Name _____ 5.16

7.2

USE WHAT YOU KNOW

Range, Mode, Median, and Mean

Find the range, mode, median, and mean.

1. 32, 37, 32, 32, 32

2. $75, $38, $65, $38, $84

3. 19, 22, 23, 24, 22

4. 55, 59, 59, 60, 57

5. 150, 150, 162

6. $200, $300, $255, $255, $240

Mixed Applications

7. Team A scored 16 points, 12 points, and 17 points in three games. Find the mean score.

8. Sheila scored 90%, 92%, 85%, and 93% on four tests. After the fifth test, the mode of her scores was 92%. What was her score on the fifth test?

9. Students have to take a ferry to visit the zoo. There are 200 students. If one ferry can hold 25, how many ferries are needed?

10. The cost of 2 apples is $1. How much did Tom spend, if he bought 10 apples?

SOCIAL STUDIES CONNECTION

11. In 1810, the population of the United States was about 7 million people. In 1830, the population was about 13 million people. How can you use an average to predict the population in 1820? What is your prediction?

Use with text pages 212–213.

5.16

Tests for Higher Standards in Mathematics
Virginia Student Checkpoint Test

Grade 5
SOL 5.19

Marcus made the following grades on Math Tests this nine weeks: 90, 85, 80, 100, 75, 80, 90, 80.

1. **What is Marcus's mean test grade?**

A 25
B 80
C 82.5
D 85

2. **What is the mode of the test grades?**

A 25
B 80
C 82.5
D 85

3. **What is the range for this set of test scores?**

A 25
B 75
C 80
D 100

4. **What is the median for this set of numbers?**

A 75
B 80
C 82.5
D 85

Use the data below to answer questions 5-8.

Average Daily Temperature	
Monday	58
Tuesday	64
Wednesday	70
Thursday	70
Friday	70
Saturday	64
Sunday	59

5. **What is the mean temperature?**

A 58
B 64
C 65
D 70

6. **What is the mode of the temperatures?**

A 58
B 64
C 65
D 70

7. **What is the range of the temperatures?**

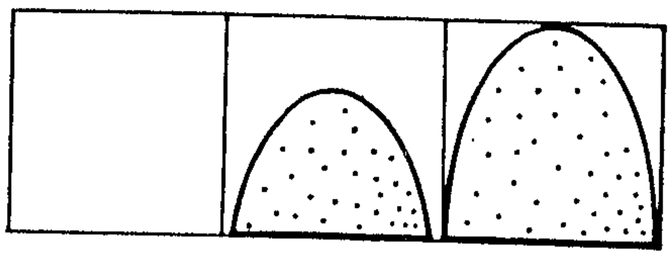
A 6
B 12
C 64
D 70

8. **What is the median temperature?**

A 58
B 64
C 65
D 70

5.16

How Long Is a Name?



Grade Level

TOOLS

1" squares
Pencil
Paper
Glue

Why

To introduce the statistical concepts of mean, median, and mode, and to provide practice in making a bar graph

How

- ☐ Make a list of the names of your family and some relatives or friends.
- ☐ Write the letters of each name on the 1" squares, using one square for each letter.

- ☐ Write the number of letters in each name, and the person's initials, on another square.

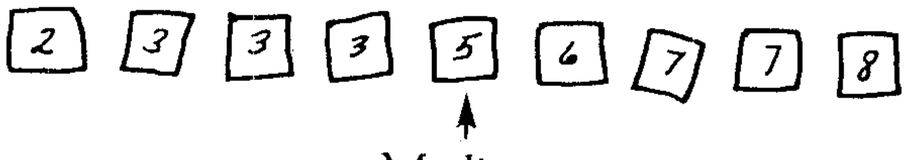
- ☐ Line up the names from longest to shortest, as shown in the picture.

Mean

- ☐ Find the average that is called a **mean** of the lengths of the names. To do this, move letters from the longer names to fill in the shorter ones, until all the rows have the same number of letters. (It doesn't matter where the letters go, as long as the rows have the same number of letters, or as close as possible.)
- ☐ The **mean** in our example is a little less than five, because all the names evened out to be five letters long, except one.

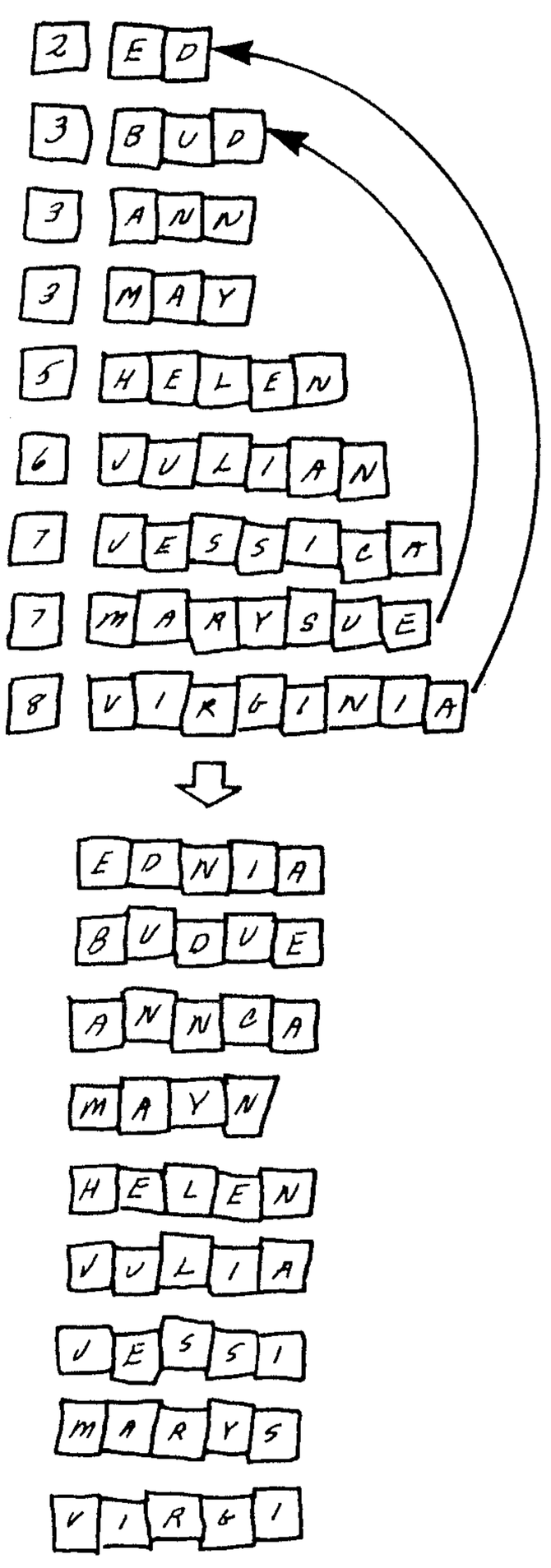
Median

- ☐ Now put out the squares with the numbers that tell how long each person's name is. Arrange them in numerical order:



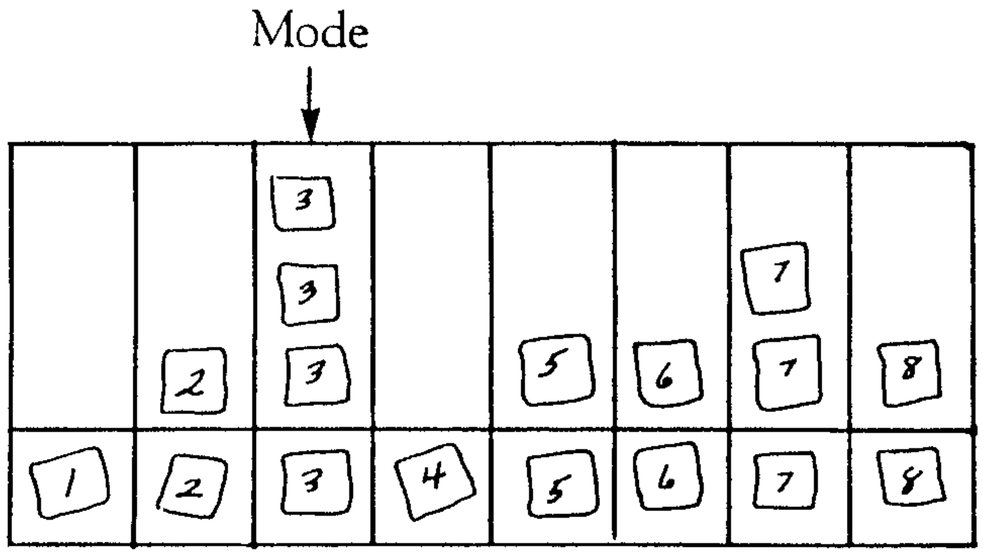
Median

- ☐ Find the center number in the row. This is the **median.** In our example, "5" is in the middle, so **five** is the median for this example. If there are two numbers in the middle, add them together and divide by two to compute the median.



Mode

□ Next, glue all of the numbers onto a bar graph like the one shown here. Look for the number which occurs most often. This is called the **mode.**



To summarize, our sample group has:

a **mean** name length of 4.8,

a **median** of 5, and

a **mode** of 3.

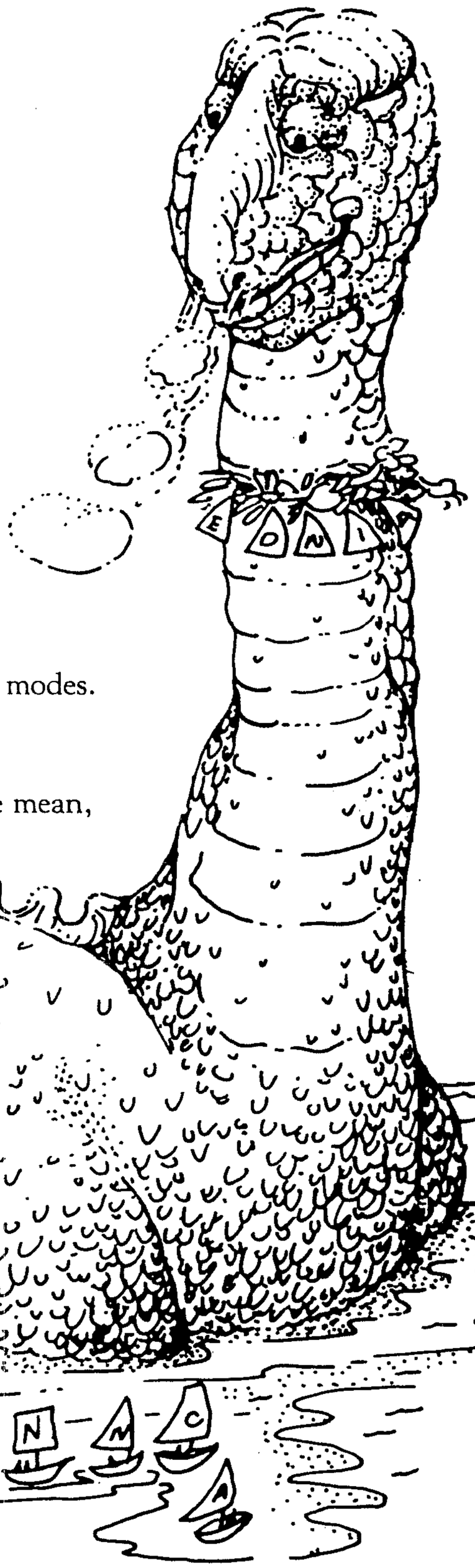
□ What happened with your group of names?

More Ideas

□ Talk about the difference between means, medians, and modes. Why don't they all come out the same?

□ Can all graphs have means and medians?

□ Can there be a graph that has the same number for the mean, median and mode?



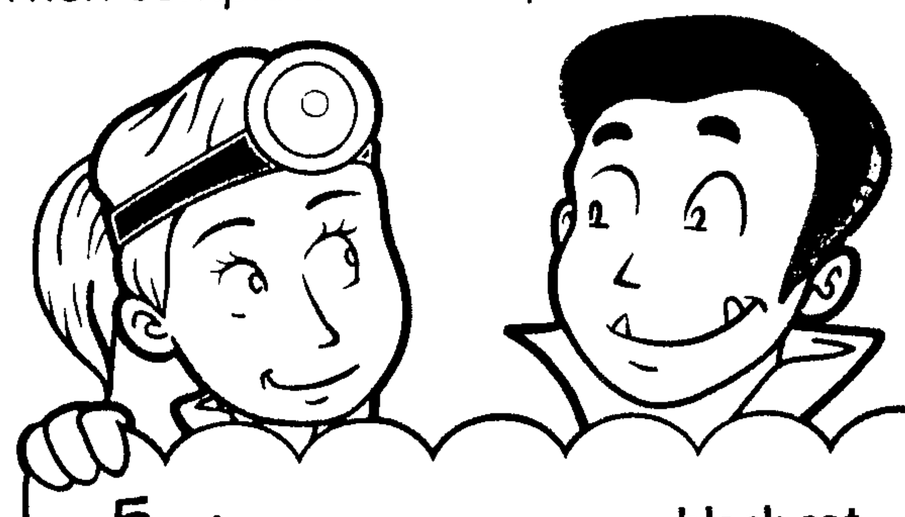
Name _____

Date _____

5.16

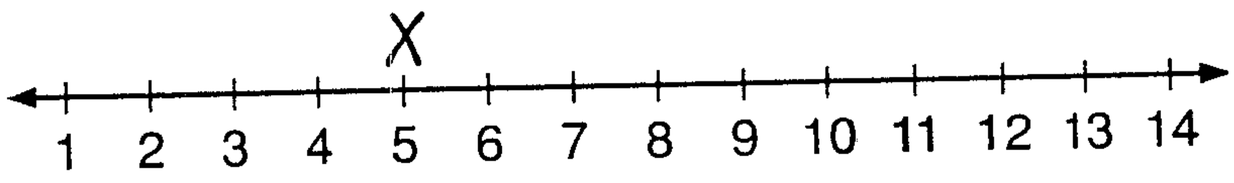
Costume Calculations

Fill in the blanks with the number of letters in each costume's name. Then complete the line plot and answer the questions.



5 clown	___ black cat
___ vampire	___ doctor
___ hippie	___ chef
___ cowboy	___ nurse
___ princess	___ rock star
___ ninja	___ skeleton
___ cheerleader	___ knight
___ pirate	___ ladybug
___ superhero	___ zombie
___ football player	___ fairy

Number of Letters in Each Costume's Name



1. What do you notice when you observe the line plot? _____

_____

2. What is the mean for the set of data? _____
3. What is the mode for the set of data? _____
4. What is the median for the set of data? _____
5. What is the range for the set of data? _____
6. Is there an outlier in the set of data? If so, what is it? _____
7. If you take the outlier out, does the mean change? If so, how? _____

_____

8. If you take the outlier out, does the mode change? Why or why not? _____

_____

9. If you take the outlier out, does the median change? Why or why not? _____

_____

10. If a new costume were added to the list, how many letters do you think it would have in its name?

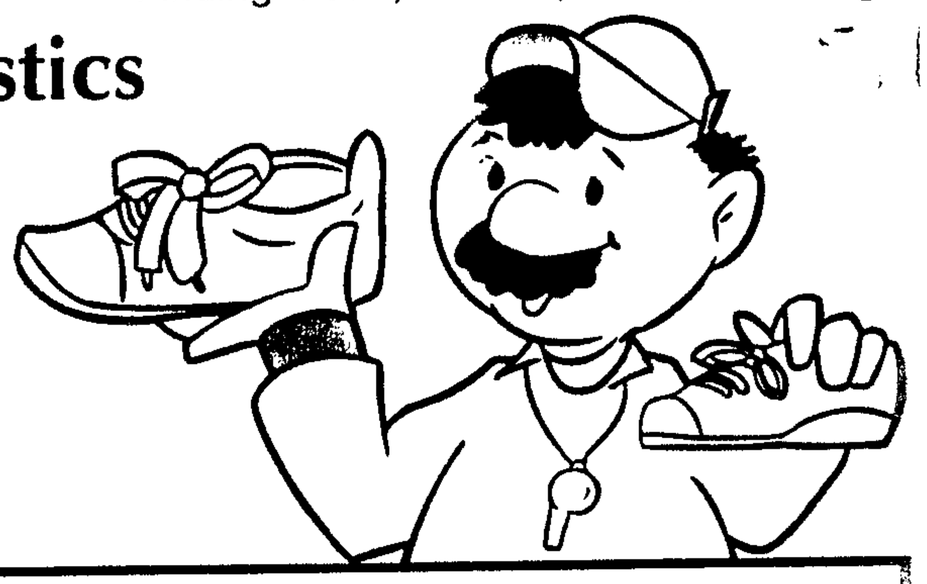
_____

5.16

Name _____ National Physical Fitness and Sports Month

Finding mean, median, mode, and range

Shoe-Size Statistics



Archie Goodfoot is buying new shoes for each athlete playing a sport at Fit Feet sports center. He needs to know the mean, median, mode, and range of each team's shoe sizes. Use a calculator to help him get the data. Round your answers to the nearest tenth.

Basketball

13 9 5 8.5
8.5 10.5 7.5
13 8 8.5 8.5
7 10

Mean = _____
Mode = _____
Median = _____
Range = _____

Track

5.5 6.5 4
3.5 4
6.5 8
6 6
6.5 3.5

Mean = _____ Median = _____
Mode = _____ Range = _____

Softball

8
4 3 6
4 9.5 7.5 10
7.5 4 4 4.5
7 9.5 3
4 6.5

Mean = _____
Mode = _____
Median = _____
Range = _____

Baseball

6 6.5 5 9.5 4.5 3.5
12.5 4.5 10 7.5 4.5
3 5.5 7.5 5
7.5

Mean = _____
Mode = _____
Median = _____
Range = _____

Tennis

4 7.5 6
9.5 8.5 10
5.5 13 4
10 10

Mean = _____
Mode = _____
Median = _____
Range = _____

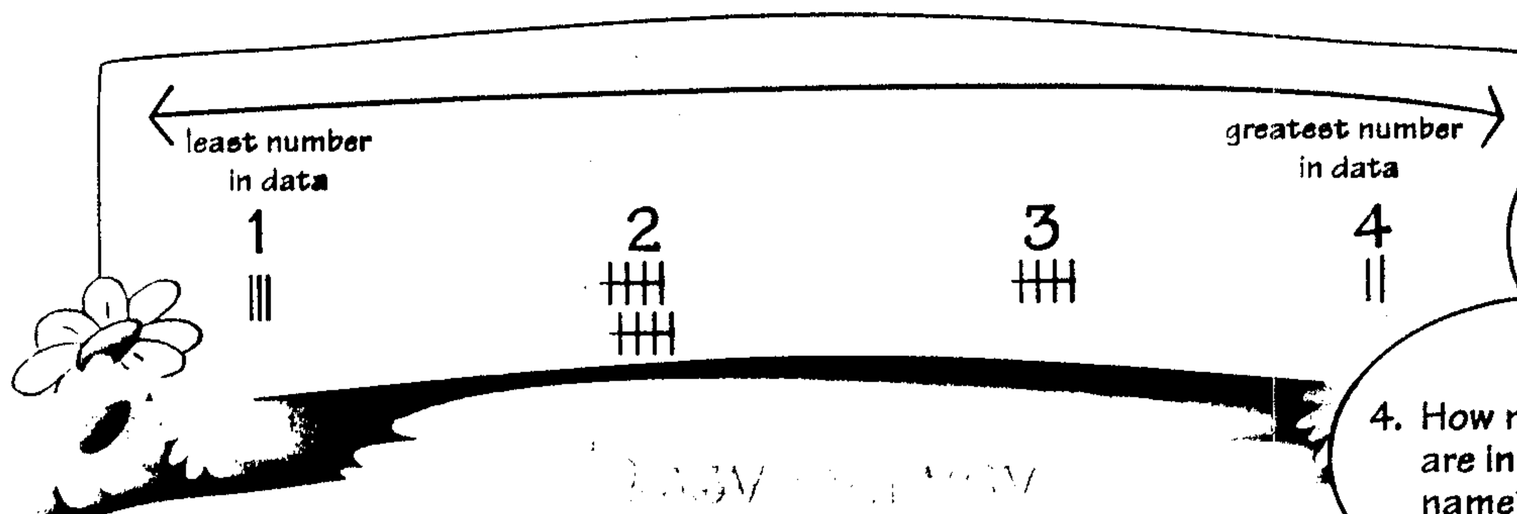
Golf

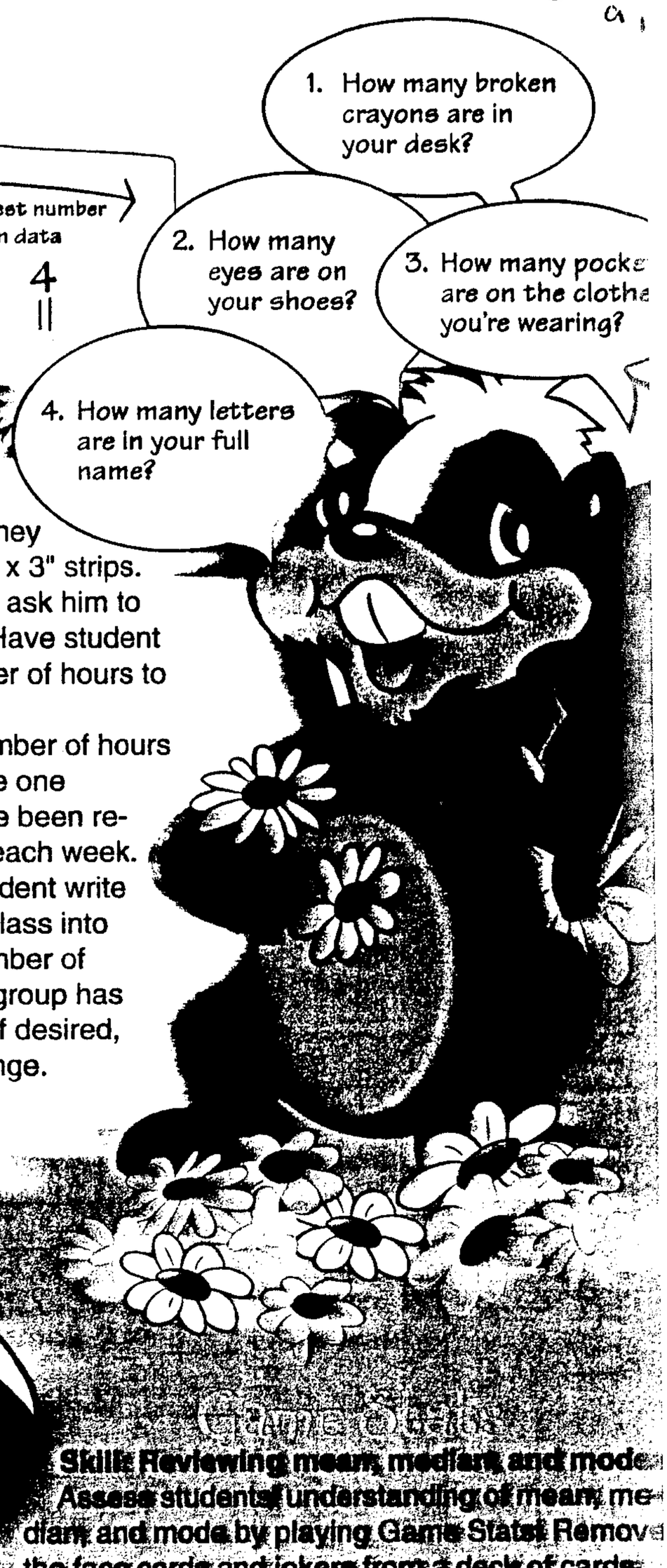
5.5 5
3 4
4.5 5
4 9 5

Mean = _____
Mode = _____
Median = _____
Range = _____

Bonus Box: Record the shoe size of six classmates and your own. Find the mean, median, mode, and range of the sizes. Is your shoe size above or below the mean?

Note to the teacher: Each student will need a calculator to complete this page.





Skills: Collecting data, finding the mean

See whether your class is up to the task of finding the mean of data they create themselves! Have each child cut a 3" x 5" index card into five 1" x 3" strips. Instruct him to number four strips from 1 to 4 and set them aside. Then ask him to label the fifth strip with the number of hours he watches TV each day. Have student volunteers collect the television strips and order them from least number of hours to greatest.

Next, draw on the board a number line that begins with the least number of hours in the data and ends with the greatest number (see the example). Have one volunteer make tally marks under each number until all responses have been recorded. Then, as a class, find the mean number of TV hours watched each week. Afterward, write on the board the four questions shown. Have each student write his answers on the numbered strips set aside earlier. Then divide the class into four groups and assign each group a different question. Have one member of each group collect the responses for his group's question. Once each group has its data, direct its members to find the mean and report it to the class. If desired, have each group also find and report the data's median, mode, and range.

Skills: Reviewing mean, median and mode

Assess students' understanding of mean, median and mode by playing Game Status! Remove the face cards and jokers from a deck of cards. Announce that aces will equal one point and all other cards will equal their face values. Divide the class into two teams. Have Player 1 on Team A draw seven cards and write their values on the board. Have both teams find the mean, median, and mode of the seven numbers. After a set amount of time, collect the paper of the first player on each team. Invite Player 1 on Team B to write her findings on the board. If they are correct, award Team B points equal to the highest value found (see the example). If incorrect, award Team B no points. Then give Team A a chance to score by having its Player 1 write her answers on the board. Return the papers. Continue playing for a set amount of time or until every player has been to the board.

5.16c

Name _____ Finding mean, median, mode, and range

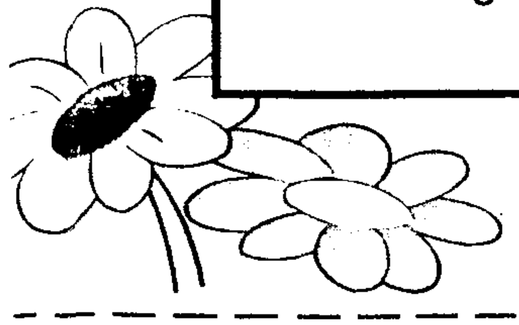
Where's Blossom?

Blossom is a curious skunk. He has wandered into the meadow to sniff flowers. To find the path to Blossom, follow these steps:

1. Look at the data in Box 1 and the two arrows pointing out of Box 1. Decide which of the two boxes the arrows point to contains correct information. Then color the correct box.
2. Look at the data in Box 2 and the two arrows pointing out of it. Decide which of the two boxes the arrows point to contains the correct information. Then color the correct box.
3. Continue in this manner until you have reached Blossom.

Start

① 48, 49, 50, 50, 51, 53, 54	Mode = 51	Range = 30	⑧ 51, 52, 55, 55, 55, 56, 61, 71	Mean = 99
Mean = 51	② 6, 7, 8, 10, 10, 11, 12	Mean = 57	Median = 100	⑦ 98, 99, 100, 100, 105
Median = 10	Mode = 9		Mean = 34	Mode = 37
③ 5, 7, 8, 9, 12, 12, 13	Median = 9	Mode = 103	Mean = 5	⑥ 31, 32, 34, 34, 35, 37, 37, 37, 44
Range = 9	④ 101, 102, 102, 103, 104, 105, 106, 109	Mean = 104	⑤ 1, 4, 5, 6, 6, 9	Range = 6



Note to the teacher: Allow students to use calculators to complete this page.

Name _____ 5.10

Finding mean, median, mode, and range

Perfect Picnic Weather?

Petunia is in charge of picking the date for this year's family picnic. To help her make a decision, use the weather data in the chart to answer the questions below. In questions 1–2 and 5, round your answers to the nearest whole number. In question 3, round your answer to the nearest tenth.

Week 1	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Average Temperature	79°F	82°F	89°F	96°F	85°F	85°F	87°F
Rainfall	0.5 in.	0 in.	0.1 in.	0 in.	0.4 in.	0.6 in.	1.0 in.
Average Wind Speed	5 mph	6 mph	2 mph	2 mph	8 mph	6 mph	15 mph

Week 2	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Average Temperature	95°F	96°F	95°F	92°F	83°F	84°F	78°F
Rainfall	0 in.	0 in.	0 in.	0 in.	1.2 in.	2.0 in.	0.7 in.
Average Wind Speed	12 mph	9 mph	2 mph	6 mph	11 mph	9 mph	20 mph

1. What is the mean temperature for week 1? _____ Week 2? _____ Both weeks? _____
2. What is the mean wind speed for week 1? _____ Week 2? _____ Both weeks? _____
3. What is the mean rainfall for week 1? _____ Week 2? _____ Both weeks?
4. What is the temperature range for week 1? _____ Week 2? _____
5. What is the range of rainfall for week 1? _____ Week 2? _____
6. What is the range in wind speed for week 1? _____ Week 2? _____
7. What is the temperature mode for week 1? _____ Week 2? _____
8. What is the median temperature for week 1? _____ Week 2? _____
9. Based on the data, do you think Petunia will plan the picnic for week 1 or week 2? Why?

_____

_____

Bonus Box: Which type of data above is the most helpful to Petunia: mean, median, mode, or range? Why?

Note to the teacher: Allow students to use calculators to complete this page.

Name _____

5.16c

Finding mean, median, and mode

Petunia's Tricky Teacher

Petunia's teacher loves pulling pranks on her students! Today, she added a riddle to their math lesson. To solve the riddle, find the median, mode, and mean of each set of data to the nearest whole number. Circle the answers. Then write the letter of each circled answer in order in the blanks below.

Data	Median			Mode			Mean		
① 34, 34, 35, 37, 38, 39, 40	35	37	39	34	35	37	35	36	37
	I	A	S	R	A	N	D	T	A
② 61, 72, 74, 79, 79, 79, 82	72	75	79	72	74	79	72	75	82
	F	T	N	I	O	G	B	E	S
③ 101, 103, 104, 105, 107, 107, 108, 113, 120	104	107	108	104	105	107	107	108	109
	H	W	R	E	V	I	N	T	D
④ 4, 5, 6, 7, 8, 8, 8, 9, 11, 12, 13, 14, 14	6	8	10	8	13	14	8	9	10
	I	H	E	A	D	E	N	M	T
⑤ 246, 247, 248, 248, 249, 250, 251, 252, 259, 268, 271	250	251	252	247	248	251	251	252	254
	O	E	A	C	D	E	P	A	E

What do you get when a math teacher combines a powerful car engine and an old-fashioned stove?

__ __ __ __ __ __ __ __ __ __ __ "__ __ __ __ - R" !

Bonus Box: Combine the data for problems 1–3 above. Then find the mean, median, and mode of this new set of data.

Note to the teacher: If desired, allow students to use calculators to complete this page.