

Title: Passport to the Americas

Brief Overview:

In this unit, students will become data explorers. Utilizing data observations, collections, experimentation, representation, and analysis skills, they will navigate through North, Central and South America.

NCTM Content Standard/National Science Education Standard:

- Design investigations to address a question and consider how data-collection methods affect the nature of the data set;
- Collect data using observations, surveys, and experiments;
- Represent data using tables and graphs such as line plots, bar graphs, and line graphs;
- Recognize the differences in representing categorical and numerical data.

Grade/Level:

3rd – 5th

Duration/Length:

3 to 5 days/3 lessons-75 minutes per lesson

Student Outcomes:

Students will:

- construct a line plot.
- collect, organize, and display data in a line graph with scale increments of one or greater than one.
- use data displays to interpret the results, draw conclusions, make predictions, and solve problems.
- construct and use stem-and-leaf plots to draw conclusions and make predictions.

Materials and Resources:

- Flag banners
- Markers
- Calculator
- Centimeter Grid Paper
- Sticky Notes
- Everybody Cooks Rice by Norah Dooley
- Zack the Alligator by Shirley Mozelle and James Watts

- Growing Critters
- Rulers
- Water
- Bowls
- Foam sheets
- Scissors
- Craft eyes
- Magnet strip
- Sharpie black and assorted colors
- Glue stick
- Sample of local temperature charts and graphs
- Temperature packets for each country
- Chart paper
- Student Resources 1- 17
- Teacher Resources 1- 4

Development/Procedures:

Day 1

- Pre-assessment

Collect all surveys and then distribute Student Resource 2A-H. Students will be able to achieve 79% accuracy on a data analysis pre-assessment. See Teacher Resource 1A-H for the answer key.
- Engagement
 - Students will share information about their cultures and customs based on a take home survey distributed the day before as a homework assignment (Student Resource 1) .
 - Students will share their families’ countries of origin.
 - Read Everybody Cooks Rice to the students and have them identify the various countries of origin. Distribute Student Resource 3 to each student.
 - Students will work cooperatively and complete the graphic organizer on the countries in the book Everybody Cooks Rice. See Teacher Resource 2 for the answer key.
- Exploration
 - Distribute Student Resource 4 and Student Resource 5.
 - Cooperative groups will choose a country located in one of the Americas.
 - Students will design and construct a flag banner for their chosen country.
 - Students will share their flag banners.
- Explanation

- Distribute Student Resource 6.
 - Students will be introduced to components of a line plot using a rubric.
 - Model the steps in constructing a line plot using the number of letters in a country's name mentioned in the story.
 - Distribute Student Resource 7.
 - Model ways to determine the value of the country's name by using the names of the countries in the book, Everybody Cooks Rice.
- Application
 - Students will choose a country from North America, Central America or South America and construct line plots using the number of letters in the country's name.
 - Students will find the value of their countries' names.
- Differentiation
 - Students will construct a line plot using additional country names and values (Reteach).
 - Students will find the range, median, and mean of all class country values (Enrichment).
 - Distribute Student Resource 8 and Student Resource 9.
 - Students will practice making line plots at home, and finding the mean, median, mode and range of the data. See Teacher Resource 4 for an answer key.
- Assessment
 - Students will be observed for participation, cooperation, concept attainment, and effort.

Day 2

- Engagement
 - Students will predict and discuss local temperature over the past twelve months.
- Exploration
 - Distribute Student Resource 10.
 - Students will review the components of the line graph.
 - Students will create a line graph of monthly local temperatures over a twelve month duration.
- Explanation
 - Students will compare and contrast the temperature data based on the chart information.
 - Students will hypothesize the direction of the charted line over time.
- Application

- Students will plot the data for their selected country.
- Students will interpret, analyze and draw conclusions about data on their local and chosen country line graphs.
- Differentiation
 - Students will practice by creating a graph using data from another country. (Reteach)
 - Students will be given data from an unknown country. They will use the data to determine which country it may be (Enrichment).
- Assessment
 - Students will self evaluate using the rubric.
 - Students will be observed for participation, cooperation, concept attainment, and effort.
 - Distribute Student Resource 11 and Student 12 to assess student understanding. See answer key on Teacher Resource .

Day 3

- Engagement
 - Students will listen to the story, Zack's Alligator, to observe what happens to an alligator over time.
 - Students will practice line graphing skills from Day 2 by measuring and charting the growth of Growing Critters. (Growth will be charted daily over a two week period.)
 - Students will discuss how animals change over time.
- Exploration
 - Distribute Student Resource 14 and Student Resource 15.
 - Students will work cooperatively to time how long it takes to construct a "Critter Magnet."
 - Students will display the data on a class T-Chart.
- Explanation
 - Students will construct a class stem and leaf plot using the "Critter Magnets" data.
- Application
 - Students will discuss strategies to decrease the time needed to build "Critter Magnets". Students will test the strategies by assembly line productions.

- Students will work cooperative to time themselves as they construct “Critter Magnets” using an assembly line.
- Students will display data on class T-Chart.
- Students will create their own stem and leaf plots using collected class data.
- Differentiation
 - Students will practice stem and leaf plots using additional data (Reteach).
 - Students will create a back to back stem and leaf plot using class data and data from another class (Student Resource 13 Enrichment).
- Summative Assessment:
 - Students will be observed for participation, cooperation, concept attainment, and effort.
 - Distribute game- Student Resource 16 and Student Resource 17, Post Assessment. Students will be able to achieve 79% accuracy on data analysis post assessment.

Authors:

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Passports to the Americas *Cultural Survey*

Family Name: _____

1. What country represents your culture?

2. What is the predominant language that you speak in your home?

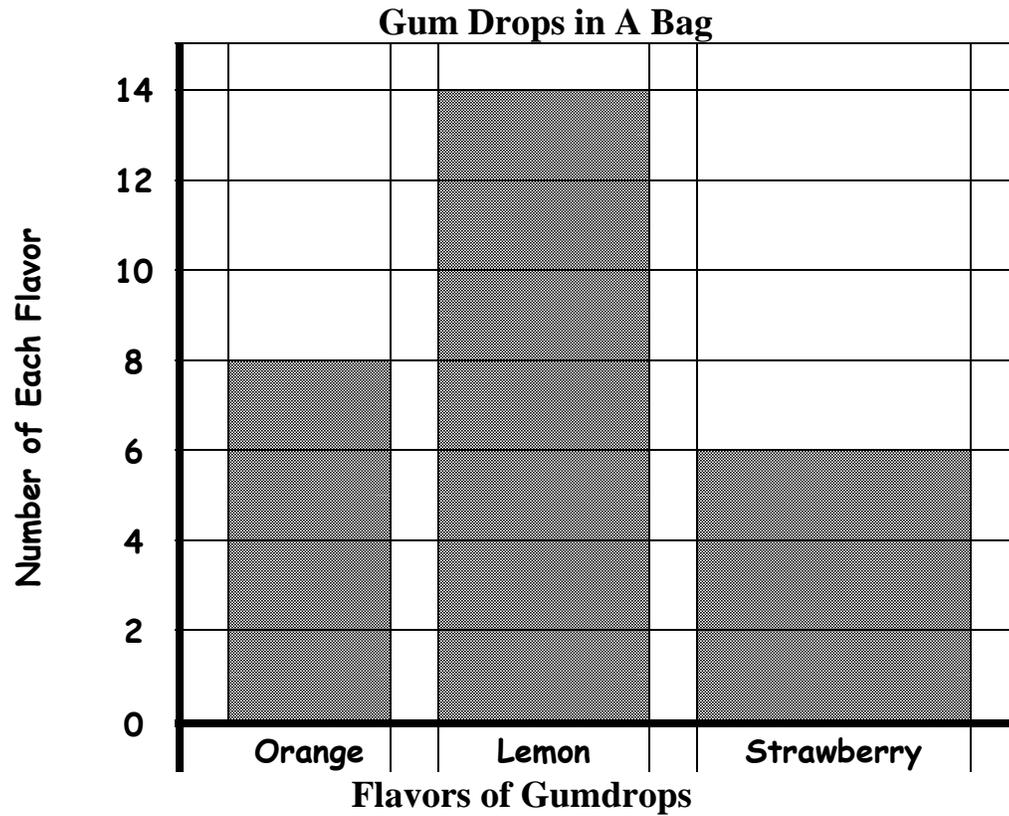
3. What are some customs and traditions that you practice?

4. Name and describe some cultural holidays that you celebrate.



Passport to the Americas Pre-Assessment

1. The bar graph below shows the number of each flavor of gumdrops in a bag.



1. Based on the graph, how many lemon gumdrops were in the bag?

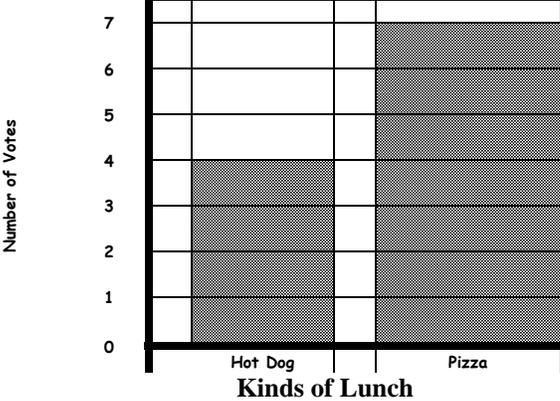
- A. 7
- B. 0
- C. 14
- D. 28

2. Ms. Brazil’s class voted for their favorite lunch. Which graph correctly shows the data in the table?

Student	Favorite Lunch
Sydney	Pizza
Edward	Hot Dog
Devin	Hamburger
Jahmal	Pizza
Pamela	Hot Dog
Elizabeth	Hamburger
Sharlene	Hot Dog
Trevon	Pizza
Michael	Pizza
Hannah	Hot Dog
Precious	Pizza
Pixxa	Hamburger
Rafeal	Pizza
Sara	Pizza

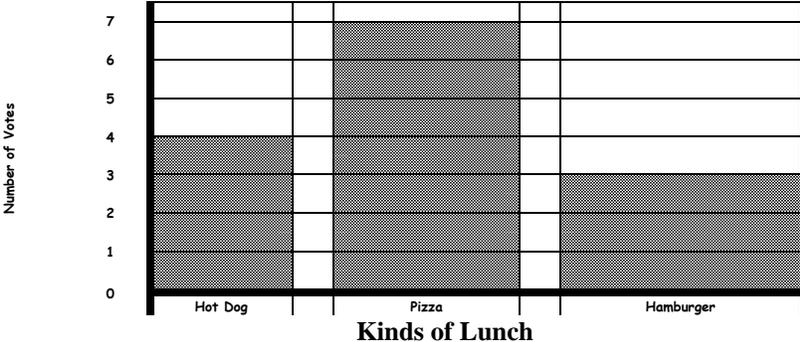
A.

Students in Ms. Brazil’s Class Favorite Lunch

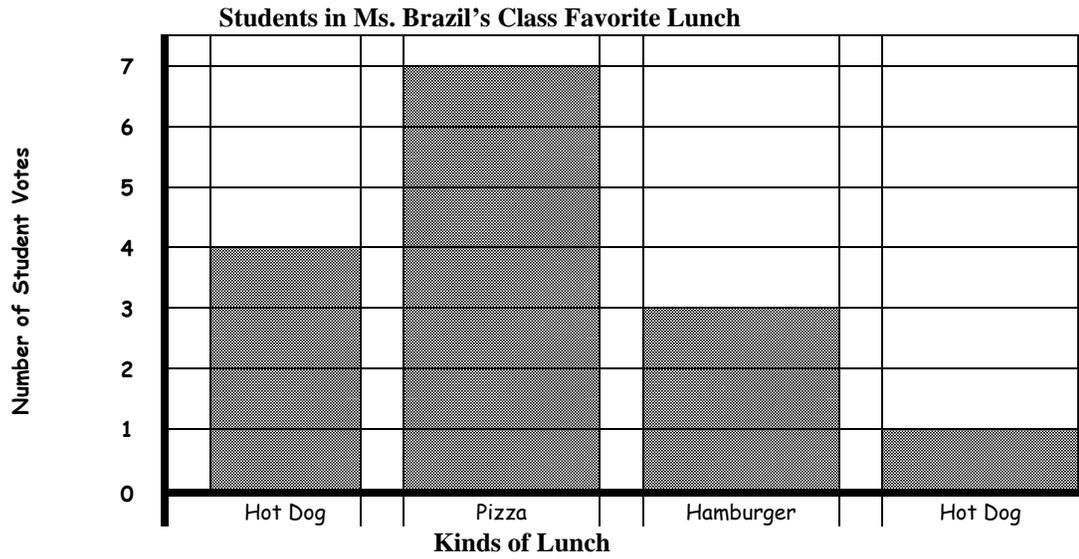


B.

Students in Ms. Brazil’s Class Favorite Lunch



C.

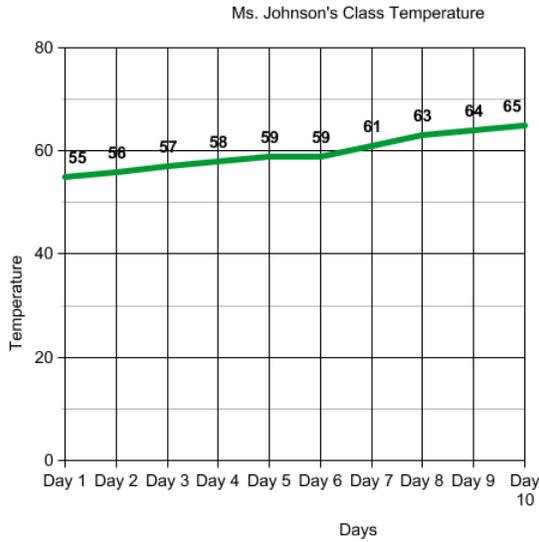


2. Mr. Johnson's class measured and recorded the temperature every day for two weeks. The table below shows the results.

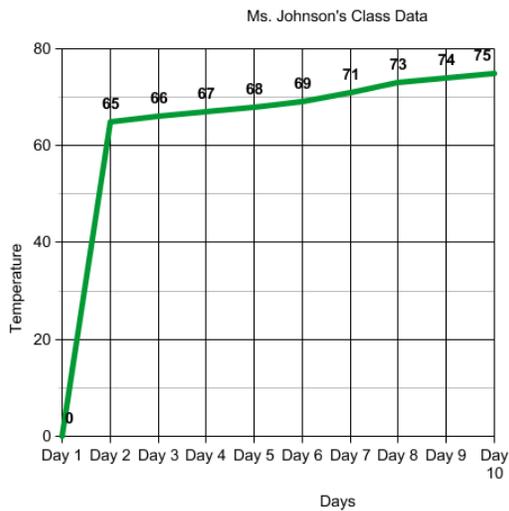
Days	Temperature
Day 1	55 °F
Day 2	56 °F
Day 3	57 °F
Day 4	58 °F
Day 5	59 °F
Day 6	59 °F
Day 7	61 °F
Day 8	63 °F
Day 9	64 °F
Day 10	65 °F

Which graph best represents the correct data from the table?

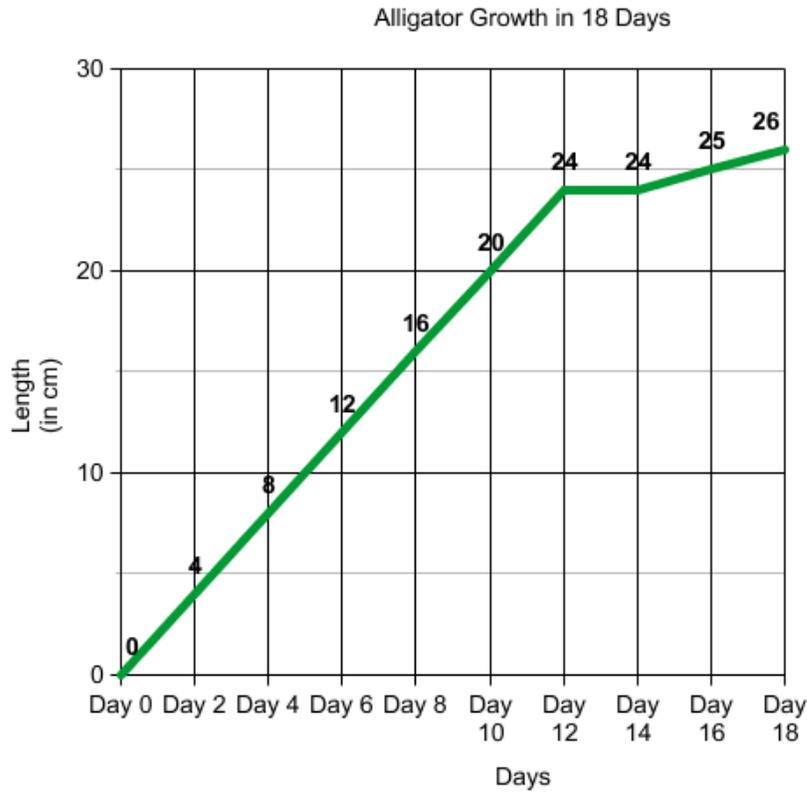
A.



B

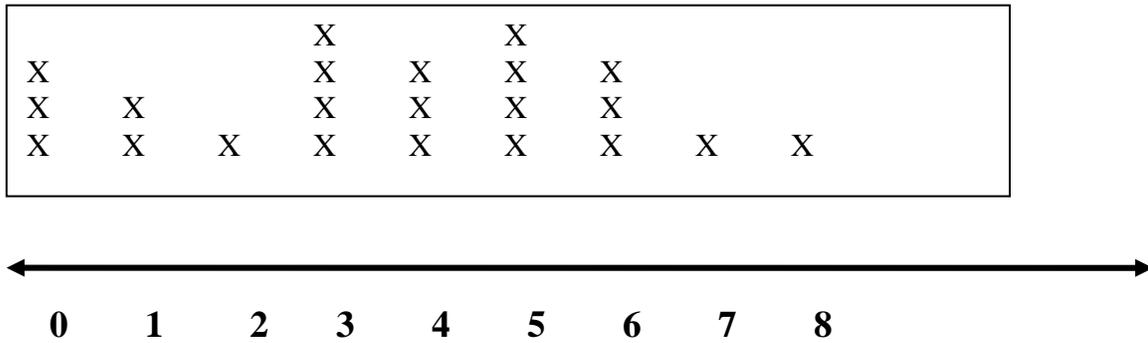


4. The line graph shows how an alligator's length changed as it grew. Which of the following is closest to the alligator's length on Day 9 ?



- A. 16
- B. 17
- C. 18
- D. 19

Use the line plot below to answer questions 5 - 9.



5. How many students read less than 5 books?

- A. 4
- B. 13
- C. 22
- D. 17

6. How many more students read more than 5 books?

- A. 0
- B. 9
- C. 4
- D. 5

7. What is median of the data set?

- A. 3
- B. 4
- C. 5
- D. 6

8. What is the mean for the data set?

- A. 3.6
- B. 3
- C. 5
- D. 4

9. How would you find the range for the data set?

- A. Add all the values and divide by 22.
- B. Look for the smallest value.
- C. Look for the value that is far from the rest of the data.
- D. Find the difference between the smallest and largest values.

10. Students in the Americans County Multicultural Club visited El Salvador during the summer. The data below shows the number of students who visited El Salvador during 1994 - 2009.

14	35	22	28
25	30	43	16
39	41	24	30

Which of the following stem-and-leaf plot shows the same information?

A.

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

B.

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

C.

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

D.

Stem	Leaf
1	2
2	4
3	4
4	2

Name: _____

Date: _____

Work with your group to complete the graphic organizer using information from the book *Everybody Cooks Rice* by Norah Dooley.

Family Name	Name of Country	Food Cooked	Customs



“Design A Flag” Criteria and Research Card
Criteria for Flag Design

	4	3	2	1
Quality of Construction	No spelling or grammatical errors. Flag includes name of country. Colors used represent the country. At least one picture included.	Some spelling or grammatical errors. Flag includes name of country. Some colors used represent the country. At least one picture included.	Few spelling or grammatical errors. Flag includes name of country. Colors used do not represent the country. At least one picture.	Flag includes name of country. Colors used do not represent the country. No pictures.
Oral Presentation	Student demonstrates full knowledge of country by answering questions	Student demonstrates some knowledge of country by answering questions	Student demonstrates a little knowledge of country by answering questions	Student demonstrates no knowledge of country
Creativity	Flag is creative and neatly arranged with a border.	Flag is neatly arranged with a border.	Flag is neatly arranged.	Flag is neither creative nor neatly arranged.

Design a Banner for Your Country

Pretend that your classmates have been invited to visit your chosen country. You plan to take a flag banner to show that you have learned interesting facts about the country. Use the space below to design a flag banner for your country. Be sure to use the criteria and information from the “research card” to help you design your banner.

Now work cooperatively to construct your flag banner!

Research Card Example:

Bolovia



- Located in central [South America](#)
- The population is estimated at 9 million people
- [It is multiethnic](#), and includes [Amerindians](#), [Europeans](#), [Asians](#) and [Africans](#).
- The main language spoken is [Spanish](#), although the Aymara and Quechua languages are also spoken.



Passport to the Americas Country Fact Sheet

Name of State/Country	Location	Facts	Average Yearly Temperature
Virginia, USA	North America	The state is called the “Mother of Presidents” because eight U.S. presidents were born there.	28.7 C
Mexico	North America	Highly developed cultures, including those of the Olmecs, Mayas, Toltecs, and Aztecs, existed long before the Spanish conquest.	8-12 C
Alaska	North America	Alaska covers 656,425 square miles, making it the largest of the 50 states and more than twice the size of Texas	6.7 C
El Salvador	Central America	It is the smallest of the Central American countries. Most of the country is on a fertile volcanic plateau about 2,000 ft (607 m) high.	22 C
Honduras	Central America	Honduras and other Central American provinces gained independence from Spain in 1821. The country was then briefly annexed to the Mexican Empire.	29 C
Costa Rica	Central America	Costa Rica was inhabited by an estimated 400,000 Indians when Columbus explored it in 1502.	27 C
Panama	Central America	In 1524, King Charles V of Spain ordered a survey of a waterway across the isthmus in consideration of building a canal. In 1878, the Colombian government gave a construction concession to the French Canal Company.	19 C
Belize	Central America	The Mayan civilization spread into the area of Belize between 1500 B.C. and A.D. 300 and flourished until about 1200.	25 C
Columbia	South America	Most of the plateau is underlaid by deposits, more than 10,000 ft thick in places, of lava.	11-24 C

Student Resource 5B

Venezuela	South America	Venezuela, a third larger than Texas, occupies most of the northern coast of South America on the Caribbean Sea	27 C
Argentina	South America	Argentina's population is overwhelmingly Catholic, but it also has the largest Jewish population in Latin America, estimated between 280,000 to 300,000 strong, and is home to one of the largest Islamic mosques in Latin America.	23
Bolivia	South America	Famous since Spanish colonial days for its mineral wealth, modern Bolivia was once a part of the ancient Inca empire.	8 - 26 C
Peru	South America	Peru was once part of the great Incan Empire and later the major vice-royalty of Spanish South America. It was conquered in 1531–1533 by Francisco Pizarro.	15.4 C
Guyana	South America	Before the arrival of European settlers, the indigenous Warrau tribe controlled the territory of Guyana. In the early 17th cent. the Dutch established settlements about the Essequibo River, and England and France also founded colonies in the Guiana region.	30 C
Ecuador	South America	The Andes, dominating the country, cut across Ecuador in two ranges and reach their greatest altitude in the snowcapped volcanic peaks of Chimborazo (20,577 ft/6,272 m) and Cotopaxi (19,347 ft/5,897 m).	0 -18
Chile	South America	The northern Chilean desert contains great mineral wealth, principally copper. The southern coast is a labyrinth of fjords, inlets, canals, twisting peninsulas, and islands.	20 C

Passport to the Americas: How to Construct a Line Plot Rubric

	4	3	2	1
	<p>All of the following evident:</p> <ul style="list-style-type: none"> • accurate display of data on the line plot. • correct label for number line. • data displayed at equal intervals • title displayed <ul style="list-style-type: none"> • number line range is correct <ul style="list-style-type: none"> • student has at least 3 sentences describing clumps, clusters, concentrations, mode(s), outliers, or median. 	<p>Three of the following evident:</p> <ul style="list-style-type: none"> • accurate display of data on the line plot. • correct label for number line. • data displayed at equal intervals • title displayed <ul style="list-style-type: none"> • number line range is correct <ul style="list-style-type: none"> • student has at least 2 sentences describing clumps, clusters, concentrations, mode(s), outliers, or median. 	<p>Two of the following evident:</p> <ul style="list-style-type: none"> • accurate display of data on the line plot. • correct label for number line. • data displayed at equal intervals • title displayed <ul style="list-style-type: none"> • number line range is correct <ul style="list-style-type: none"> • student has at least 1 sentence describing clumps, clusters, concentrations, mode(s), outliers, or median. 	<p>Only one of the following evident:</p> <ul style="list-style-type: none"> • accurate display of data on the line plot. • correct label for number line. • data displayed at equal intervals • title displayed <ul style="list-style-type: none"> • number line range is correct • student has at least 1 sentence describing clumps, clusters, concentrations, mode(s), outliers, or median.
Student Evaluation				
Teacher Evaluation				



Country Names Line Plot

How many letters are in your country's name? Count the amount of letters in your country. _____ Save the data for our class line plot. We will construct a line plot using data about all of the countries.



How Much Is Your Country Worth?

Think about how much your country will be worth if each letter was worth 25¢. Write the letters in the space below. Calculate the value of your country. How much is your country worth?

Letter									
Value									

My Country's Total Value is:

Use the space below to explain how you determined the total value of your country.

Line Plot Homework Practice

The data below shows the number of letters in USA state names. Use the data to construct a line plot of the number of letters in the state names and then answer the following questions.

Be sure to show how you found the mode, median, mean and range.

Alabama	7	Nebraska	8
Connecticut	10	North Carolina	13
Delaware	8	North Dakota	11
Florida	7	Oklahoma	8
Georgia	7	Ohio	4
Hawaii	6	Texas	5
Iowa	4	Mexico	6
Kansas	6	Idaho	5
Louisiana	9	Minnesota	9
Maryland	8	Arkansas	8

Line Plot Questions:

What was the greatest amount of letters in any state?

What is the least amount of letters in any state?

What is the mode of the data?

What is the range of the data?

What is the median?

What is the mean?

Line Plot Homework Practice

(Title)

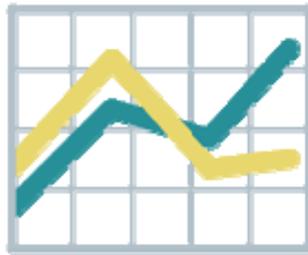


Passport to the Americas: Line Graph Rubric

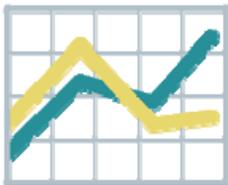
	4	3	2	1
	<p>All of the following evident:</p> <ul style="list-style-type: none"> • accurate display of data on the line graph. • correct labels for both x and y axes. • title included. • scale displayed at equal intervals. • key is accurate. 	<p>Three of the following evident:</p> <ul style="list-style-type: none"> • accurate display of data on the line graph. • correct labels for both x and y axes. • title included. • scale displayed at equal intervals. • key is accurate. 	<p>Two of the following evident:</p> <ul style="list-style-type: none"> • accurate display of data on the line graph. • some correct labels for both x and y axes. • title included. • scale displayed at equal intervals. • key contains minor inaccuracies. 	<p>Only one of the following evident:</p> <ul style="list-style-type: none"> • accurate display of data on the line graph. • some correct labels for both x and y axes. • title included. • scale displayed at equal intervals. • key contains minor inaccuracies
Student Evaluation				
Teacher Evaluation and COMMENTS				

Line Graph Homework Practice

Every graph tells a story. Look at the graph below. What story does it tell? Create a story about the line graph and write it below.



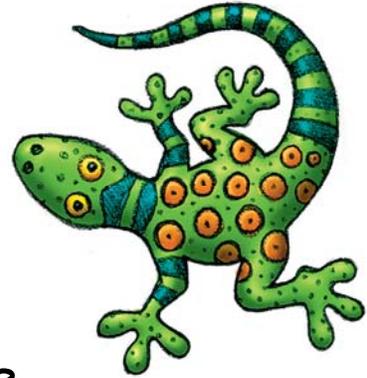
Now add numerical data to the line graph to support your creative story.



Stem-and-Leaf Plot Homework Practice

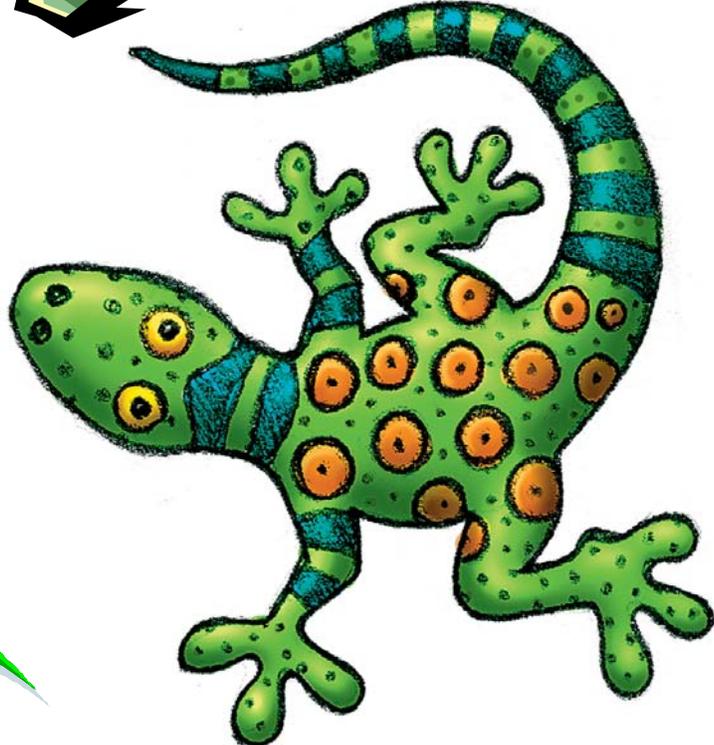
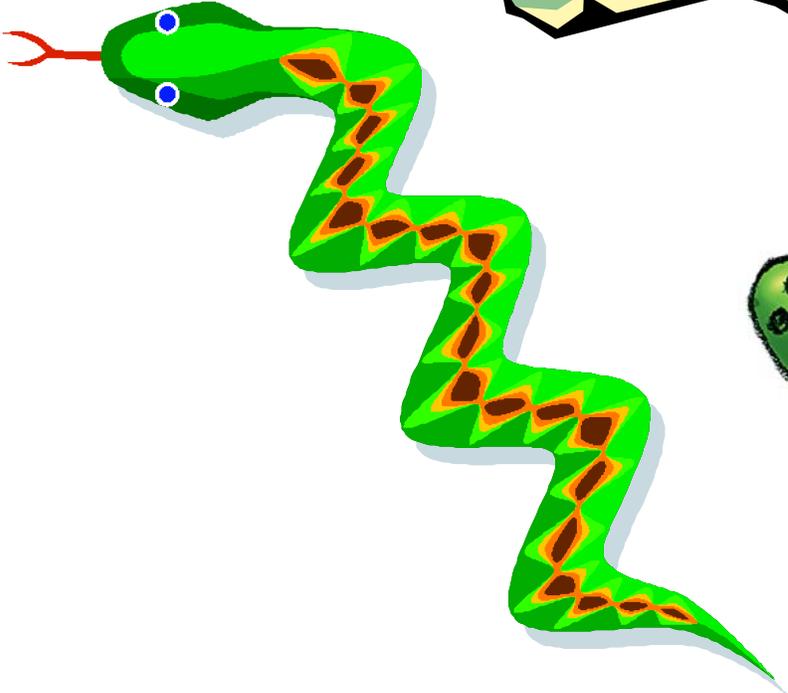
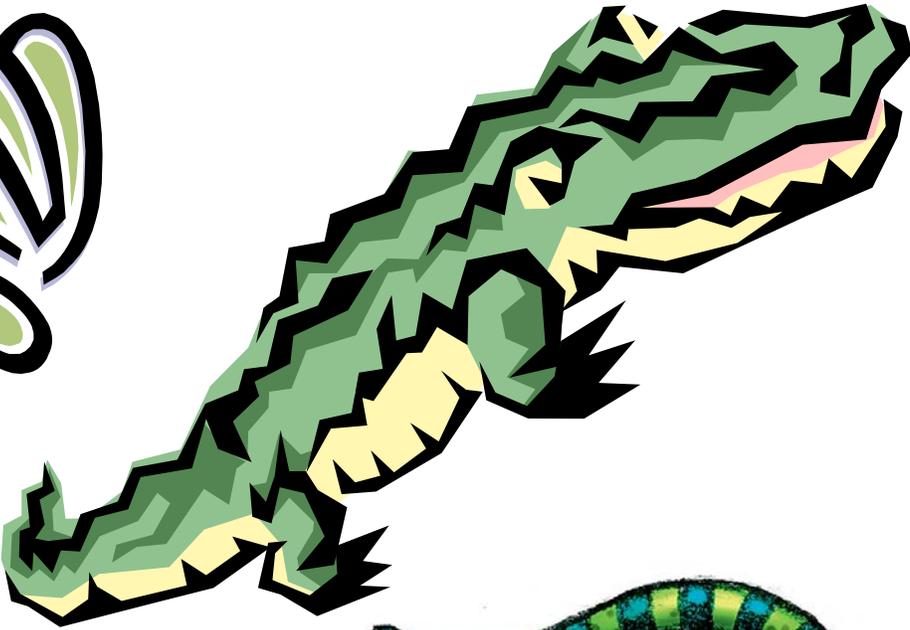
(Title)

Critter Magnet Directions



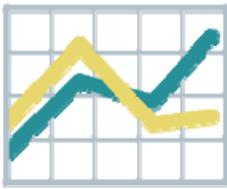
1. Choose a critter and cut the stencil for that shape.
2. Use the stencil to trace the critter on the foam.
3. Cut out the foam shape.
4. Glue eyes on critter.
5. Glue magnet on bottom of critter.

Critter Magnets



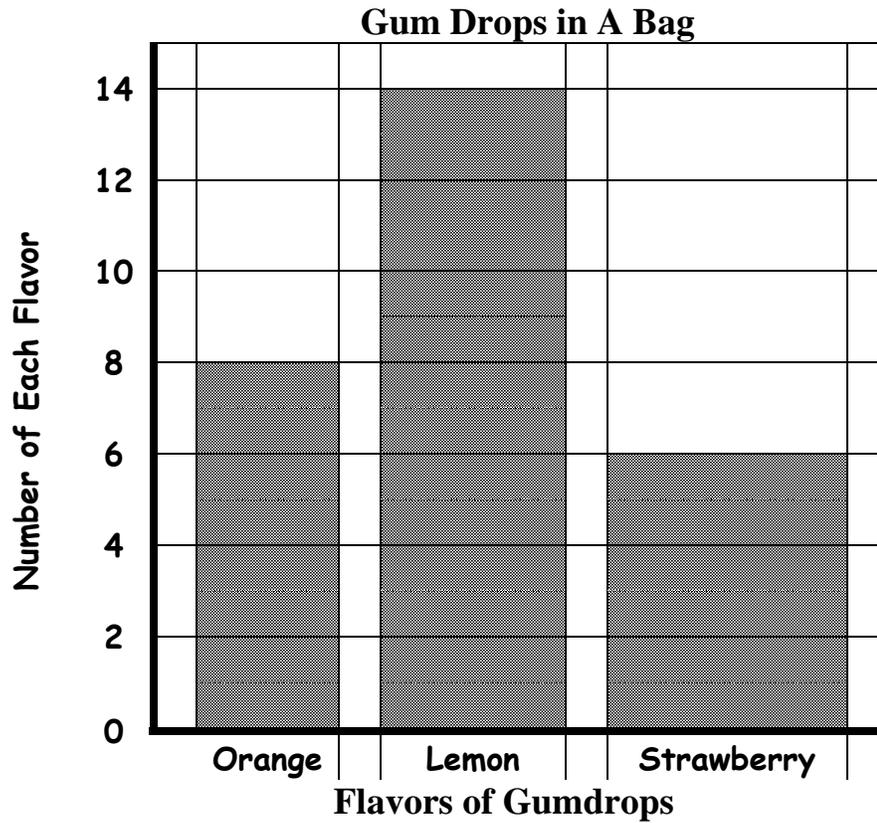
Data Analysis Relay Race

	<u>Jump ahead 2 spaces</u>				<u>Move back 2 spaces</u>	<u>END Congrats!</u>
						<u>Move back 3 spaces</u>
<u>PLACE DECK OF CARDS HERE!</u>						
<u>Directions:</u>						
<ol style="list-style-type: none"> 1. Choose a question card. 2. Answer the question. 3. Your opponents will tell you if you are correct! 4. Place the card on the bottom of the deck. 5. If you are correct, roll the dice. 6. Move around the game board according to your roll. 7. The first player to reach "END" wins! 						
	<u>Take another card</u>					

<p>Find the mode of the data set.</p> <p>15, 12, 11, 10, 15</p>	<p>Find the median of the data set.</p> <p>12, 9, 8, 8, 7, 6, 3</p>	<p>Find the mean of the data set.</p> <p>10, 10, 15, 15, 20</p>
<p>Find the range of the data set.</p> <p>4, 5, 5, 6, 7, 9</p>	<p>Find the mode of the data set.</p> <p>7, 8, 9, 9, 10, 10, 11, 12</p>	<p>Find the median of the data set.</p> <p>21, 25, 26, 26, 27, 28</p>
<p>Find the mode of the data set.</p> <p>33, 32, 34, 35, 39, 39</p>	<p>Find the median of the data set.</p> <p>21, 22, 25, 25, 26, 27</p>	<p>Find the mean of the data set.</p> <p>37, 39, 43, 41, 41, 59</p>
<p>Find the range of the data set.</p> <p>10, 11, 15, 19, 20, 25</p>	<p>Make up a story for the graph.</p> 	<p>Find the median.</p> <p>35, 37, 39, 39, 40</p>

Passport to the Americas Pre-Assessment KEY

1. The bar graph below shows the number of each flavor of gumdrop in a bag.



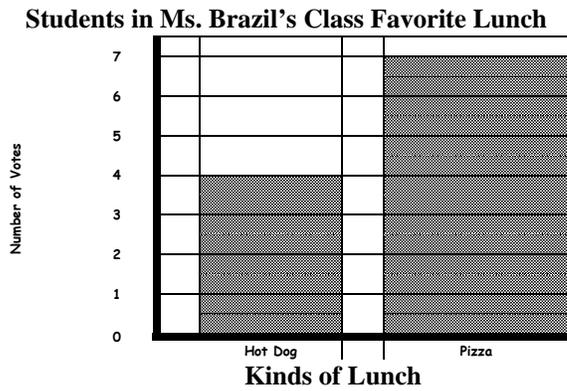
Based on the graph, how many lemon gumdrops were in the bag?

- A. 7
- B. 0
- C. 14**
- D. 28

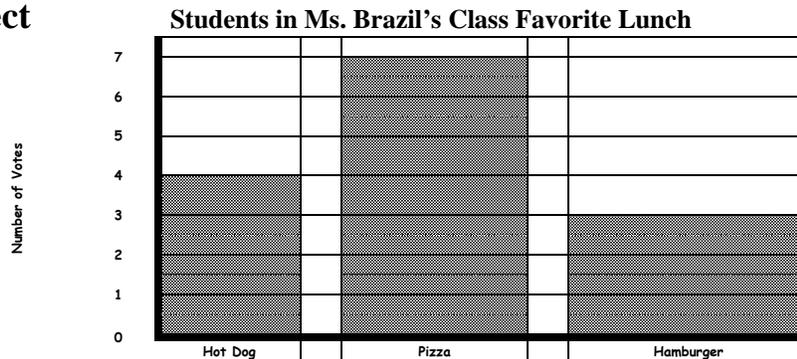
2. Ms. Brazil’s class voted for their favorite lunch. Which graph correctly shows the data in the table?

Student	Favorite Lunch
Sydney	Pizza
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Elizabeth	Hamburger
Sharlene	Hot Dog
Trevon	Pizza
Michael	Pizza
Hannah	Hot Dog
Precious	Pizza
Pixxa	Hamburger
Rafeal	Pizza
Sara	Pizza

A.



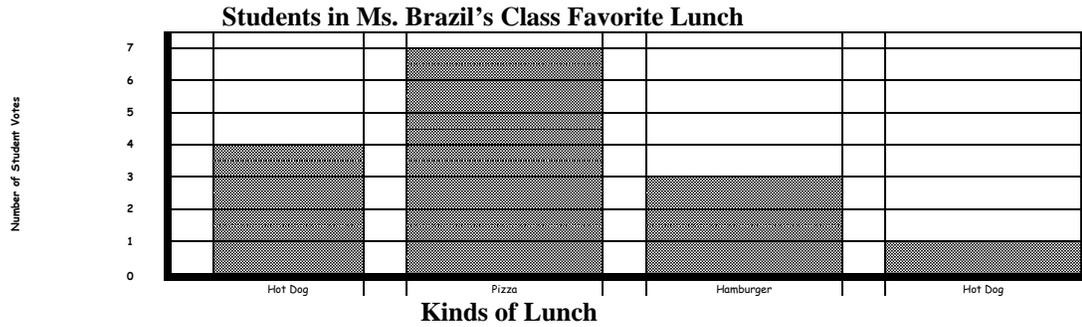
B. Correct



Kinds of Lunch

Teacher Resource 1C

C.

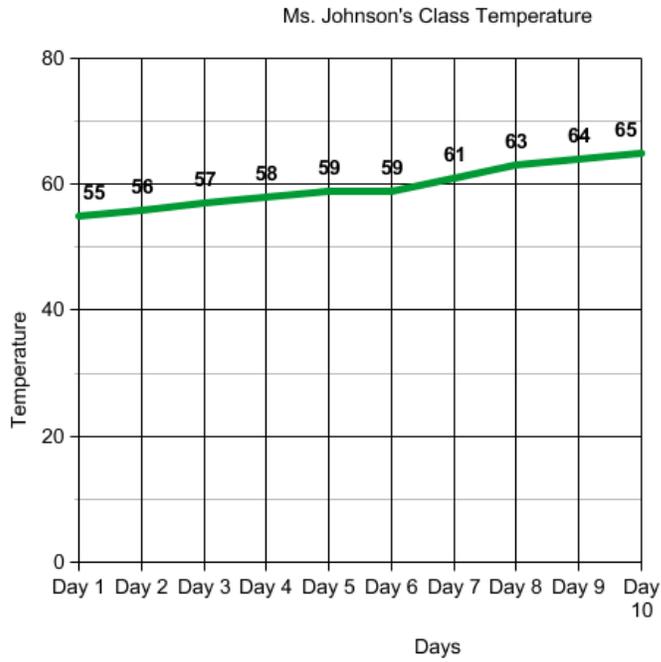


3. Mr. Johnson's class measured and recorded the temperature every day for two weeks. The table below shows the results.

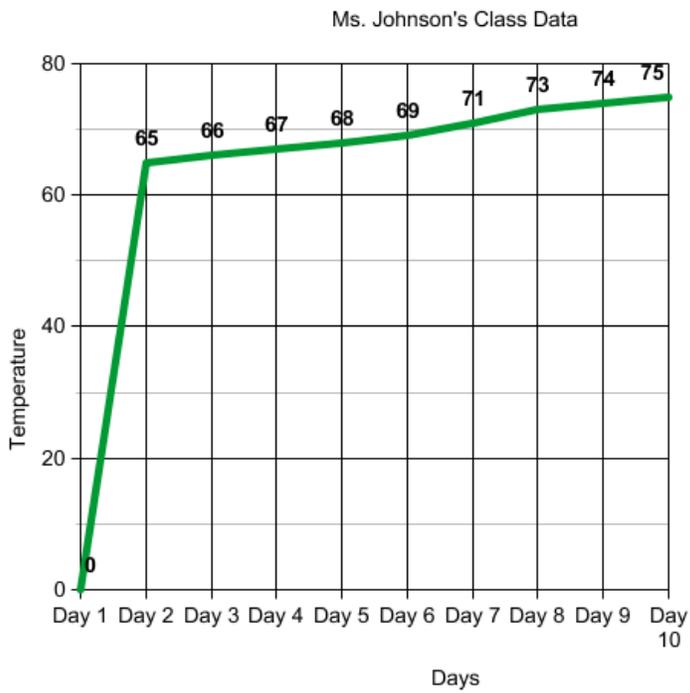
Days	Temperature
Day 1	55
Day 2	56
Day 3	57
Day 4	58
Day 5	59
Day 6	59
Day 7	61
Day 8	63
Day 9	64
Day 10	65

Which graph best represents the correct data from the table?

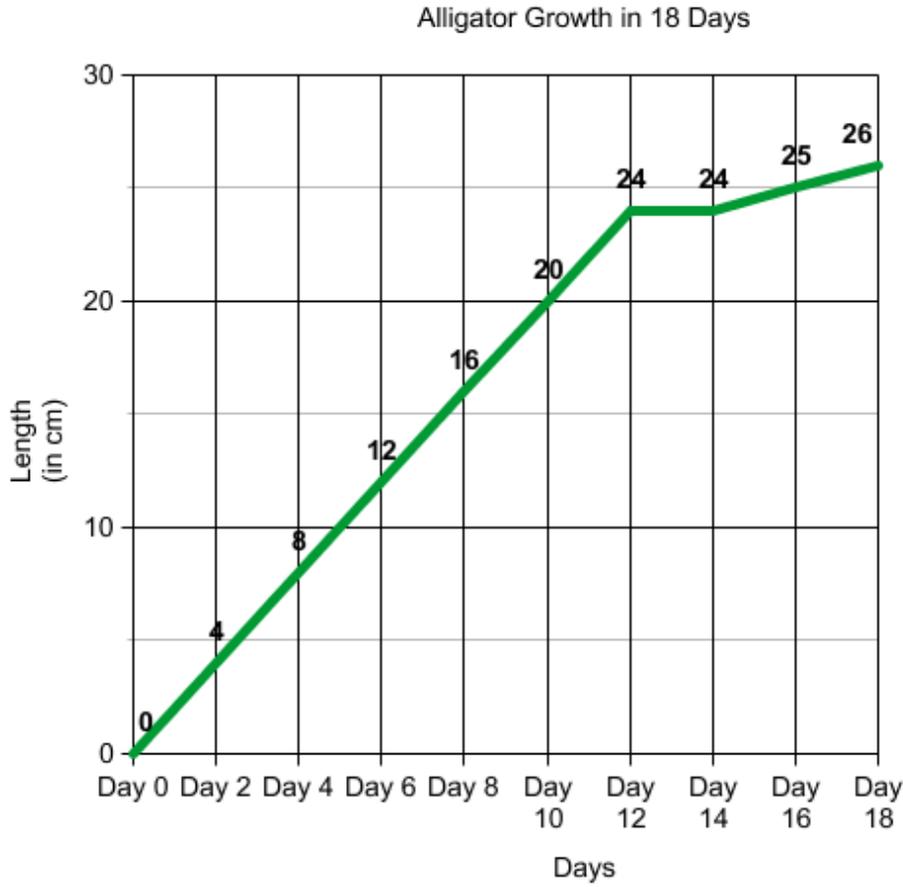
A.



B

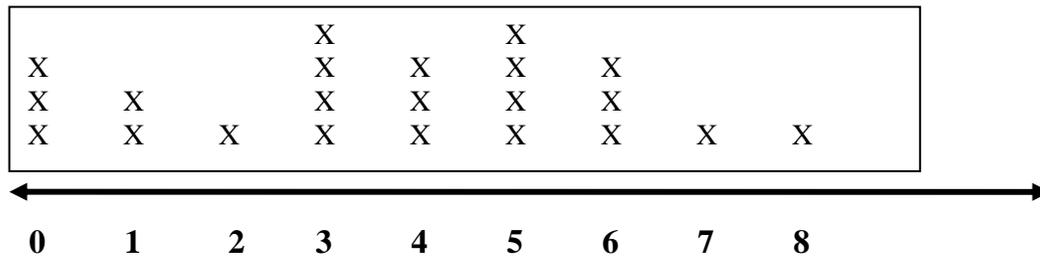


4. The line graph shows how an alligator's length changed as it grew. Which of the following is closest to the alligator's length on Day 9 ?



- A. 16
- B. 17
- C. 18**
- D. 19

Use the line plot below to answer questions 5 - 9.



5. How many students read less than 5 books?

- A. 4
- B. 13**
- C. 22
- D. 17

6. How many students read more than 5 books?

- F. 0
- G. 9
- H. 4
- J. 5**

7. What is median of the data set?

- A. 3
- B. 4**
- C. 5
- D. 6

8. What is the mean for the data set?

- F. 3.6**
- G. 3
- H. 5
- J. 4

9. How would you find the range for the data set?

- A. Add all the values and divide by 22.
- B. Look for the smallest value.
- C. Look for the value that is far from the rest of the data.
- D. Find the difference between the smallest and largest values.**

10. Students in the Americans County Multicultural Club visited El Salvador during the summer. The data below shows the number of students who visited El Salvador during 1994 - 2009.

14	35	22	28
25	30	43	16
39	41	24	30

Which of the following stem-and-leaf plot shows the same information?

A.

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

B.

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

C.

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

D.

Stem	Leaf
1	2
2	4
3	4
4	2

Name: _____

Date: _____

Work with your group to complete the graphic organizer using information from the book *Everybody Cooks Rice* by Norah Dooley.

Family Name	Name of Country	Food Cooked	Customs
Darlington	Barbados	Black Eye Peas and Rice with fried onions and bacon	Swim and go fishing all year long
Diaz	Puerto Rico	Pigeon Peas and Yellow Rice	
Tran	Vietnam	Fried Rice with peas and <i>Nuoc Cham</i> garlic, fish sauce	Extended family lives in one house. Waits to eat for father to come home
Rajit	India	Biryani Rice with peas, cashews, raisins, spices and basmati rice	Uses tiffin metal carrier to store food
Huas	China	Steamed white rice with tofu and vegetables	Cooks in a wok, uses chopsticks to eat
Bleus	Haiti	Red beans and rice with hot pepper and chives	Speaks French, Creole, English
Northern Italy	Northern Italy	<i>Risi e bisi Rice with green peas with butter, grated cheese and nutmeg</i>	

“Design A Flag” Criteria and Research Card

Criteria for Flag Design

	4	3	2	1
Quality of Construction	No spelling or grammatical errors. Flag includes name of country. Colors used represent the country. At least one picture included.	Some spelling or grammatical errors. Flag includes name of country. Some colors used represent the country. At least one picture included.	Few spelling or grammatical errors. Flag includes name of country. Colors used do not represent the country. At least one picture.	Flag includes name of country. Colors used do not represent the country. No pictures.
Oral Presentation	Student demonstrates full knowledge of country by answering questions	Student demonstrates some knowledge of country by answering questions	Student demonstrates a little knowledge of country by answering questions	Student demonstrates no knowledge of country
Creativity	Flag is creative and neatly arranged with a border.	Flag is neatly arranged with a border.	Flag is neatly arranged.	Flag is neither creative nor neatly arranged.

Design a Banner for Your Country

Pretend that your classmates have been invited to visit your chosen country. You plan to take a flag banner to show that you have learned interesting facts about the country. Use the space below to design a flag banner for your country. Be sure to use the criteria and information from the “research card” to help you design your banner.

Stem-and-Leaf Plot Homework Practice

The data below represents the time it took Mrs. Payne's students to construct their critter magnets using single person production. Use the attached grid to construct a stem-and-leaf plot of the data. After plotting the data, answer the following questions.

Single Person Production of Critter Magnets

Janet	72 sec	Artenia	70 sec
Morgan	60 sec	Pam	48 sec
Petter	69 sec	Carol	51 sec
Fishette	58 sec	Justin	60 sec
Joselyn	45 sec	Pete	48 sec
Nathaniel	42 sec	Jalani	32 sec
Juan	31 sec	Fredrico	53 sec
Azzani	33 sec	Jaime	41 sec
JayJay	35 sec	Chantal	59 sec
Susanna	60 sec	Julia	34 sec

Sec → seconds

QUESTIONS:

1. What was the **mode** for single person production?

2. What is the **mode** of the data?

3. What is the **median**?

4. What is the **mean** amount of time it took Mrs. Payne's students to construct a critter magnet?

5. What **variables** could have affected Mrs. Payne's students mean?