 8, 5, 4, 6, 1, 11.

6. **RVs** Write a few sentences that analyze the RV data for Mr. Chin's report in Exercise 5.

Name _____ **E 120**

Use with text pages 324–325.

Making Stem and Leaf Plots

Use the data in this table to answer each question.

AVERAGE JULY TEMPERATURE (°F) OF SOME U.S. CITIES							
Anchorage	58	Cheyenne	69	Honolulu	80	San Diego	70
Atlanta	79	Des Moines	76	Kansas City	81	Seattle	65
Birmingham	80	Detroit	72	Louisville	78	St. Louis	79
Buffalo	71	Helena	68	Phoenix	92	Washington, D.C.	79

1. What is the greatest value, least value, and range for this set of data? _____

2. What values would you use as stems to make a stem and leaf plot? _____

3. Find the mean to the nearest thousandth for the temperatures in the table. _____

4. Make a stem and leaf plot for the data.

5. Find the median of the temperatures. _____

6. What is the mode of the temperatures? _____

7. Make a bar graph with horizontal bars to show the number of cities with each range of temperature. Use 50–59, 60–69, 70–79, 80–89, and 90–99.

Name _____

Use with text pages 324–325.

Making Stem and Leaf Plots

Use a stem and leaf plot to summarize the data.

AVERAGE JUNE TEMPERATURE (°F) OF SOME WESTERN U.S. CITIES							
Albuquerque	75	Flagstaff	60	Missoula	59	Salt Lake City	67
Bismarck	65	Ft. Worth	82	Portland	62	San Francisco	61
Boise	66	Lincoln	73	Rapid City	65	Seattle	60

Step 1
Find the greatest and least values. (82, 59)

Step 2
Use the tens digits for stems. Write the digits vertically with a line to their right.

8|
7|
6|
5|

Step 3
Use the ones digits as leaves. Write the leaves to the right of the line.

Step 4
Write a key to the left of your plot.

AVERAGE JUNE TEMPERATURES

5|9 = 59°

8	2
7	5 3
6	5 6 7 0 5 2 0 1
5	9

stems leaves

Use the data in this table to answer each question.

AVERAGE YEARLY PRECIPITATION IN SOME U.S. CITIES (INCHES)					
Atlanta	47	Nashville	45	Portland	43
Jacksonville	54	New Orleans	54	Washington, D.C.	41
Louisville	41	New York City	42	Wilmington	51

1. What is the greatest value? _____

2. What is the least value? _____

3. What values should you use as stems? _____

4. Make a stem and leaf plot for the data.

AVERAGE YEARLY PRECIPITATION

Name _____

Use with text pages 324–325.

Making Stem and Leaf Plots

Use the data in this table to answer each question.

HIGHEST WIND SPEEDS IN THE U.S. (MILES PER HOUR)					
Albuquerque	90	Galveston	100	New Orleans	98
Buffalo	91	Minneapolis	92	Omaha	109
Cape Hatteras	110	Mt. Washington	231	Phoenix	86

1. What is the greatest value? 231 miles per hour

2. What is the least value? _____

3. What values would you use as stems to make a stem and leaf plot? _____

4. Are there any values that are much greater or much less than the others? If yes, name them. _____

5. Where do most of the values cluster? _____

6. Are there any gaps in the values? If yes, name them. _____

7. Would you classify Galveston as one of the places with high wind speeds or with low wind speeds? Why? _____

8. Make a stem and leaf plot for the data.

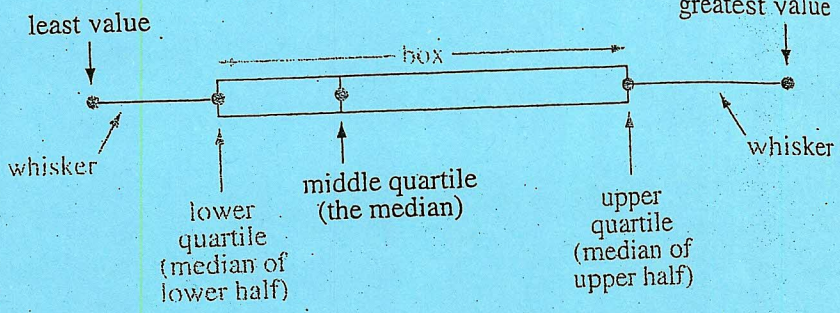
MATH TOOLBOX

EXPLORATION

Box-and-Whisker Plots

After Lesson 1-5

A box-and-whisker plot is another way to display data. A **box-and-whisker plot** shows you how the data are distributed. The diagram at the right identifies the important features of a box-and-whisker plot.



EXAMPLE

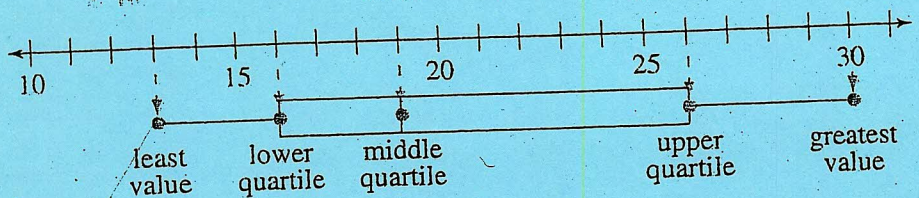
The director of a computer center recorded the number of users each hour for one day. The results were 13, 14, 22, 25, 30, 29, 27, 18, 19, 14, 18, 19. Draw a box-and-whisker plot of the data.

least value — 13 14 14 18 18 19 19 22 25 27 29 30 — greatest value

List the data in order.

The lower quartile is 16. The middle quartile is 19. The upper quartile is 26.

Find the quartiles.



Use a number line to draw the box-and-whisker plot.

1. *Reasoning* In the Example, why is the middle quartile not in the middle of the box?

Create a box-and-whisker plot for each data set.

2. 2 3 5 7 7 8 8 10 14 14 15 15

3. 32 34 34 36 40 42 42 42 46 54 54 56

4. 8 11 11 13 14 14 16 16 16 17 19 22 24

5. 62 55 60 86 62 65 68 70 55 60 65 62 58 60 62 68 65

6. a. In Exercise 5, what is the outlier?
   b. *Reasoning* How does the outlier affect the way the box-and-whisker plot looks?

NAME _____ DATE _____ PERIOD ____

2-5 Practice: Skills

Stem-and-Leaf Plots

Make a stem-and-leaf plot for each set of data.

1. 18, 16, 13, 20, 33, 58, 32, 14, 61, 67, 52

2. 61, 75, 62, 63, 74, 71, 75, 82, 64, 81, 91, 65

3. $52, $49, $37, $21, $65, $23, $49, $51, $22, $21, $24, $47, $44, $53, $61

4. 82°, 91°, 80°, 55°, 63°, 54°, 83°, 90°, 84°, 91°, 59°, 62°, 50°, 92°, 85°, 92°, 92°

SPORTS For Exercises 5–8, use the stem-and-leaf plot that shows the total number of points earned by each volleyball team at a tournament.

Stem	Leaf
2	9
3	6 6 7 8 9
4	4 5 5 7 9
5	1 4 9
6	1 3 5

4 | 5 = 45 points

5. What was the greatest number of points earned?

6. What was the least number of points earned?

7. How many teams earned more than 50 points?

8. Between what numbers are most of the points earned?

The MMMR Rap

The M, The M, The MMMR Rap.
The M, The M, The MMMR Rap.

Now Mode, Mode, I've been told,
is the # that you see the most.

Median, Median, Median, is the man.
The man in the middle, the man in the middle.
Just line up the #'s the best you can
From smallest to largest,
From smallest to largest.

Now Mean, Mean, he is the best.
Of course he is better than all the rest.
Just add, add, add all your #'s,
and when you divide
you won't believe your eyes-
you'll only have one # to your surprise.

Last but not least is our friend the Range-
He isn't the best, but he sure is strange.
You start with the Hiiiggghhhh and subtract
the Loooowwww!!!
You've got the Range and there is no mo'!

The M, The M, The MMMR Rap.
The M, The M, The MMMR Rap.
When you sing it out loud--it's all just a snap!

Name_____
Class Period_____
Date_____

Sixth Grade Math Vocabulary Quiz
S.O. L. 6.18
Stem-and –Leaf Plot and Box-and-Whisker Plot

1._____ A plot that shows a set of data clusters around the middle (median). It also shows how far apart and how evenly data are distributed.

2._____ The least number in a set of data.

3._____ The median of the lower half of a set of data.

4._____ The middle number or the average of the two middle numbers in an ordered set of data.

5._____ The method organizing data in order to make comparisons: the one digits appear horizontally as leaves, and the tens digits and greater appear vertically as stems.

6._____ The median of the upper half of a set of data.

7._____ The greatest number in a set of data.

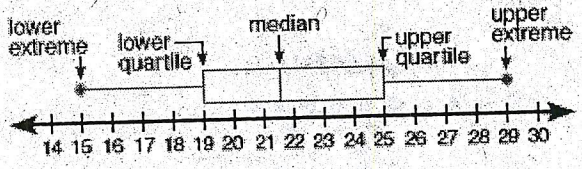
Word Bank

Box-and-Whisker Plot	Upper Extreme	Stem-and Leaf Plot
	Median	
Upper Quartile	Lower Extreme	Lower Quartile

Sixth Grade
Math Vocabulary
SOL 6.18 b & c – Stem-and-Leaf Plot and Box-and-Whisker Plot

1. **Box-and-Whisker Plot**: A plot that shows how a set of data clusters around the middle (median). It also shows how far apart and how evenly data are distributed.

Example:



2. **Lower Extreme**: The least number in a set of data.

3. **Lower Quartile**: The median of the lower half of a set of data.

Example:

2, 3, 4, 5, 5, 6, 7, 8, 8, 8, 9, 11

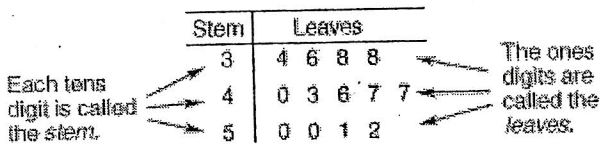
The lower quartile is 4.5.

4. **Median**: The middle number or the average of the two middle numbers in an ordered set of data.

5. **Stem-and-Leaf Plot**: A method of organizing data in order to make comparisons; the ones digits appear horizontally as leaves, and the tens digits and greater appear vertically as stems.

Example:

Number of Sit-Ups



Key: 3 | 6 = 36

6. **Upper Extreme:** The greatest number in a set of data.

7. **Upper Quartile:** The median of the upper half of a set of data.

Example:

2, 3, 4, 5, 5, 6, 7, 8, 8, 8, 9, 11

The upper quartile is 8.

NAME _____ DATE _____ PERIOD ____

2-2 Practice: Skills

Bar Graphs and Line Graphs

Make a bar graph for each set of data.

1.

Cars Made in 2000	
Country	Cars (millions)
Brazil	1
Japan	8
Germany	5
Spain	2
U.S.A.	6

2.

People in America in 1630	
Colony	People (hundreds)
Maine	4
New Hampshire	5
Massachusetts	9
New York	4
Virginia	25

Use the bar graph made in Exercise 1.

3. Which country made the greatest number of cars?

4. How does the number of cars made in Japan compare to the number made in Spain?

For Exercises 5 and 6, make a line graph for each set of data.

5.

Yuba County, California	
Year	Population (thousands)
1990	59
1992	61
1994	62
1996	61
1998	60
2000	60

6.

Everglades National Park	
Month	Rainfall (inches)
January	2
February	2
March	2
April	2
May	7
June	10

7. **POPULATION** Refer to the graph made in Exercise 5. Describe the change in Yuba County's population from 1990 to 2000.

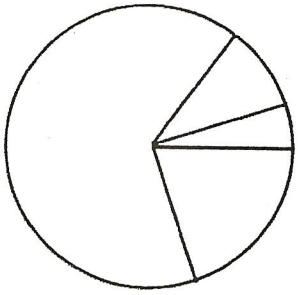
8. **WEATHER** Refer to the graph made in Exercise 6. Describe the change in the amount of rainfall from January to June.

Lesson 2–2

Name: Date:

Circle Graphs and Percents

1. Write the percentages into the right circle sectors.



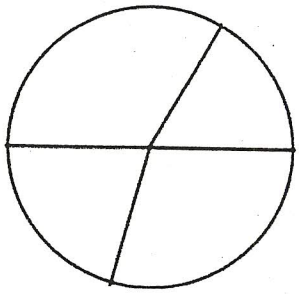
a.

5%

65%

20%

10%



b.

21%

17%

33%

29%

2. Find 5%, 10% and 20% using mental math.

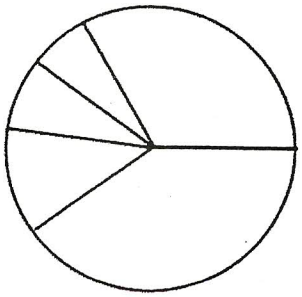
Number	40	54	640	128	8.4	12.6	1,200	6,420
5%								
10%								
20%								

3. Discount time is always fun!

a. shirt $15, discount 10%	**b.** jeans $22, discount 10%	**c.** $47 suitcase, discount 20%
Discounted price: $____	Discounted price: $____	Discounted price: $____
d. fan $89, discount 15%	**e.** lamp $18, discount 30%	**f.** $125 keyboard, discount 25%
Discounted price: $____	Discounted price: $____	Discounted price: $____

4. Match the percentages with the right circle sectors. Find how many of each drink was sold.

Fruit drinks sold during one week in Janet's cafe



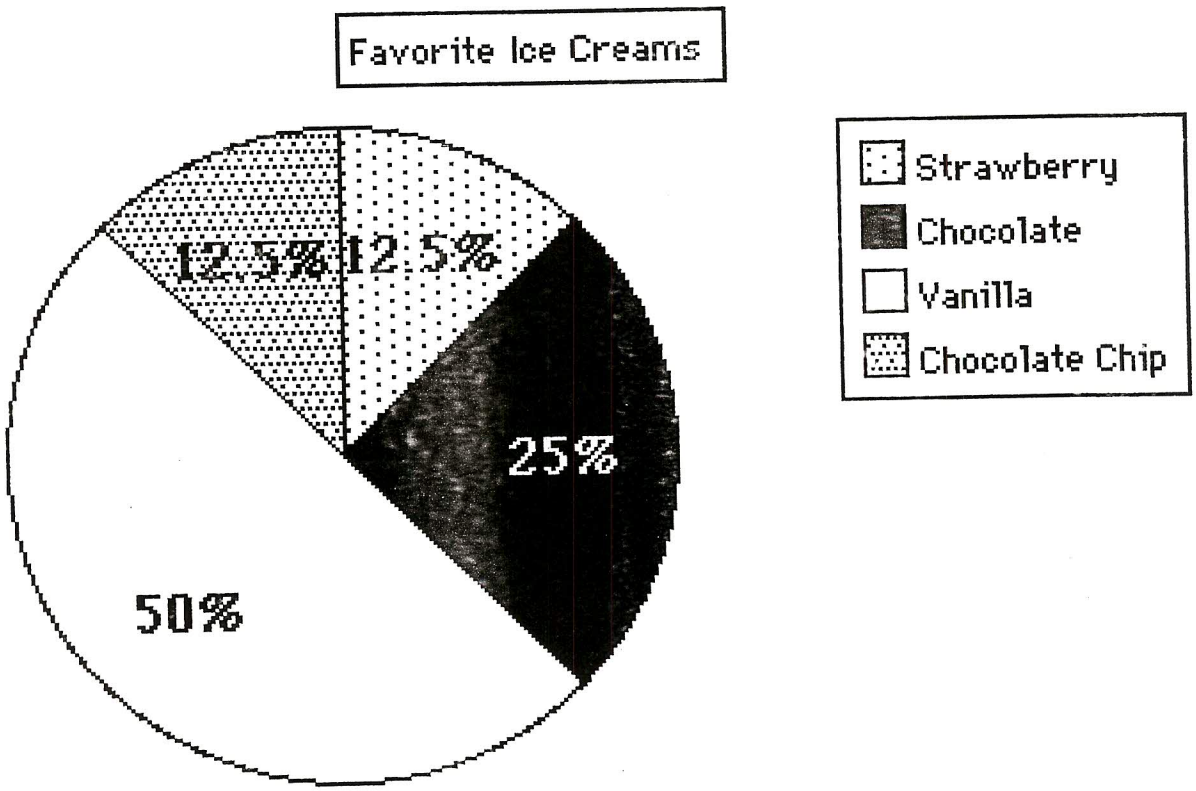
Total sales 225

	Percentage	Drinks sold
Apple juice	33%	
Orange juice	40%	
Mango juice	12%	
Pear juice	8%	
Guava juice	___%	

Favorite Ice Creams

Flavor	# of Students	Fraction	Central Angle
Strawberry	3	3/24 or 1/8	45°
Chocolate	6	6/24 or 1/4	90°
Vanilla	12	12/24 or 1/2	180°
Chocolate Chip	3	3/24 or 1/8	45°
Total	24	24/24	360°

Students	Fraction	Central Angle



Name_____ Date_____

6.18 Box and Whisker Plots Tutorial Worksheet

Directions: As you watch the tutorial video, answer questions 1 – 8.

1. Draw a Box and Whisker Graph.

2. Put your data in order from least to greatest here:

3. Use the back of the worksheet to draw the Box and Whisker plot from the video.

4. Median is the _____ number in a set of numbers arranged in order from least to greatest.

5. There are 4 quartiles. They are called the_____, second, _____ and _____ quartile.

6. Mean is the _____ of a set of numbers divided by now many numbers are in the set. Mean is the same as average.

The mean of the data set in the video is _____.

7. Mode is the number in a set that occurs _____ often. Sometimes there is no mode.

Bimodal sets have _____ modes. The mode(s) of the data set in the video are _____.

8. Range is the _____ between the least and the greatest number. The range of this data is _____.

Directions: Once the tutorial video is complete, try problems 1 and 2 on your own.
Use the back of the worksheet if you need more space.

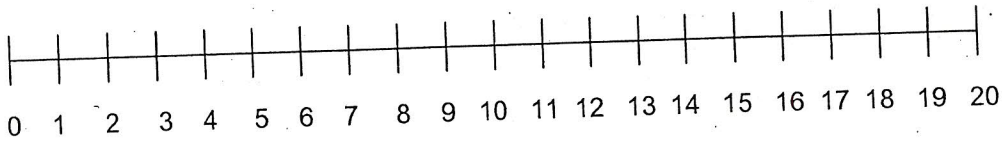
1. Draw a box and whisker graph for this set of data.

2, 3, 5, 6, 6, 7, 8, 9, 10, 12, 14, 15, 15, 15, 16, 17, 18

Find the median: _____ Find the lower median: _____

Find the upper median: _____

Low number: _____ High number: _____



2. Draw a box and whisker graph for this set of data.

17, 9, 7, 10, 2, 4, 4, 12, 14, 13, 12, 11, 4, 5, 5, 6, 10

Find the median: _____ Find the lower median: _____

Find the upper median: _____

Low number: _____ High number: _____

Draw a number line and mark it off 0 through 20, like the one from question 1.

Name_____ Date_____

Practice Questions

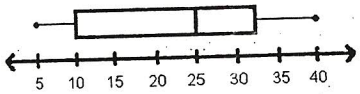
6.18 Box and Whisker Plots

Now you are ready to work out 10 practice questions. You may use your notes to answer the problems. Remember to show your work! Your answers will be turned in to your teacher.

1. What is the median of the upper half of this list of numbers?

2, 12, 10, 11, 7, 6, 5, 9, 11, 7, 13

2. What is the range of this data set?

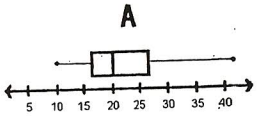


3. What is the median of this list of numbers?

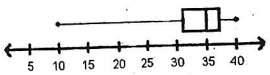
12, 10, 11, 7, 6, 5, 9, 11, 7

4. Circle the box and whisker plot for the following : {10,16,17,18,22,26,28,42}

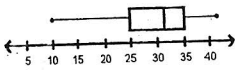
A



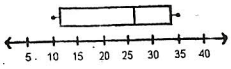
B



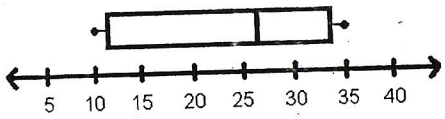
C



D

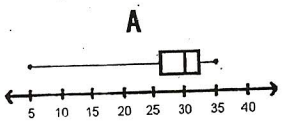


5. What is the lower median of this data set?

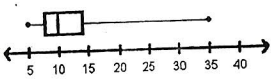


6. Circle the box and whisker plot for the following: {5,10,12,12,15,18,21,23,36}

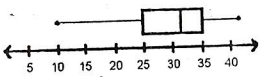
A



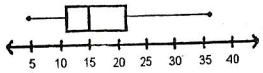
B



C

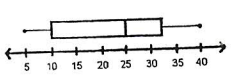


D

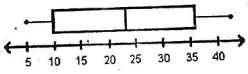


7. Circle the box and whisker plot for the following: {5,10,10,17,23,30,35,37,42}

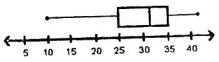
A



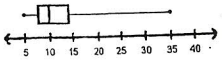
B



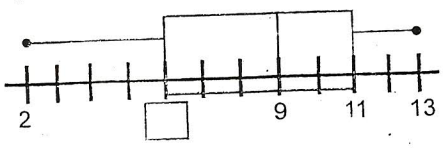
C



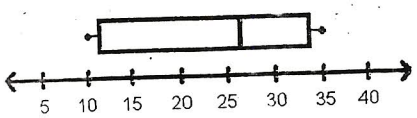
D



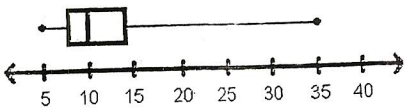
8. What number goes in the blank box pictured below for the box and whisker graph?



9. What is the upper median of this list of numbers?



10. What is the median value for this data set?

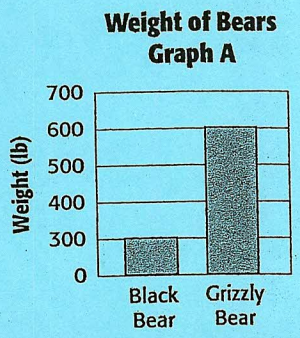


NAME _____ DATE _____ PERIOD _____

2-8 Practice: Skills

Analyzing Graphs

ANIMALS For Exercises 1–3, use the graph that shows the weight of bears.

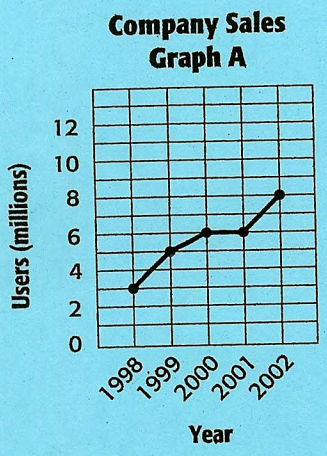


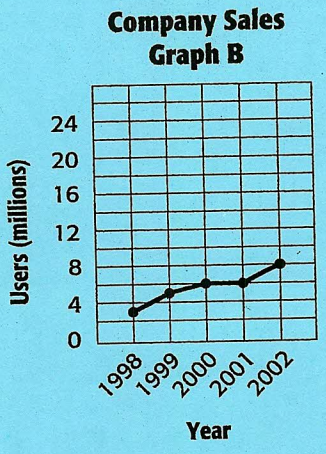
1. About how many times heavier does a grizzly bear appear to be than a black bear?

2. Explain how this graph is misleading.

3. Redraw the graph so that it is not so misleading.

4. **BUSINESS** The graphs below show company sales. Which graph makes the sales appear to be increasing more rapidly? Explain.





BUDGETS Use the table that shows the 2003 budgets for eight national parks.

National Park 2003 Budget	
Park	**Budget ($)**
Acadia	6,000,000
Crater Lake	4,000,000
Denali	11,000,000
Everglades	14,000,000
Mammoth Cave	6,000,000
Olympic	10,000,000
Great Smokies	15,000,000
Zion	6,000,000

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

6. Which measure would be misleading in describing the average budget for these parks? Explain.

7. Which measure describes the data most accurately? Explain.

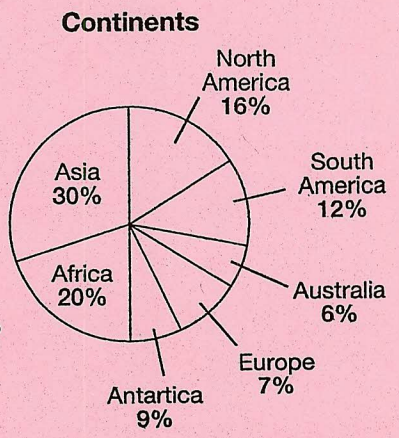
Lesson 2–8

NAME _____ DATE _____ PERIOD ____

2-3 Practice: Skills

Circle Graphs

GEOGRAPHY Use the graph that shows how much of Earth's land that each continent represents.



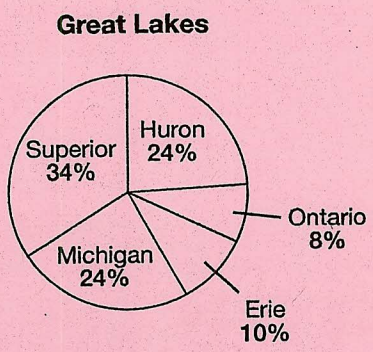
1. Which continent has the greatest area?

2. Which two continents are the smallest?

3. How does the size of Europe compare to the size of Africa?

4. How much larger is Asia than Africa?

LAKES Use the graph that shows how much of the total surface of the Great Lakes each lake takes up.



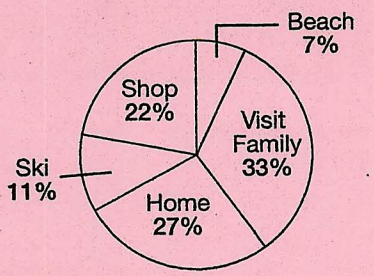
5. Which of the Great Lakes is the smallest?

6. Which two lakes are about the same size?

7. How does Lake Erie compare to Lake Ontario?

8. Which two lakes together are the same size as Lake Superior?

VACATIONS Use the graph that shows how families will spend winter vacation.



9. How will most families spend their vacations?

10. Will more families go to the beach or go shopping?

11. Compare how many families will be skiing to how many will be visiting family.

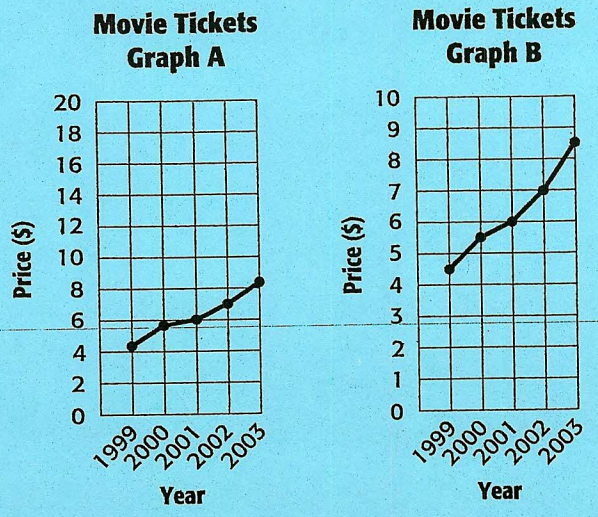
NAME _____ DATE _____ PERIOD ____

2-8 Study Guide and Intervention

Analyzing Graphs

Graphs can lead readers to the wrong conclusion about the data when the numbers on either scale are inconsistent, the vertical or horizontal scale does not start at zero, or different scales are used.

EXAMPLE 1 **The graphs at the right show how the cost of a movie increased over time. Which graph appears to show that the cost increased more quickly? Explain.**



Both graphs show the same data, but Graph B appears to show the cost increasing more quickly. Graph A uses a scale of 2 and Graph B uses a scale of 1.

Using an inappropriate measure of central tendency can cause readers to make a wrong conclusion.

EXAMPLE 2 **Refer to the table. The store says the average price of an electronic pet is $12. Explain how using this average to attract customers with low prices is misleading.**

Electronic Pet Prices ($)				
14	15	15	20	49
21	12	12	20	12

Order the data from least to greatest: 12, 12, 12, 14, 15, 15, 20, 20, 21, 49.
mean: $19 median: $15 mode: $12

The store used the mode as the average. Because the mode price is less than the other prices, it is not the most accurate average to use.

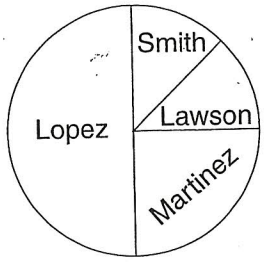
EXERCISES

1. In Example 1, how could you change Graph A to appear to show that the cost rose more slowly?

2. Oleta's test scores in order from least to greatest were 19, 75, 76, 82, 83. Find the mean, median, and mode of the data. Which measure might be misleading in describing the average number of points Oleta earned.

Use the graph to answer problems 4–8.

Home Runs by Player — Current Season



4 Which player had the greatest number of home runs for the season?

F Smith
G Lawson
H Martinez
J Lopez

5 What fraction of the total home runs did Martinez hit?

A $\frac{1}{16}$
B $\frac{1}{8}$
C $\frac{1}{4}$
D $\frac{1}{2}$

6 What fraction of the total home runs did Smith hit?

F $\frac{1}{16}$
G $\frac{1}{8}$
H $\frac{1}{4}$
J $\frac{1}{2}$

7 Which of the following statements is true?

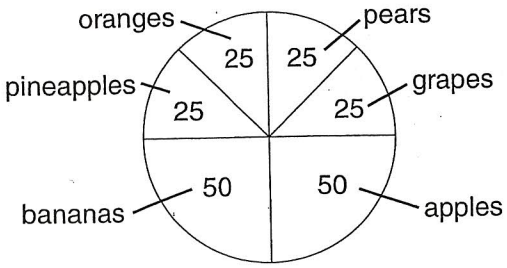
A Smith hit a greater number of home runs than Martinez.
B Martinez hit a greater number of home runs than Lopez.
C Martinez hit the fewest home runs.
D Smith and Lawson hit the same number of home runs.

8 Which of the following *cannot* be determined from the graph?

F The number of home runs Martinez hit
G The player who hit the greatest number of home runs
H The player who hit $\frac{1}{4}$ of the home runs
J The player who hit $\frac{1}{2}$ of the home runs

Use the graph to answer problems 9–11.

Favorite Fruit Survey



9 How many people were surveyed?

A 100
B 200
C 250
D 300

10 What fraction of people chose apples?

F $\frac{1}{8}$
G $\frac{1}{4}$
H $\frac{1}{2}$
J $\frac{3}{4}$

11 What fraction of people chose grapes or oranges?

A $\frac{1}{8}$
B $\frac{1}{4}$
C $\frac{1}{3}$
D $\frac{1}{2}$

hich circle graph *best* displays the data in the table.

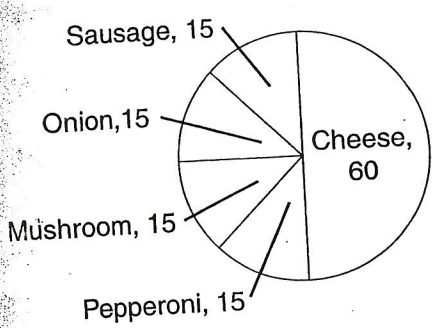
Kinds of Pizza Ordered

Pizza	Number
Cheese	60
Pepperoni	15
Mushroom	15
Onion	15
Sausage	15

Which of the following graphs shows this information correctly graphed?

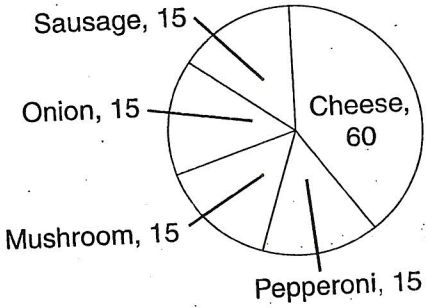
F

Kinds of Pizza Ordered



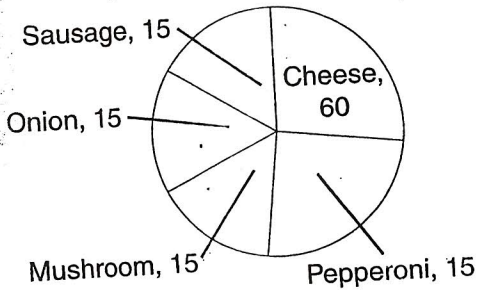
H

Kinds of Pizza Ordered



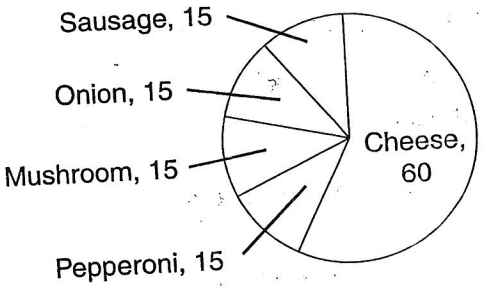
G

Kinds of Pizza Ordered



J

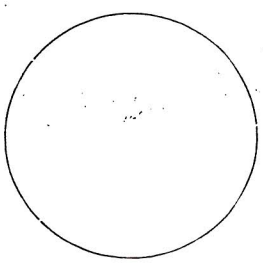
Kinds of Pizza Ordered



Use the circle to make a graph from the data in the table. Show your work.

Class President Election

Candidate	Number of Votes
Jackson	56
Duncan	28
Armstrong	28



NAME _____ DATE _____ PERIOD ____

2-5 Practice: Word Problems

Stem-and-Leaf Plots

TRAFFIC For Exercises 1 and 2, use the table. For Exercises 3 and 4, use the stem-and-leaf plot.

Number of Trucks Passing Through the Intersection Each Hour					
5	15	6	42	34	28
19	18	19	22	23	21
32	26	34	19	29	21
10	6	8	40	14	17

Number of Birds at a Watering Hole Each Hour

Stem	Leaf
1	8 9
2	4 8 9
3	3 4 4 4
4	2 5 5 5 5 7 8
5	0 0 3 3 4 6 6 7

3 | 4 = 34 birds

1. Mr. Chin did a traffic survey. He wrote down the number of trucks that passed through an intersection each hour. Make a stem-and-leaf plot of his data.

2. Refer to your stem-and-leaf plot from Exercise 1. Mr. Chin needs to know the range of trucks passing through the intersection in one hour into which the greatest number of hours fall.

3. What is the least number of birds at the watering hole in one hour? What is the greatest number?

4. What is the most frequent number of birds to be at the watering hole in one hour?

5. RVs Make a stem-and-leaf plot for the number of RVs Mr. Chin counted in 12 hours: 3, 4, 9, 13, 7, 9, 8, 5, 4, 6, 1, 11.

6. RVs Write a few sentences that analyze the RV data for Mr. Chin's report in Exercise 5.

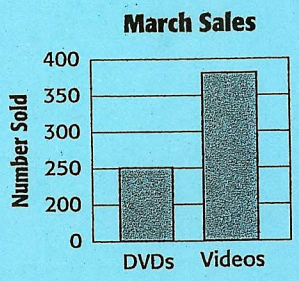
NAME _____ DATE _____ PERIOD ____

2-8 Practice: Word Problems

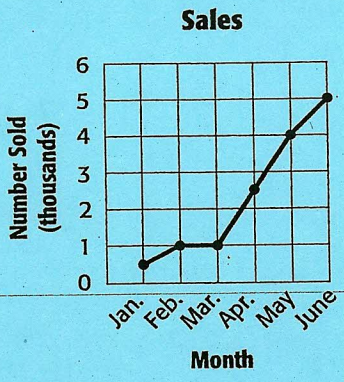
Analyzing Graphs

BUSINESS For Exercises 1 and 2, use Graph A. For Exercises 3 and 4, use Graphs B and C. The graphs show the number of DVDs and videos sold by a video store.

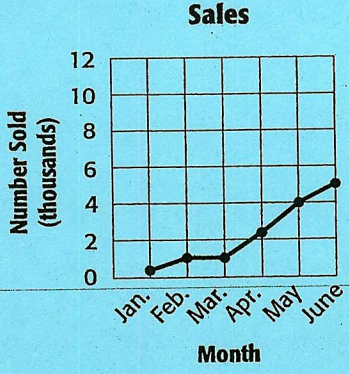
Graph A



Graph B



Graph C



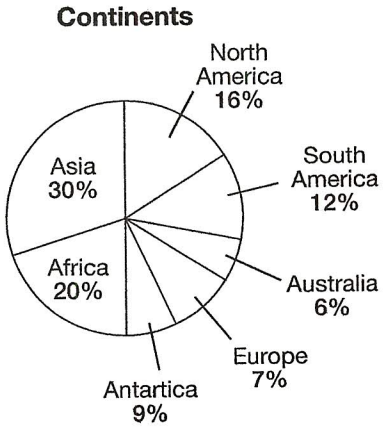
1. About how many times fewer DVDs than videos appear to have been sold?	**2.** Explain how Graph A is misleading.
3. The graphs show the same data. Which graph appears to shows that the number of DVDs and videos sold increased more rapidly? Explain.	**4.** The store owner is trying to get a loan from the bank and wants to show that business is good. Which graph should the store owner show the bank? Explain.
5. **MARKETING** A store advertises that it has the lowest average price for T-shirts in town. Find the mean, median, and mode of the prices. T-Shirt Prices: $14, $5, $10, $12, $5, $4, $13	**6.** **MARKETING** Use your answer from Exercise 5. Which measure of central tendency describes the average T-shirt price the most accurately? Explain.

NAME _____ DATE _____ PERIOD ____

2-3 Practice: Skills

Circle Graphs

GEOGRAPHY Use the graph that shows how much of Earth's land that each continent represents.



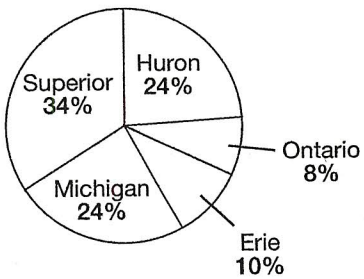
1. Which continent has the greatest area?

2. Which two continents are the smallest?

3. How does the size of Europe compare to the size of Africa?

4. How much larger is Asia than Africa?

LAKES Use the graph that shows how much of the total surface of the Great Lakes each lake takes up.



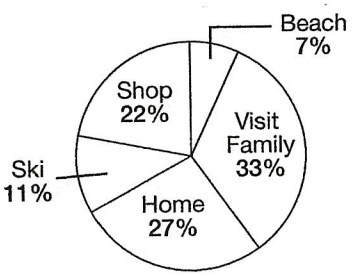
5. Which of the Great Lakes is the smallest?

6. Which two lakes are about the same size?

7. How does Lake Erie compare to Lake Ontario?

8. Which two lakes together are the same size as Lake Superior?

VACATIONS Use the graph that shows how families will spend winter vacation.



9. How will most families spend their vacations?

10. Will more families go to the beach or go shopping?

11. Compare how many families will be skiing to how many will be visiting family.

NAME _____ DATE _____ PERIOD _____

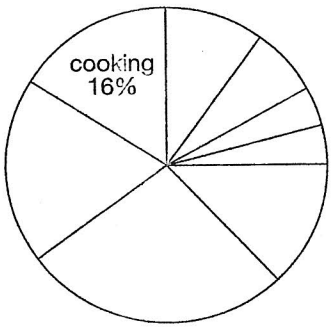
2-3 **Enrichment**

A Circle Graph Mystery

The circle graph below was drawn to show the leading causes of fire in the United States. However, all the labels except one have mysteriously disappeared.

Use the clues below to decide what the labels should be and where they belong. Then complete the graph. (Remember: Each label must include a word or phrase and a percent.)

Causes of Fires



Clue 1 Most fires are caused by *heating equipment*.

Clue 2 Fires caused by *electrical wiring* and fires caused by *heating equipment* together make up 46% of all fires.

Clue 3 The percent of fires caused by *children playing* is 12% less than the percent of fires caused by *cooking*.

Clue 4 The percent of fires caused by *open flames* is equal to the percent of fires caused by *children playing*.

Clue 5 The percent of the fires caused by *cooking* and the percent of fires caused by *arson* are together just 1% less than the percent of fires caused by *heating equipment*.

Clue 6 The percent of the fires caused by *electrical wiring* is 15% greater than the percent caused by *children playing*.

Clue 7 Fires caused by *smoking* and fires caused by *arson* together make up 17% of all fires.

Clue 8 Fires that result from other causes are listed in a category called *other*.

Lesson 2–3

NAME _____ DATE _____ PERIOD ____

2-2 Practice: Word Problems

Bar Graphs and Line Graphs

TREES For Exercises 1, 3, and 4, use Table A. For Exercises 2, 5, and 6, use Table B.

Table A

Average Heights of Pine Trees	
Tree	**Height (ft)**
Eastern White	75
Lodgepole	48
Longleaf	110
Pitch	55
Ponderosa	140

Table B

Lemons Produced by My Tree	
Year	**Number of Lemons**
1999	26
2000	124
2001	122
2002	78
2003	55

1. You and Jorge are writing a report on different kinds of pine trees. Make a bar graph for the report that shows the average heights of different kinds of pine trees. Use the data from Table A.

2. Table B shows the number of lemons your tree produced each year. Make a line graph for the data in Table B.

3. Use your graph for Exercise 1. Which tree is about half as tall as a ponderosa?

4. How does the average height of a pitch pine compare to the average height of a lodgepole pine?

5. Use the line graph you made in Exercise 2. Describe the change in fruit production for your lemon tree.

6. FRUIT Suppose you want to make a graph of the total number of lemons produced by your lemon tree and the total number of oranges produced by your orange tree in one year. Would you make a bar graph or a line graph? Explain.

NAME _____ DATE _____ PERIOD ____

2-3

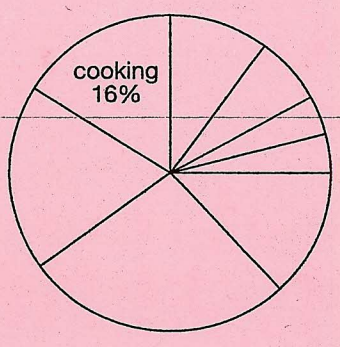
Enrichment

A Circle Graph Mystery

The circle graph below was drawn to show the leading causes of fire in the United States. However, all the labels except one have mysteriously disappeared.

Use the clues below to decide what the labels should be and where they belong. Then complete the graph. (Remember: Each label must include a word or phrase and a percent.)

Causes of Fires



Clue 1 Most fires are caused by *heating equipment*.

Clue 2 Fires caused by *electrical wiring* and fires caused by *heating equipment* together make up 46% of all fires.

Clue 3 The percent of fires caused by *children playing* is 12% less than the percent of fires caused by *cooking*.

Clue 4 The percent of fires caused by *open flames* is equal to the percent of fires caused by *children playing*.

Clue 5 The percent of the fires caused by *cooking* and the percent of fires caused by *arson* are together just 1% less than the percent of fires caused by *heating equipment*.

Clue 6 The percent of the fires caused by *electrical wiring* is 15% greater than the percent caused by *children playing*.

Clue 7 Fires caused by *smoking* and fires caused by *arson* together make up 17% of all fires.

Clue 8 Fires that result from other causes are listed in a category called *other*.

Lesson 2–3

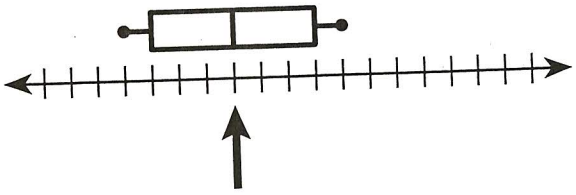
Name _____

Period 1 2 3 5 6

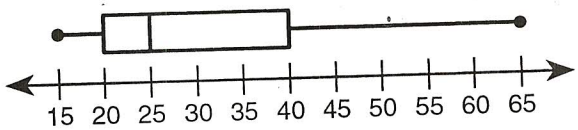
The number of pages Jane read in a book each day for one week are listed below.

{12, 18, 19, 11, 12, 15, 18}

Below is the box-and-whisker plot of this data. To which number is the arrow most likely pointing?



A 11
B 12
C 15
D 18

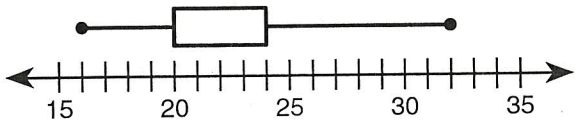


Price
(in dollars)

Which measures can be determined using data presented in a box-and-whisker plot?

F The mean and the range
G The mean and the mode
H The median and the mode
J The median and the range

Part of the box-and-whisker plot Jim was creating is shown below.



Age
(in years)

What could be missing from Jim's plot?

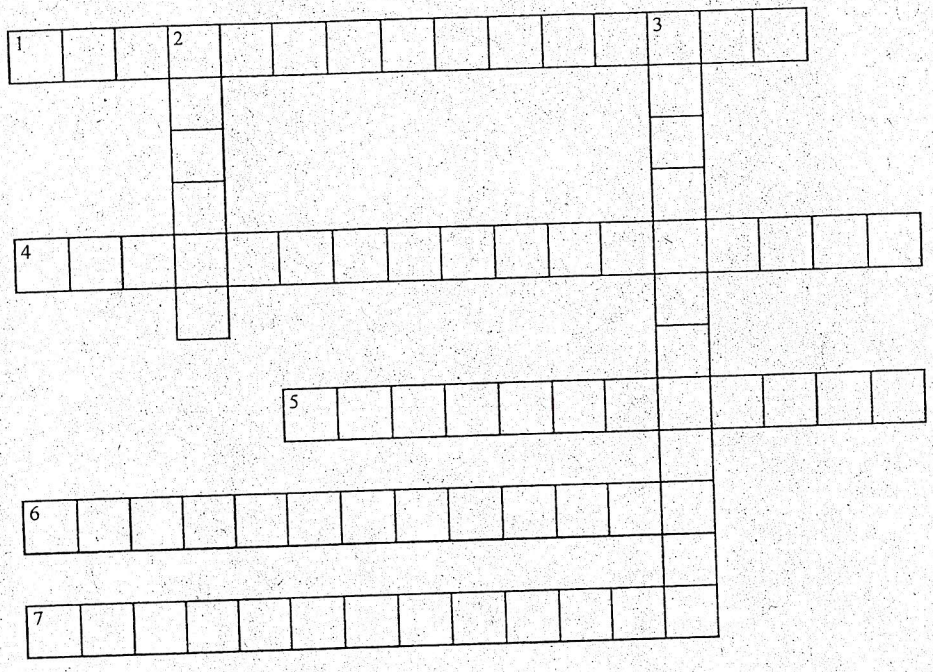
A Upper extreme
B Lower extreme
C Upper quartile
D Median

Name: _____ Number: _____

Date: _____

Vocabulary – Crossword

SOL 6.18 a & b – Stem-and-Leaf Plot and Box-and-Whisker Plot



ACROSS

1 A method of organizing data in order to make comparisons; the ones digits appear horizontally as leaves, and the tens digits and greater appear vertically as stems.

4 A plot that shows how a set of data clusters around the middle (median). It also shows how far apart and how evenly data are distributed.

5 The greatest number in a set of data.

6 The median of the lower half of a set of data.

7 The median of the upper half of a set of data.

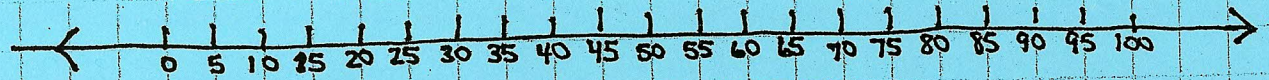
DOWN

2 The middle number or the average of the two middle numbers in an ordered set of data.

3 The least number in a set of data.

Construct a box-and-whiskers plot for given points.

Sixth Grade Benchmark Scores



lower extreme - 50

upper extreme - 98

median - 75

lower quartile - 65

upper quartile - 89

Use a box-and-whisker plot to display the quiz scores listed.

7, 8, 10, 6, 2, 9, 10, 9, 5, 9, 6

Step 1: Write the data in order from least to greatest.

Step 2: Identify the following 5 values.

The **median** divides the ordered data into a lower half and an upper half.

The **lower quartile** is the median of the lower half of the data.

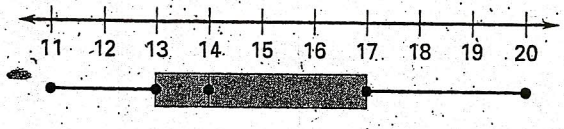
The **upper quartile** is the median of the upper half of the data.

The **lower extreme** is the least data value.

The **upper extreme** is the greatest data value.

Step 3: Make the box-and-whisker plot.

Identify each value in the box-and-whisker plot.



lower extreme | lower quartile | median | upper quartile | upper extreme

_____ _____ _____ _____ _____

What is a box-and-whisker plot?

What is a stem-and-leaf plot?

Use a stem-and-leaf plot to display the data.

Number of movie tickets sold for a showing:

32, 50, 65, 14, 57, 45, 23, 58, 12, 48, 51, 19, 63, 55, 30, 41, 24, 46

Use the stem-and-leaf plot at the right.

3. Notice the decimal point in the key.

Complete: 2 | 4 = _____

4. Write the lengths of the 10 longest snakes.

5. How long is the longest snake?

Ten Longest Snakes, in meters

2	4	7
3	4	7
4	9	
5	8	
6	4	
7	6	
8	5	
9		
10	7	

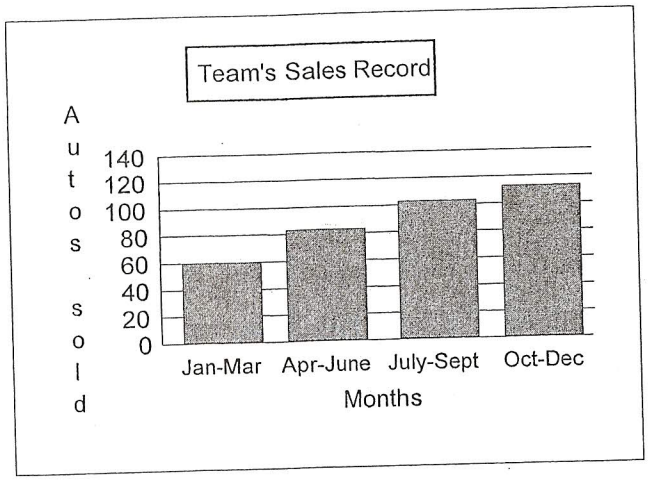
Key: 4 | 9 = 4.9

Source: *DK The Top Ten of Everything 2003*

Name _____ Class Period 1 2 3 5 6 Date _____

6.18 Review Questions

Use the bar graph below to answer questions 1 and 2.



(6.18a)

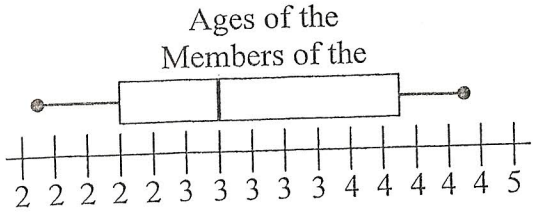
1. During which months were the most autos sold?

A Oct-Dec
B Jan-March
C July-Sept
D April-June

2. About what is the difference in sales between the highest and lowest months?

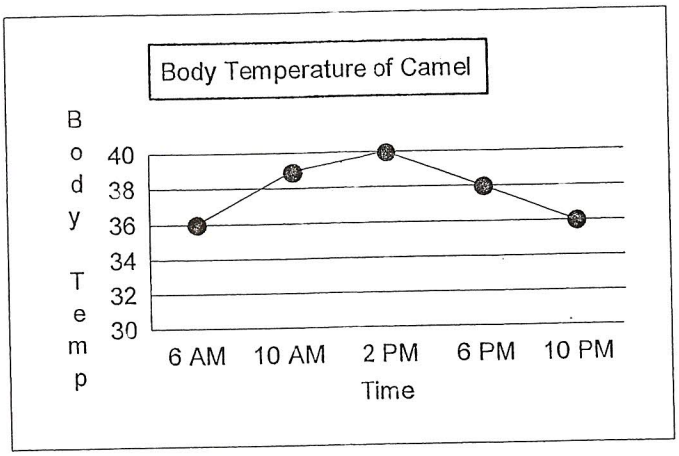
A 30 cars
B 40 cars
C 50 cars
D 60 cars

3. Melanie collected data concerning the ages of the members of the community orchestra. What is the median age of this group?



A 26
B 32
C 43
D 47

Use the line graph below to answer questions 4 and 5.



4. How many hours are between the times?

A 3 hours
B 4 hours
C 5 hours
D 6 hours

5. What is the lowest temperature represented on the graph?

A 36°
B 38°
C 39°
D 40°

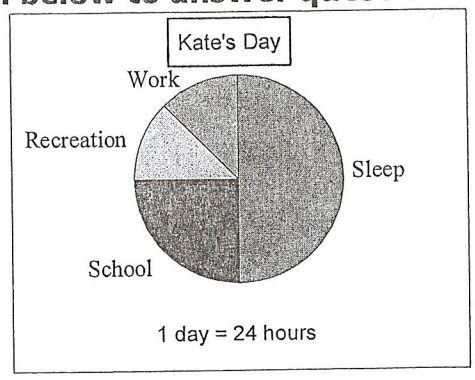
6. Which type of graph would be the most effective way to show a comparison of the monthly rainfall between Washington D.C. and New York City?

A a circle graph
B a line graph
C a bar graph
D a stem-and-leaf plot

7. What type of graph should you use if you wanted to display the number of books a fifth grade class read over a 9-week period?

A a line graph
B a circle graph
C a box and whisker plot
D a phonograph

Use the circle graph below to answer questions 8 and 9.



8. How did Kate spend $\frac{1}{4}$ of her day?

A recreation
B working
C at school
D sleeping

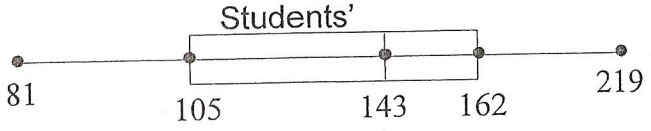
9. How many hours did Kate spend sleeping?

A 4
B 8
C 10
D 12

10. The students at your school participate in after school programs at the Y.M.C.A., the school or the community center. What is the best way to represent the percent of student body enrolled in each program?

A bar graph
B circle graph
C line graph
D pictograph

11. The box-and-whisker plot below summarizes the weight of 19 students in pounds.



Which of the following is true?

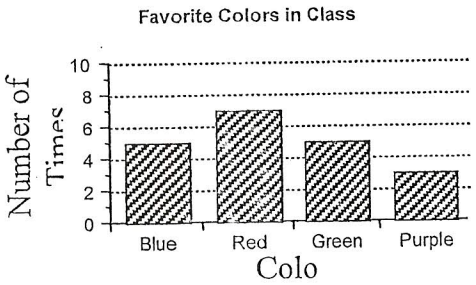
A The average weight of the students is 162 pounds.
B The majority of the students weigh less than 105 pounds.
C The median weight of the students is 143 pounds.
D The heaviest student weighs 162 pounds.

12. Which of the following diagrams is NOT an appropriate way to display the information below?

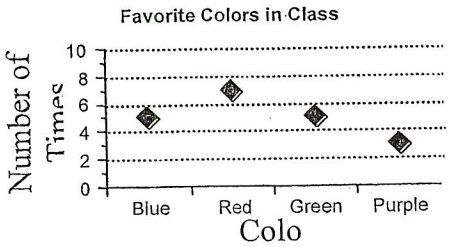
Favorite Colors in Class

Blue	5
Red	7
Green	5
Purple	3

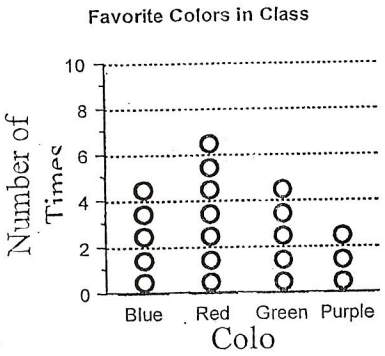
A



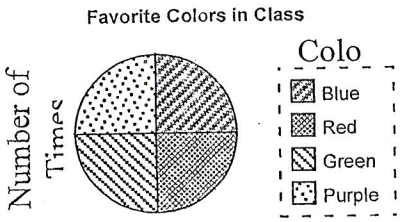
B



C



D



Use this information to answer the next two questions.
The data below are scores from a sixth grade test. 7 | 0 means 70.

Stem	Leaves
7	0 1 2 3 3 6
8	1 2 3 4 5 6 6 6
9	0 1 2 2 3 5

13. What is the mode?

A 66
B 85
C 86
D 95

14. What is the range for this data?

A 70 to 86
B 70 to 90
C 70 to 95
D 76 to 95

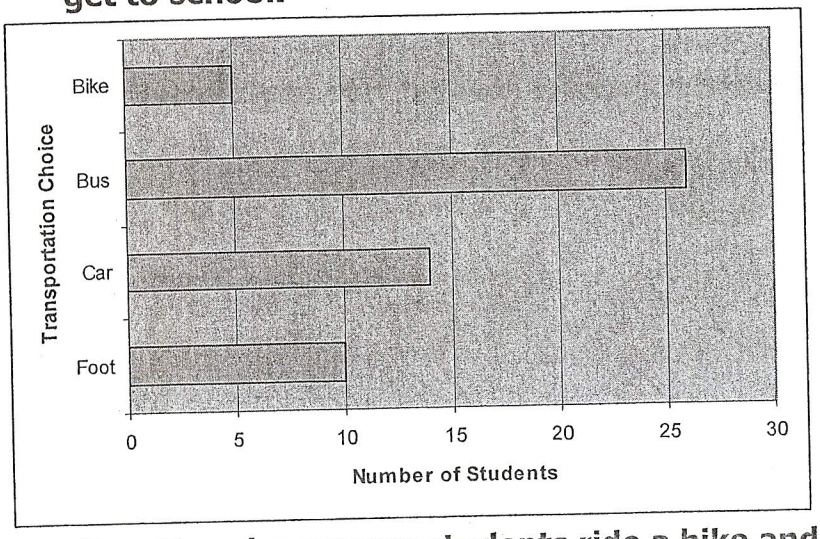
15. What type of graph should you use when you want to display data that shows parts of a whole?

A line graph
B circle graph
C bar graph
D pictograph

16. What type of graph is used to show how something changes over time, like the height of a child from birth to twelve years?

A line graph
B circle graph
C bar graph
D pictograph

17. Shown below is a bar graph of how some of the students in sixth grade get to school.



Together, how many students ride a bike and walk to school?

A 5 students
B 10 students
C 15 students
D 16 students

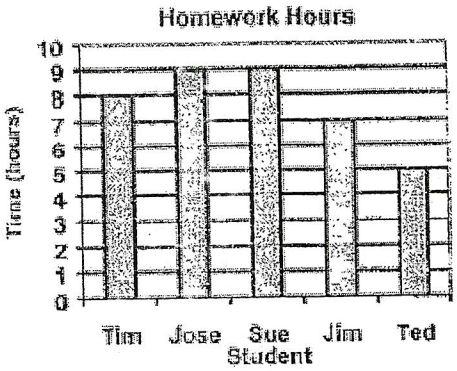
The table shows the number of hours 5 students spent on homework last week. Which graph below best represents the same data?

Student	Tim	Jose	Sue	Jim	Ted
Hours Spent on Homework	8	9	9	7	5

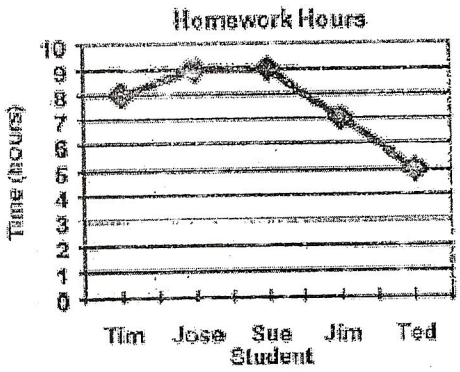
A

Stem	Leaf
0	5 7 8 9 9
1	
2	

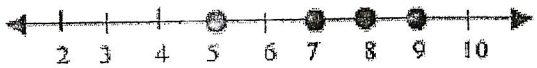
B



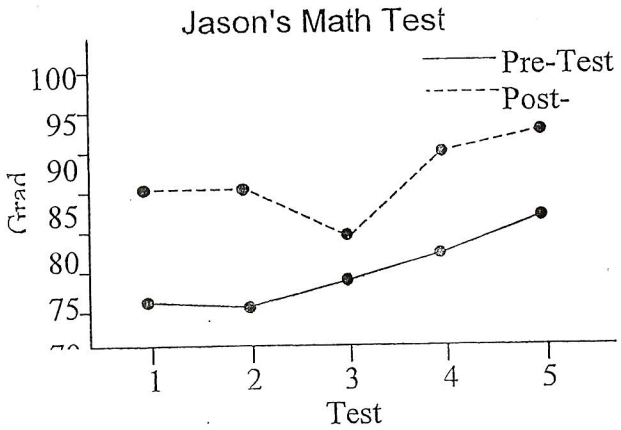
C



D



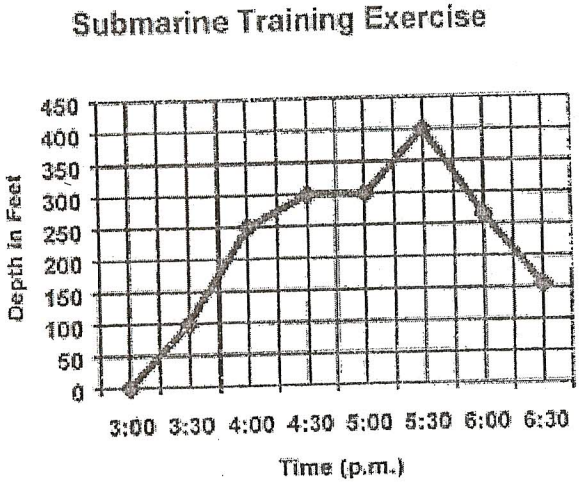
18. This graph shows Jason's math scores for his first five math tests.



Which statement is false?

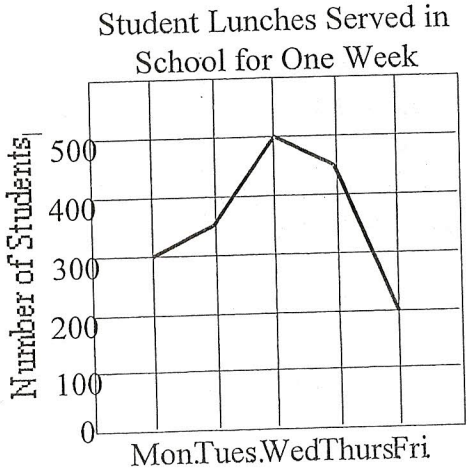
A Jason improved from his pre-test score to his post-test score on every test.
B Jason did not improve on Test #3 from his pre-test to his post-test.
C Jason showed the least amount of improvement from pre-test to post-test scores on Test #3.
D Jason's highest pre-test and post-test score was on Test #5.

19. On a training exercise, a submarine was underwater for a $3\frac{1}{2}$ hour period of time. The submarine's depth, in feet, during the $3\frac{1}{2}$ hour period is recorded on the graph below. About how long did the submarine maintain a depth of 250 ft or greater?



A 3 hr 30 min
B 3 hr
C 2 hr 30 min
D 2 hr

Use this graph to answer the next question.



20. How many students were served on Tuesday?

A 300 students
B 310 students
C 350 students
D 395 students

21. About how many fewer students had lunch on Monday than on Thursday?

A 100 students
B 150 students
C 200 students
D 300 students

Use the stem-and-leaf plot below to answer questions 22 and 23.

Stem	Leaves
7	0 2 4 4 5
8	0 0 3 5 5 5 6
9	1 2 3 4 5 5 7

Key: 6| 0 means 60

(6.18b)

22. What is the highest number shown?

A 70
B 90
C 91
D 97

23. What is the mode for the data in the stem–and–leaf plot?

A 55
B 74
C 85
D 95

Use this information to answer the next question.

The following stem and leaf diagram represents the average temperature in degrees Fahrenheit (°F) for selected major cities in the USA on January 5, 1997.

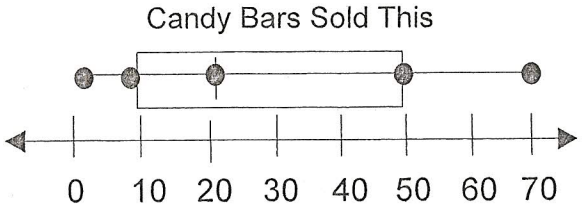
Average Temperatures of Selected Cities in USA

0	5 9
1	1 3 5 6
2	1 8 9
3	0 8 9 9
4	0 4 4 9
5	0 2 6 7
6	2 2 8
7	2 8

24. How many cities had temperatures within the 10 - 19 °F range?

A 4 cities
B 5 cities
C 8 cities
D 12 cities

Use this graph to answer the next three questions.
This shows the number of candy bars sold by the school band in 1 week.



(6.18c)

25. What type of graph is displayed?

A line plot
B scatterplot
C stem-leaf
D box-whisker

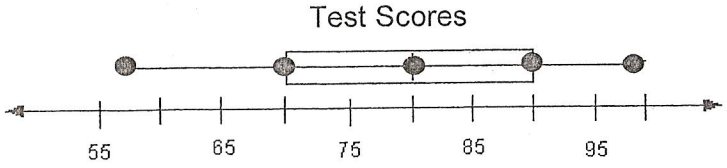
26. About what was the median number of bars sold in a week?

A 10
B 12
C 21
D 41

27. What was the highest number of bars sold?

A 21
B 42
C 62
D 70

Use this graph to answer question 28.



28. What is the median test score?

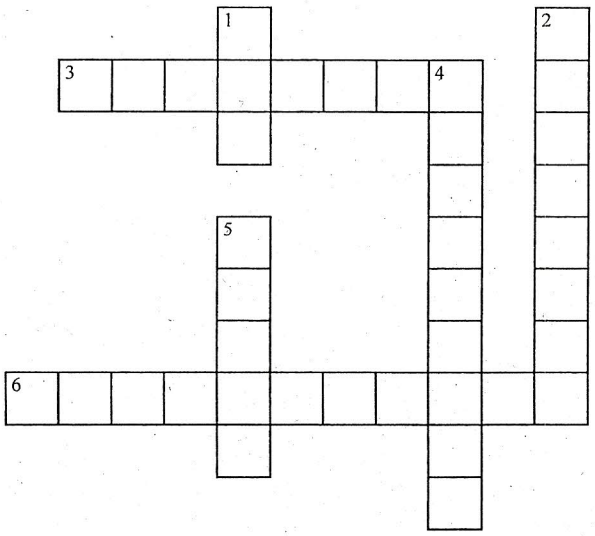
A 57
B 80
C 90
D 98

Name: _____ Number: _____

Date: _____

Vocabulary – Crossword

SOL 6.18a – Bar, Circle and Line Graphs



ACROSS

3 The distance between the numbers on the scale of a graph.

6 A graph using a circle that is divided into pie shaped sections showing percents or parts of the whole.

DOWN

1 The part of a graph that tells what each line or bar represents.

2 A graph that uses separate bars (rectangles) of different heights (lengths) to show and compare data.

4 A graph that uses line segments to show how data change over a period of time.

5 A series of numbers placed at fixed distances on a graph to help label the graph.

Name _____
Class Period _____
Date _____

Sixth Grade
S. O. L. 6.18 Vocabulary Quiz

Bar Graph Scale Interval Line Graph
Circle Graph Key

1. _____ A graph that uses line segments to show how data change over a period of time.

2. _____ The part of a graph that tells what each line or bar represents.

3. _____ A graph that uses separate bars of different heights to show and compare data.

4. _____ A series of numbers placed at fixed distances on a graph to help label the graph.

5. _____ A graph using a circle that is divided into pie shaped sections showing percents or parts of the whole.

6. _____ The distance between the numbers on the scale of a graph.

Name: _____ Number: _____

Date: _____

Sixth Grade
Math Vocabulary
SOL 6.18 – Bar, Circle and Line Graphs

Quiz

1. _____ A graph that uses separate bars (rectangles) of different heights (lengths) to show and compare data.

2. _____ A series of numbers placed at fixed distances on a graph to help label the graph.

3. _____ A graph that uses line segments to show how data change over a period of time.

4. _____ The part of a graph that tells what each line or bar represents.

5. _____ The distance between the numbers on the scale of a graph.

6. _____ A graph using a circle that is divided into pie shaped sections showing percents or parts of the whole.

Line Graph **Scale** **Key** **Interval** **Circle Graph** **Bar Graph**

Name_____
Class Period_____
Date_____

Sixth Grade
S.O.L. 6.18 Vocabulary Quiz

Bar Graph **Circle Graph** **Scale** **Key**
Line Graph **Interval**

1. _____ A graph that uses line segments to show how data change over a period of time.

2. _____ The part of a graph that tells what each line or bar represents.

3. _____ A graph that uses separate bars (rectangles) of different heights (lengths) to show and compare data.

4. _____ A series of numbers placed at fixed distances on a graph to help label the graph.

5. _____ A graph using a circle that is divided into pie shaped sections showing percents or parts of the whole.

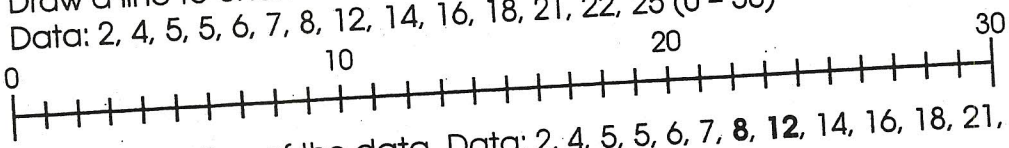
6. _____ The distance between the numbers on the scale of a graph.

Name _____

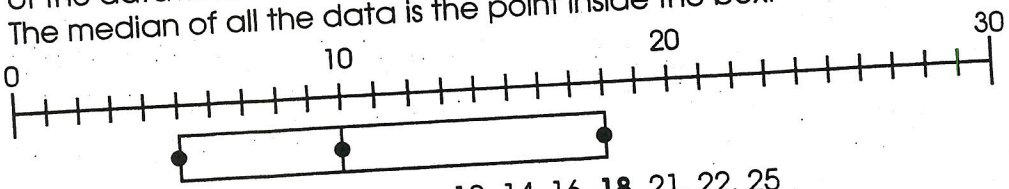
Cat's Face

Follow these steps to create a box plot for the data collected.

1. Draw a line to chart all of the data.
   Data: 2, 4, 5, 5, 6, 7, 8, 12, 14, 16, 18, 21, 22, 25 (0 – 30)

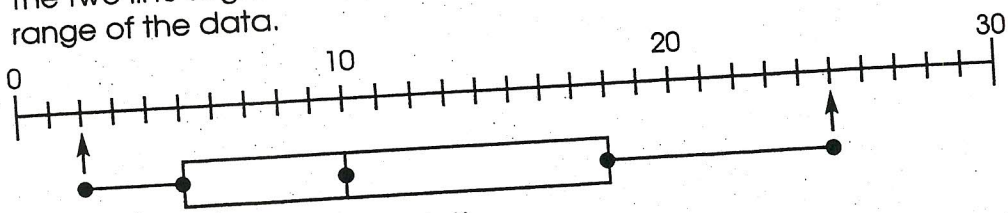


2. Find the median of the data. Data: 2, 4, 5, 5, 6, 7, **8**, **12**, 14, 16, 18, 21, 22, 25
   $8 + 12 = 20$ $20 \div 2 = 10$ The median equals 10.
3. The length of the box is represented by a point showing the median of the lower half of the data and another point to show the median of the upper half of the data. The median of all the data is the point inside the box.



Data: 2, 4, 5, **5**, 6, 7, 8, 12, 14, 16, **18**, 21, 22, 25

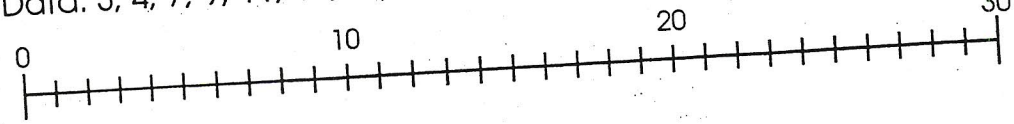
4. The two line segments (whiskers) extending from each end of the box represent the range of the data.

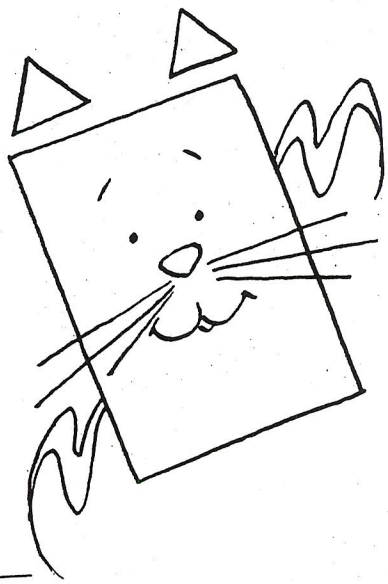


And there you have it—a box plot!

Use the data below to create a box plot.

Data: 3, 4, 7, 9, 11, 13, 17, 18, 22, 24, 27





A. What is the range of the data? _____

B. What is the median of the entire data? _____

C. What is the median of the lower half of the data? _____

D. What is the median of the upper half of the data? _____

NAME _____ DATE _____ PERIOD ____

2-2 Study Guide and Intervention

Bar Graphs and Line Graphs

A **graph** is a visual way to display data. A **bar graph** is used to compare data.
A **line graph** is used to show how data changes over a period of time.

EXAMPLE 1 **Make a bar graph of the data. Compare the number of students in jazz class with the number in ballet class.**

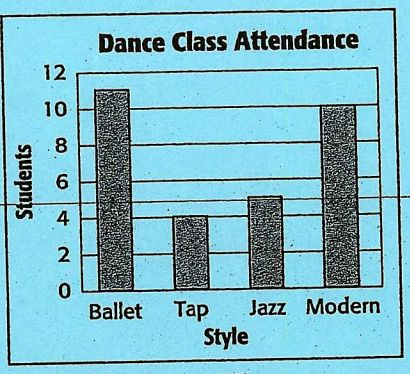
Dance Classes	
Style	Students
Ballet	11
Tap	4
Jazz	5
Modern	10

Step 1 Decide on the scale and interval.

Step 2 Label the horizontal and vertical axes.

Step 3 Draw bars for each style.

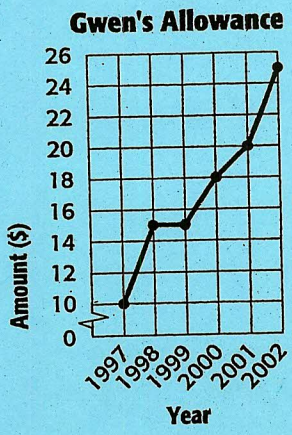
Step 4 Label the graph with a title.



About twice as many students take ballet as take jazz.

EXAMPLE 2 **Make a line graph of the data. Then describe the change in Gwen's allowance from 1998 to 2002.**

Gwen's Allowance						
Year	1997	1998	1999	2000	2001	2002
Amount ($)	10	15	15	18	20	25



Step 1 Decide on the scale and interval.

Step 2 Label the horizontal and vertical axes.

Step 3 Draw and connect the points for each year.

Step 4 Label the graph with a title.

Gwen's allowance did not change from 1998 to 1999 and then increased from 1999 to 2002.

EXERCISES

Make the graph listed for each set of data.

1. bar graph

Riding the Bus	
Student	Time (min)
Paulina	10
Omar	40
Ulari	20
Jacob	15
Amita	35

2. line graph

Getting Ready for School	
Day	Time (min)
Monday	34
Tuesday	30
Wednesday	37
Thursday	20
Friday	25

NAME _____ DATE _____ PERIOD ____

2-2 Practice: Word Problems

Bar Graphs and Line Graphs

TREES For Exercises 1, 3, and 4, use Table A. For Exercises 2, 5, and 6, use Table B.

Table A

Average Heights of Pine Trees	
Tree	**Height (ft)**
Eastern White	75
Lodgepole	48
Longleaf	110
Pitch	55
Ponderosa	140

Table B

Lemons Produced by My Tree	
Year	**Number of Lemons**
1999	26
2000	124
2001	122
2002	78
2003	55

1. You and Jorge are writing a report on different kinds of pine trees. Make a bar graph for the report that shows the average heights of different kinds of pine trees. Use the data from Table A.

2. Table B shows the number of lemons your tree produced each year. Make a line graph for the data in Table B.

3. Use your graph for Exercise 1. Which tree is about half as tall as a ponderosa?

4. How does the average height of a pitch pine compare to the average height of a lodgepole pine?

5. Use the line graph you made in Exercise 2. Describe the change in fruit production for your lemon tree.

6. **FRUIT** Suppose you want to make a graph of the total number of lemons produced by your lemon tree and the total number of oranges produced by your orange tree in one year. Would you make a bar graph or a line graph? Explain.

BOX-AND-WHISKER PLOT NOTES

Box-and-Whisker plot- a diagram that summaries data by showing how data are distributed within a range.

Upper extreme- the greatest value in a data set

Lower extreme- the lowest value in a data set

Range- the difference between the greatest value and the lowest value

Median- the middle value of a data set

Mean- the number found by diving the sum of the data set by the number of addends

Quartile- one of four parts of a data set

Upper quartile- median of the upper half of the data set

Lower quartile- median of the lower half of the data set

Inter quartile range- the difference between the upper and the lower quartiles

EXAMPLE:

17 20 22 18 8 19 10 10 17 9 15 21 7 8 20 18 14 22 19 11

STEP 1-PUT IN ORDER:

7 8 8 9 10 10 11 14 15 17 17 18 19 19 20 20 21 22

STEP 2-FIND THE MEDIAN:

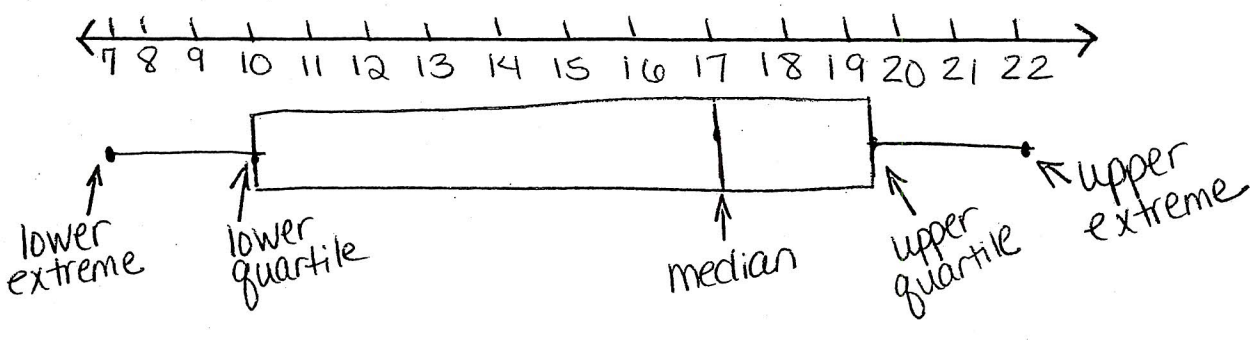
17 + 17= 34/2= 17 The median is 17.

STEP 3-FINE THE UPPER AND LOWER QUARTILE:

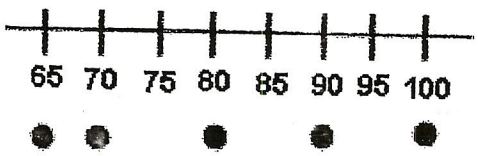
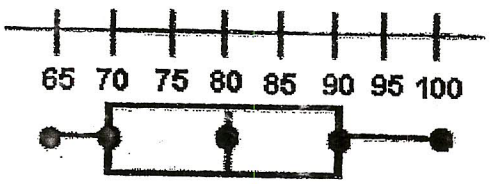
Lower- 10 + 10= 20/2= 10

Upper- 19 + 20= 39/2=19.5

STEP 4- MAKE THE BOX AND WHISKER PLOT:



The data: Math test scores 80, 75, 90, 95, 65, 65, 80, 85, 70, 100

Write the data in numerical order and find the first quartile, the median, the third quartile, the smallest value and the largest value. median = 80 first quartile = 70 third quartile = 90 smallest value = 65 largest value = 100	median of all data, second quartile **65, 65, 70, 75, 80, 80, 85, 90, 95, 100** median of lower part, first quartile median of upper part, third quartile
Place a circle beneath each of these values on a number line.	
Draw a box with ends through the points for the first and third quartiles. Then draw a vertical line through the box at the median point. Now, draw the whiskers (or lines) from each end of the box to the smallest and largest values.	

Box-and-Whisker Plots

Box-and-whisker plots are used to display the spread of a set of data.

The plot displays the **median**, the **quartiles**, and the **range** of the data values.

Example:

Data: 2, 10, 18, 2, 4, 3, 6, 11, 12, 6, 7, 10, 3, 3, 12.

To draw the box-and-whisker plot:

1. Write the values in order from least to greatest.
   (2, 2, 3, 3, 3, 4, 6, 6, 7, 10, 10, 11, 12, 12, 18)

2. Draw and label an appropriate number line.

3. Determine the median and mark it on the number line. (median = 6)

4. Determine the lower and upper quartiles and mark them on the number line. (Median of left half and right half)
   (lower quartile = 3, upper quartile = 11)

5. Draw a "box" between the lower and upper quartiles.

6. Draw a vertical line through the median.

7. Mark the lower and upper extremes. (extremes 2 and 18)

8. Draw "whiskers" from the box to the extremes.

Name_____
Class_____
Date_____

Sixth Grade
Math Vocabulary
S.O.L. 6.18 Bar, Circle, and Line Graph

1. **Scale –** a series of numbers placed at fixed distances on a graph to help label the graph.

Example:

2. **Bar Graph –** A graph that uses separate bars (rectangle) of different heights (length) to show and compare data.

Example:

3. **Circle Graph-** A graph using a circle that is divided into pie shaped sections showing percents or parts of the whole.

Example:

4. **Line Graph-** A graph that uses line segments to show data change over a period time.

Example:

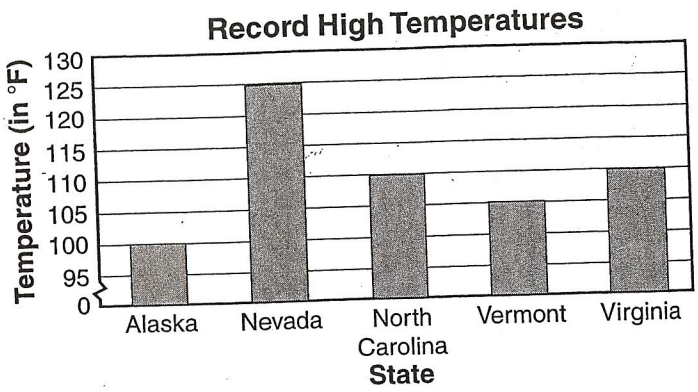
5. **Interval-** The distance between the numbers on the scale of a graph.

Example:

6. **Key-** The part of a graph that tells what each line or bar represents.

Example:

Use the graph to answer problems 4–8.



4 What is the difference between Nevada's record high temperature and Vermont's record high temperature?

F 10°F
G 15°F
H 20°F
J 25°F

5 What state has the greatest record high temperature?

A Alaska
B Nevada
C North Carolina
D Virginia

6 Which two states have the same record high temperature?

F Alaska and Nevada
G North Carolina and Alaska
H Vermont and Virginia
J North Carolina and Virginia

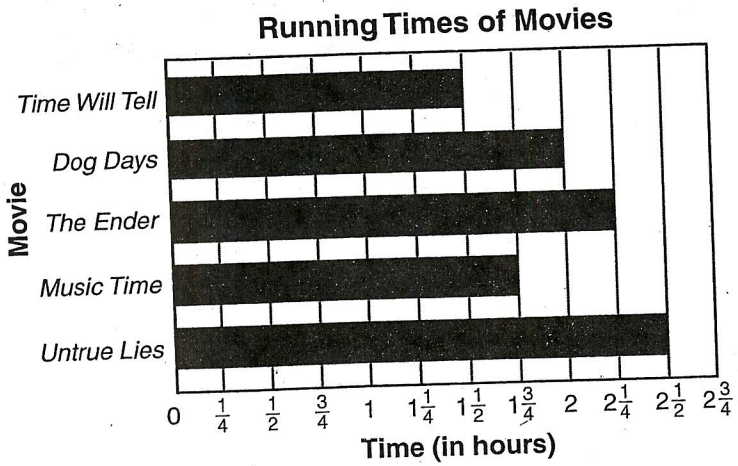
7 Which of the following statements is *not* true?

A Alaska's record high temperature is less than Virginia's record high temperature.
B North Carolina's record high temperature is 10°F greater than Alaska's.
C Virginia's record high temperature is less than Vermont's record high temperature.
D Nevada's record high temperature is 25°F greater than Alaska's.

8 Which state has the second lowest record high temperature?

F Alaska
G Nevada
H Vermont
J Virginia

Use the graph to answer problems 9–11.



9 Which movie has the shortest running time?

A *Untrue Lies*
B *Music Time*
C *Time Will Tell*
D *Dog Days*

10 How many minutes longer is *Untrue Lies* than *Music Time*?

F $\frac{3}{4}$ minute
G 15 minutes
H 30 minutes
J 45 minutes

11 Which movie has the second longest running time?

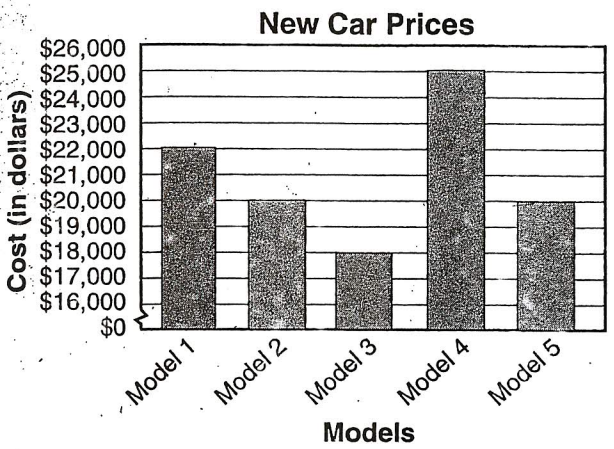
A *The Ender*
B *Music Time*
C *Time Will Tell*
D *Untrue Lies*

e table to the right shows
e prices for new cars.

New Car Prices

Model	Cost
Model 1	$22,500
Model 2	$20,000
Model 3	$18,500
Model 4	$25,000
Model 5	$20,500

ich of the following graphs shows this information correctly graphed?



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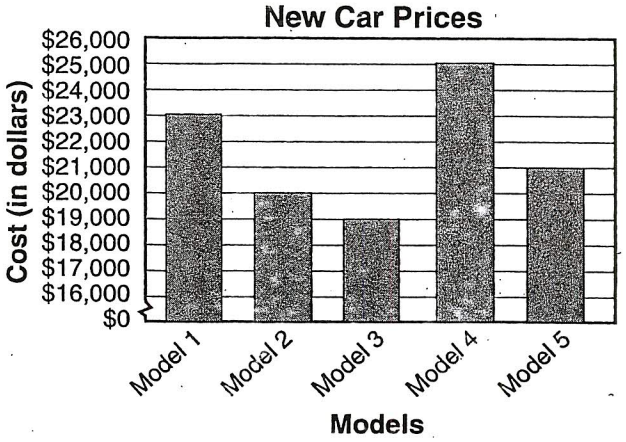
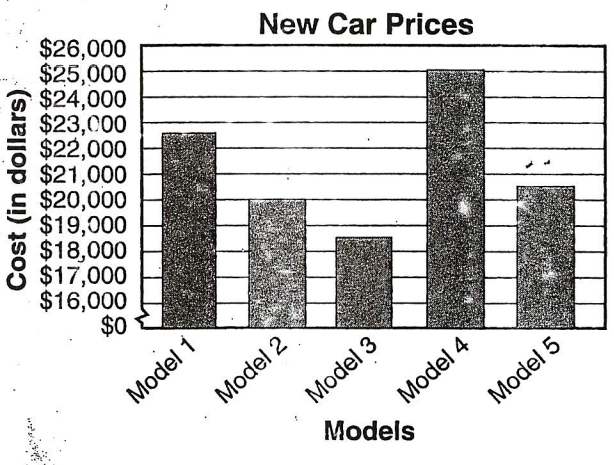
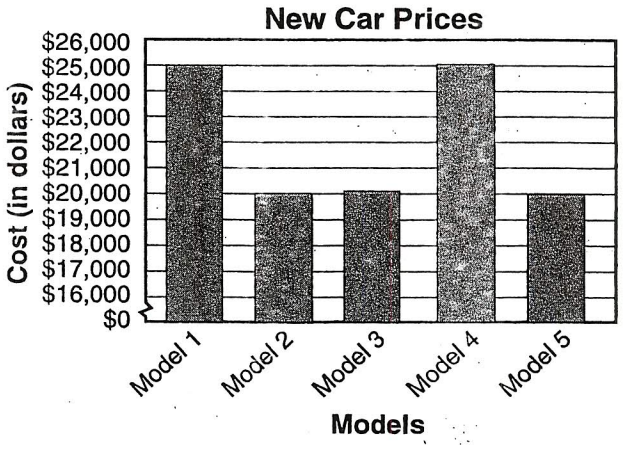




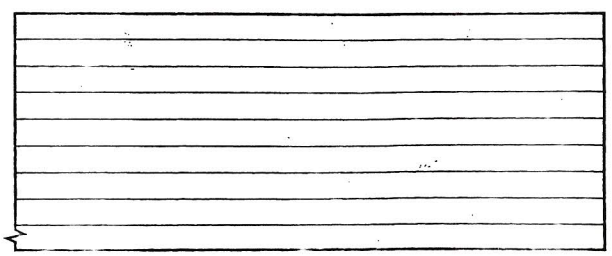
J



e the grid to make a bar graph from the data in the table.

erage Annual Snowfall Amounts

City	Amount (in.)
Bismarck, ND	40.3
Detroit, MI	40.4
Madison, WI	40.8
Chicago, IL	40.3
Sioux Falls, SD	39.9



NAME _____ DATE _____ PERIOD ____

2-3

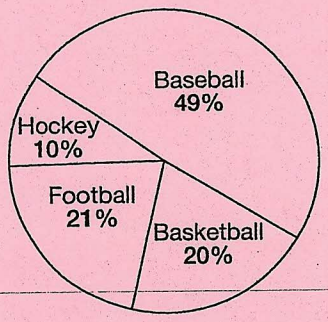
Practice: Word Problems

Circle Graphs

SPORTS **For Exercises 1–3, use Graph A. For Exercises 4–6, use Graph B.**

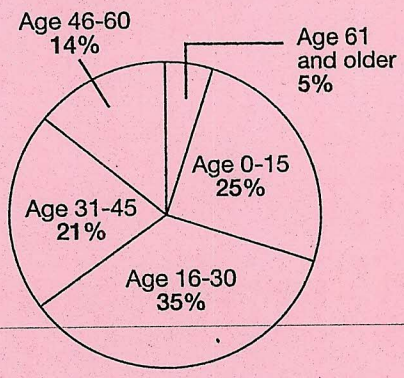
Graph A

Favorite Sports of Mr. Franco's Class



Graph B

Attendance at the Baseball Game

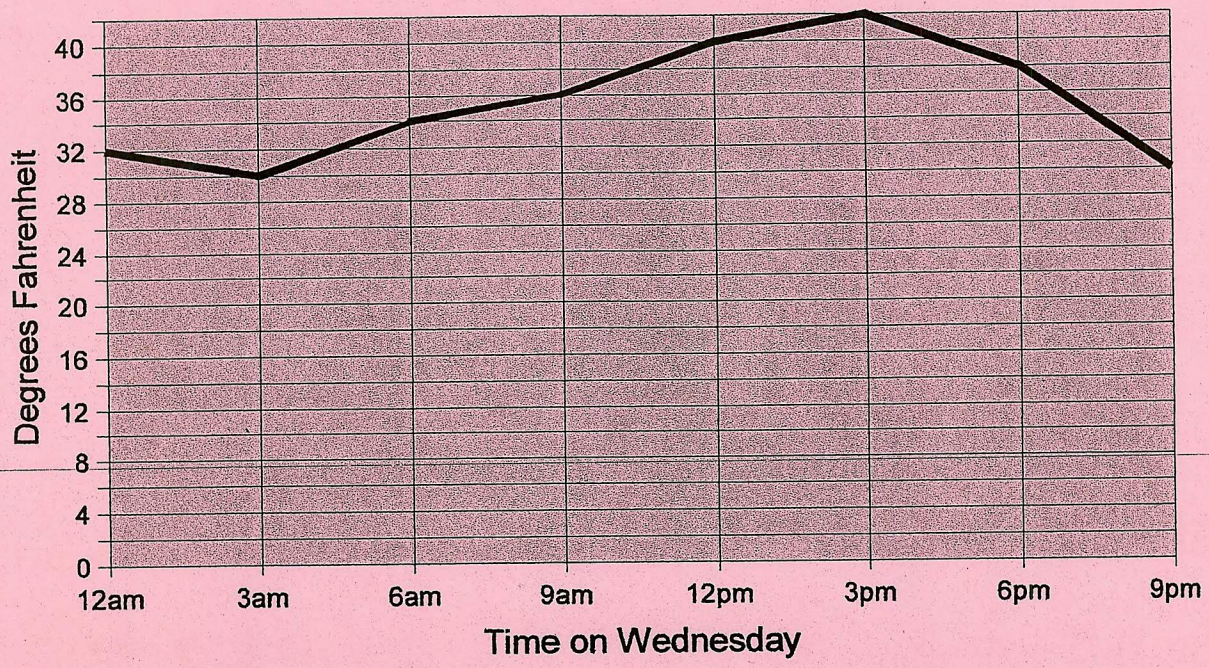


1. Kwan surveyed Mr. Franco's class to find out the favorite sports of the class. Which sport was the favorite of the largest percent of students in the class? Which sport was the favorite of the smallest percent of students?	**2.** Which sports were the favorite of about the same number of students?
3. Which sport is the favorite of half as many students as basketball?	**4.** Mr. Jackson kept track of attendance at the baseball game for an advertising agency. The agency wants to target its advertising to the age group that has the highest percent in attendance. To which group should the agency target ads?
5. Which two age groups have about the same percent of people?	**6.** Mr. Jackson's daughter is in the age group with the second highest percent. In which age group is Mr. Jackson's daughter?

Lesson 2–3

Name: _____ **Reading a Line Graph**

Air Temperature on Wednesday



1. What was the air temperature at noon on Wednesday? 1. _____

2. What was the air temperature at 6pm on Wednesday? 2. _____

3. Did the air temperature rise or fall between 6am and 9am? 3. _____

4. What is the difference in air temperature between midnight and noon? 4. _____

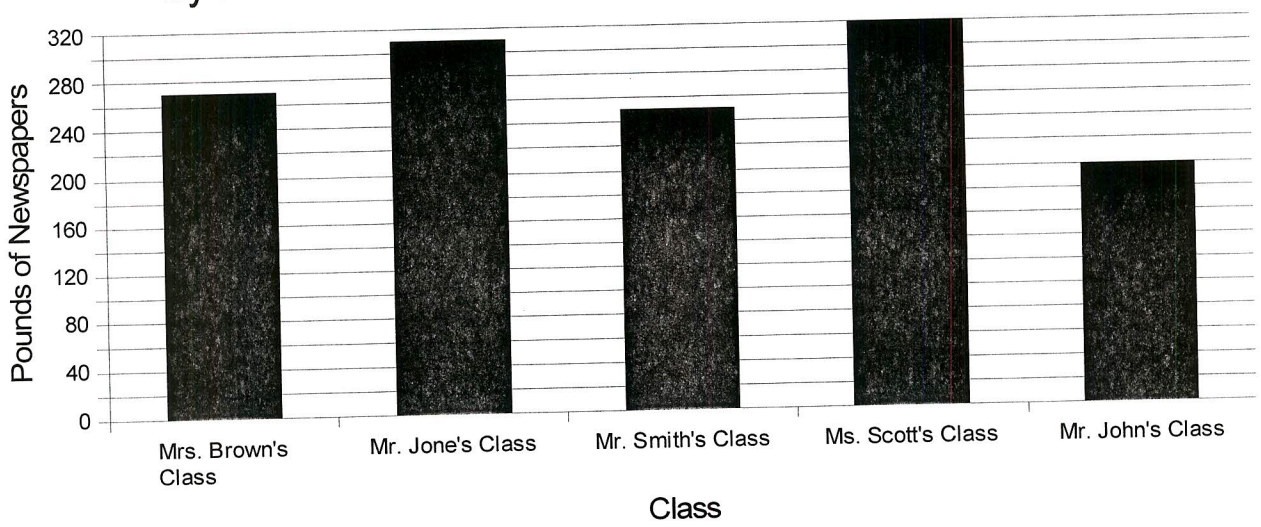
5. Was it warmer at 9am or 9pm? 5. _____

6. At what time was the air temperature the warmest? 6. _____

7. Is this more likely to be a line graph showing air temperatures in Maine or New Mexico? 7. _____

Your name: _____ **Reading a Bar Graph**

Pounds of Newspapers Recycled by Abraham Lincoln Elementary School Students



1. How many pounds of newspaper did Mrs. Brown's class recycle? 1. _____

2. How many pounds of newspaper did Mr. Jone's class recycle? 2. _____

3. How many more pounds did Mr. Scott's class recycle than Mr. John's class? Show your work in the space below. 3. _____

4. Are the numbers on the scale counting by 20s, 30s, 40s, or 50s? 4. _____

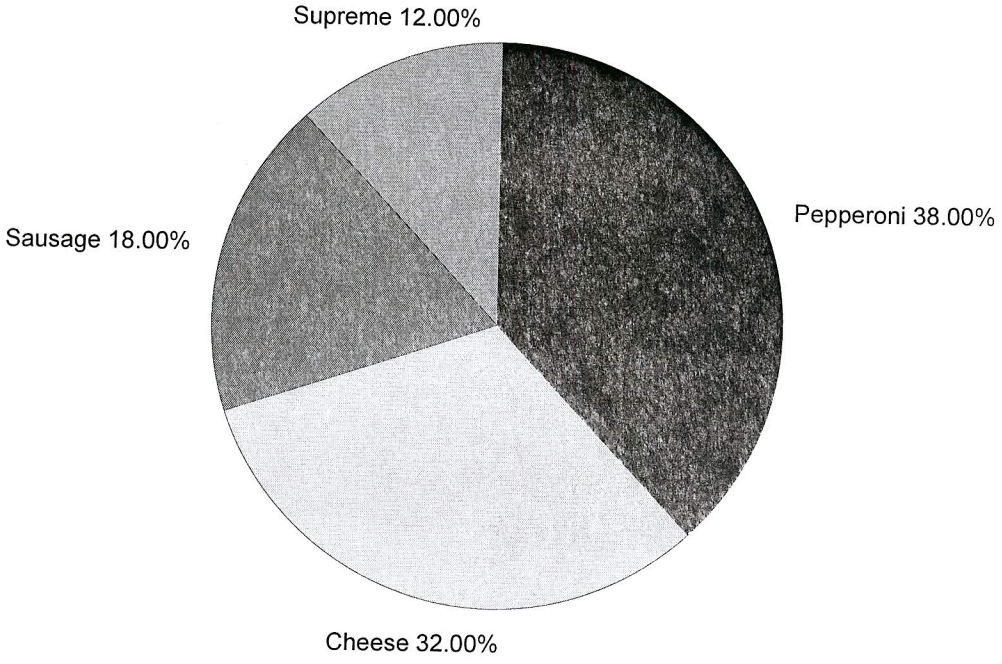
5. Do the horizontal lines show increments of 20s, 30s, 40s, or 50s? 5. _____

6. Which class recycled the most newspapers? 6. _____

7. How many pounds of newspapers were recycled in all? Show your work in the space below. 7. _____

Name: _____ **Reading a Pie Graph**

Favorite Types of Pizza



1. Of the people who took the survey, what pizza topping do most people prefer? 1. _____
2. What percentage of people surveyed like supreme pizza the best? 2. _____
3. What percentage liked cheese pizza the best? 3. _____
4. Did more or less than half of the people surveyed like pepperoni pizza the best? 4. _____
5. Did more or less than one-fourth of the people surveyed like sausage pizza the best? 5. _____
6. Did more or less than one-fourth of the people surveyed like cheese pizza the best? 6. _____
7. Which type of pizza would you have chosen? 7. _____

NAME _____ DATE _____ PERIOD ____

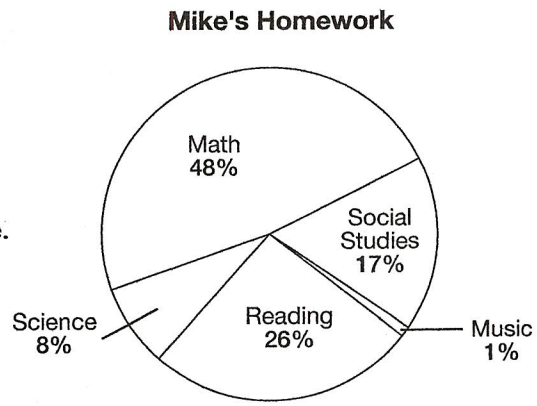
2-3 Study Guide and Intervention

Circle Graphs

A **circle graph** is used to compare parts of a whole. The pie-shaped sections show the groups. The percents add up to 100%.

EXAMPLES

1 **SCHOOL The circle graph shows the subjects Mike studies during homework time. Which subject does Mike spend most of his time studying?**



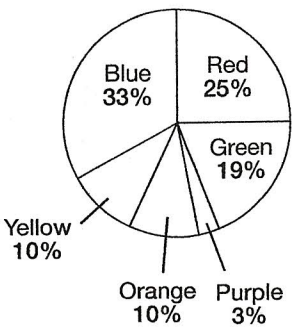
The largest section of the graph is the section representing math. So, math takes up the most time.

2 **How does the time spent studying social studies compare to the spent studying science?**

The section representing social studies is about twice the size of the section representing science. So, twice as much time is spent on social studies as on science.

EXERCISES

SURVEYS Use the graph that shows the results of a favorite colors survey.



1. Which color is the least favorite?

2. Which colors are the favorites of the same number of people?

3. How does the number of people who say green is their favorite color compare to the number who say yellow is their favorite color?

FOOD Use the graph of Mike's study time from the Examples.

4. Which subject does Mike spend the least time studying?

5. On which two subjects together does Mike spend about the same time as reading?

6. How does the amount of time spent on math compare to the amount of time Mike spends on science?

Lesson 2–3

NAME _____ DATE _____ PERIOD ____

2-3

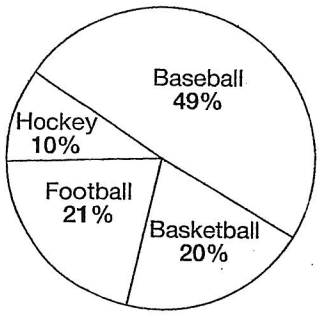
Practice: Word Problems

Circle Graphs

SPORTS For Exercises 1–3, use Graph A. For Exercises 4–6, use Graph B.

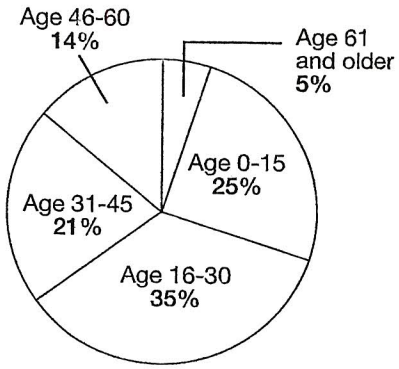
Graph A

Favorite Sports of Mr. Franco's Class



Graph B

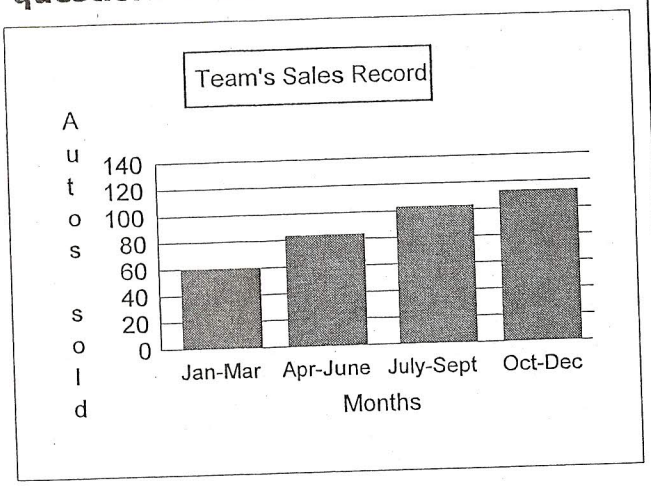
Attendance at the Baseball Game



1. Kwan surveyed Mr. Franco's class to find out the favorite sports of the class. Which sport was the favorite of the largest percent of students in the class? Which sport was the favorite of the smallest percent of students?	**2.** Which sports were the favorite of about the same number of students?
3. Which sport is the favorite of half as many students as basketball?	**4.** Mr. Jackson kept track of attendance at the baseball game for an advertising agency. The agency wants to target its advertising to the age group that has the highest percent in attendance. To which group should the agency target ads?
5. Which two age groups have about the same percent of people?	**6.** Mr. Jackson's daughter is in the age group with the second highest percent. In which age group is Mr. Jackson's daughter?

Lesson 2–3

Use the bar graph below to answer questions 1 and 2.



(6.18a)

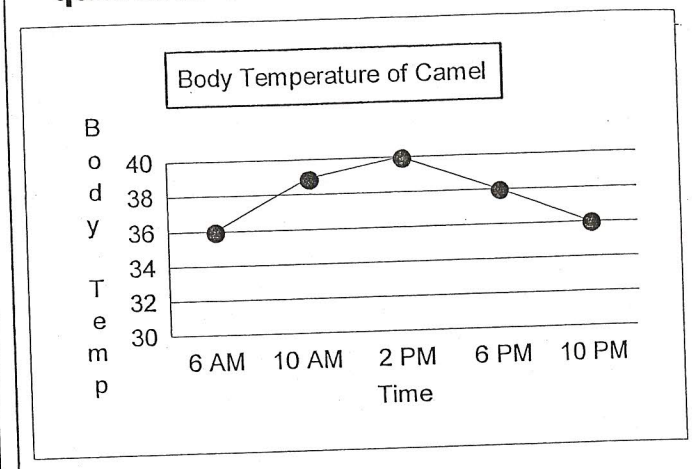
1. During which months were the most autos sold?

A Oct-Dec
B Jan-March
C July-Sept
D April-June

2. About what is the difference in sales between the highest and lowest months?

A 30 cars
B 40 cars
C 50 cars
D 60 cars

Use the line graph below to answer questions 3 and 4.



3. How many hours are between the times?

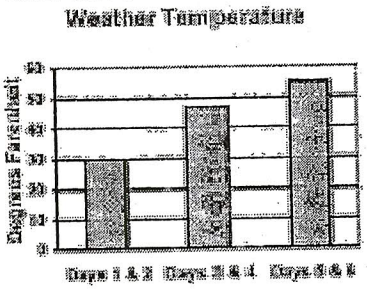
A 3 hours
B 4 hours
C 5 hours
D 6 hours

4. What is the lowest temperature represented on the graph?

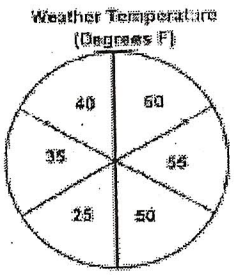
A 36°
B 38°
C 39°
D 40°

5. A meteorologist kept track of the recent highs for 6 days in January. During this week he recorded the following temperatures: Monday 25°F, Tuesday 35°F, Wednesday 40°F, Thursday 55°F, Friday 50°F and Saturday 60°F. Which of the following is the most appropriate way to show this information?

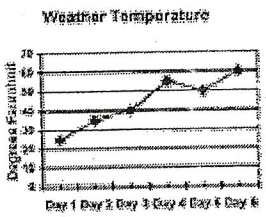
A



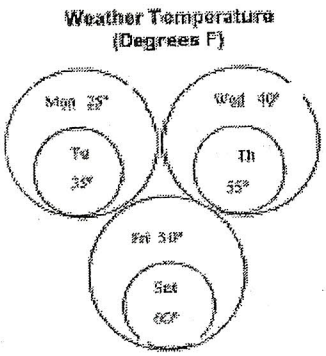
B



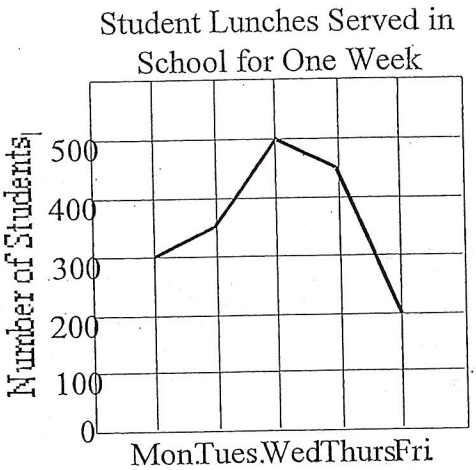
C



D



Use this graph to answer the next question.



5. How many students were served on Tuesday?

A 300 students
B 310 students
C 350 students
D 395 students

6. About how many fewer students had lunch on Monday than on Thursday?

A 100 students
B 150 students
C 200 students
D 300 students

7. What type of graph should you use if you wanted to display the number of books a fifth grade class read over a 9-week period?

A a line graph
B a circle graph
C a box and whisker plot
D a phonograph

8. What type of graph should you use when you want to display data that shows parts of a whole?

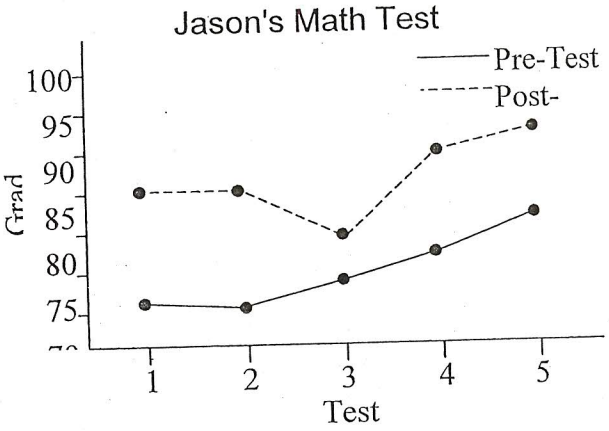
A line graph
B circle graph
C bar graph
D pictograph

9. What type of graph is used to show how something changes over time, like the height of a child from birth to twelve years?

A line graph
B circle graph
C bar graph
D pictograph

10. This graph shows Jason's math scores for his first five math tests.

Which statement is false?



A Jason improved from his pre-test score to his post-test score on every test.

B Jason did not improve on Test #3 from his pre-test to his post-test.

C Jason showed the least amount of improvement from pre-test to post-test scores on Test #3.

D Jason's highest pre-test and post-test score was on Test #5.

Use the stem-and-leaf plot below to answer questions 22 and 23.

Stem	Leaves
7	0 2 4 4 5
8	0 0 3 5 5 5 6
9	1 2 3 4 5 5 7

Key: 6| 0 means 60

(6.18b)

11. What is the highest number shown?

A 70
B 90
C 91
D 97

12. What is the mode for the data in the stem–and–leaf plot?

A 55
B 74
C 85
D 95

13. The ages of seven students enrolled in a senior math course at a local university are given below. Which is the correct stem-and-leaf plot for this data?

25, 43, 38, 21, 20, 38, 48

A

Stem	Leaf
2	1, 5
3	8
4	3, 8

B

Stem	Leaf
2	0
2	1
2	5
3	8
3	8
4	3
4	8

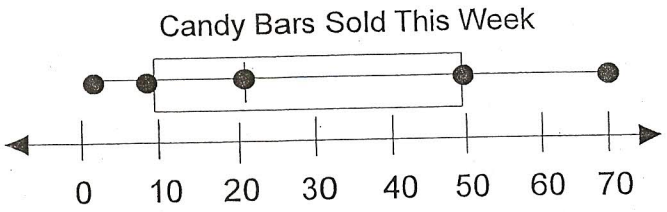
C

Stem	Leaf
2	0, 1, 5
3	8, 8
4	3, 8

D

Stem	Leaf
2	0, 1, 5
3	8
4	3, 8

Use the graph below to answer questions 28 to 30. This shows the number of candy bars sold by the school band in 1 week.



(6.18c)

14. What type of graph is displayed?

A line plot
B scatterplot
C stem-leaf
D box-whisker

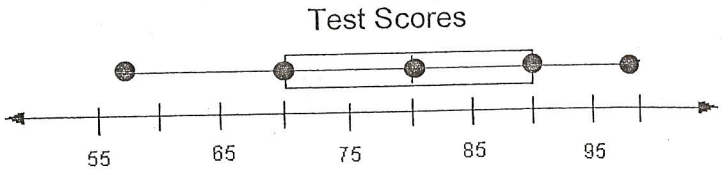
15. About what was the median number of bars sold in a week?

A 10
B 12
C 21
D 41

16. What was the highest number of bars sold?

A 21
B 42
C 62
D 70

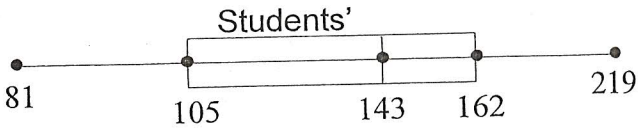
Use this graph for question 31.



17. What is the median test score?

A 57
B 80
C 90
D 98

The box-and-whisker plot below summarizes the weight of 19 students in pounds.



18. Which of the following is true?

A The average weight of the students is 162 pounds.

B The majority of the students weigh less than 105 pounds.

C The median weight of the students is 143 pounds.

D The heaviest student weighs 162 pounds.

