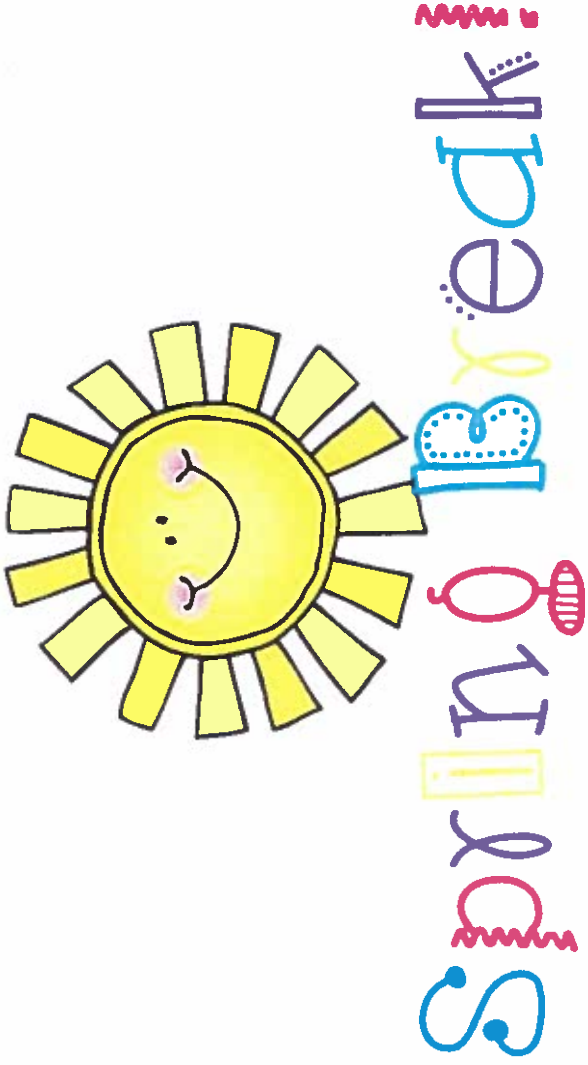


Fourth Grade
Spring Break
Vacation Packet



Due: Monday, April 9, 2018

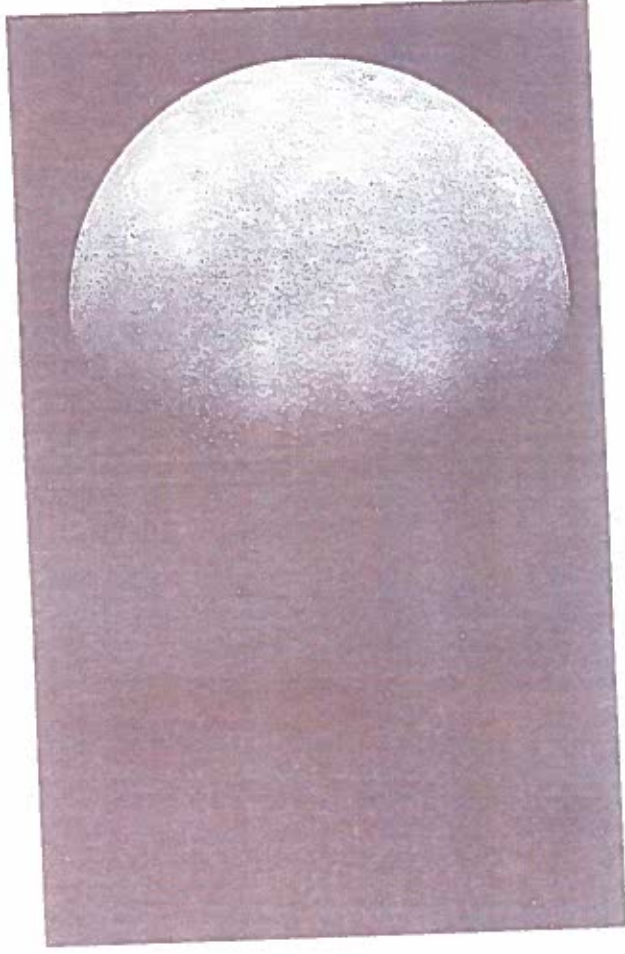
Name _____

Rehearsing for the Common Core Standards: Reading

Directions: Read the passage. Then answer the questions that follow it.

Flying Circles Around Mercury

By Ken Crosswell, Ph.D.



- 1 Giant craters, steep cliffs, ancient volcanoes, extreme heat and cold: welcome to mysterious Mercury.
- 2 Mercury is the closest planet to the Sun, and much of it is unexplored.
- 3 “Mercury is one of the big gaps in our knowledge of the solar system,” says Robert Strom at the University of Arizona.
- 4 In 1974 and 1975, a spacecraft named Mariner 10 flew past Mercury three times and sent back pictures. But the spacecraft showed us only about half the planet.
- 5 Starting in March 2011, however, a new spacecraft named Messenger will go around the planet again and again and again. It will study Mercury for years and finally send pictures of the whole planet.

Planet of Extremes

- 6 Mercury is small. It's only 3,032 miles across. That's a bit more than the distance from New York to California.
- 7 Mercury speeds around the Sun in only 88 days. That's Mercury's year. So if you lived on Mercury, you'd get a birthday every 88 days.
- 8 But don't move there just yet. Mercury has almost no air to breathe.
- 9 Plus, you wouldn't like the temperature. As Mercury turns, the side that faces the Sun gets very hot ... and the other side gets very cold. Why? The Sun stays up in Mercury's sky for 88 days, raising the temperature to 800 degrees Fahrenheit (F). That temperature is hot enough to melt lead.
- 10 After sunset, the night lasts another 88 days, and the temperature plunges to 300 degrees F below zero. That's much colder than Earth's North Pole.
- 11 Mercury's surface is just as hostile. Like the Moon, it's gray and full of craters. The largest known crater on Mercury is Caloris Basin, which is 960 miles across, wider than Texas. The crater formed when a large asteroid hit the planet.

	Mercury	Earth
Average Distance from Sun	36,000,000 miles	92,960,000 miles
Year	88 days	365½ days
Full Day (sunrise to sunrise)	176 days	24 hours
Tilt of Axis	0 degrees	23½ degrees
Diameter at Equator	3,032 miles	7,926 miles
Temperature	-300 to +800 F	-129 to +136 F
Number of Moons	0	1

Heart of Iron

- 12 But on the inside, Mercury differs from the Moon. In fact, it's more like Earth. Both Mercury and Earth have a core of iron.
- 13 "The very biggest mystery about Mercury is the origin of its large iron core," says Strom.
- 14 Surrounding the iron core is a rocky mantle and crust. Earth's iron core makes up one-third of Earth's mass. Mercury's iron core is a whopping two-thirds of Mercury's mass.
- 15 Why is Mercury's iron core so big compared with the rest of the planet? Scientists don't know. But they have some ideas.
- 16 Maybe, long ago, Mercury had a thicker mantle. Then a huge asteroid hit Mercury and blasted most of the mantle away, leaving the large iron core.
- 17 Or maybe, long ago, the Sun blazed more brightly. The light might have vaporized most of the rocky mantle.
- 18 Strom says Messenger will see what Mercury's surface is made of. From that data, scientists hope to deduce the planet's history and see how it got its huge iron core.
- 19 Motions inside that core generate a magnetic field. So if you took a compass to Mercury, it would work just fine. In contrast, it wouldn't work on Venus, Mars, or the Moon, because they don't have magnetic fields the way Mercury and Earth do.

Ice on Mercury?

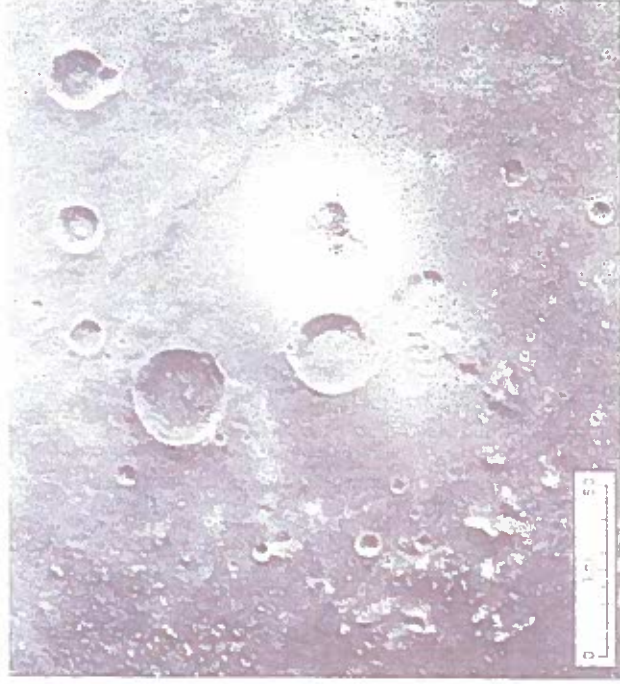
- 20 In 1991, astronomers looked at Mercury's poles and made a surprising discovery. They found what seems to be water in the form of ice.

- 21 How can ice exist on such a hot planet? The ice probably huddles inside craters that never see sunlight. So the ice doesn't melt. Messenger will tell us whether this ice really exists.
- 22 On March 18, Messenger is set to go into orbit around Mercury, filling a big gap in our knowledge. Says Strom, "Once we fill that gap, we're going to have a much better understanding of the solar system."

One Discovery: Volcanoes!

The Messenger spacecraft has already made some discoveries, because it flew past the planet twice in 2008 and once in 2009. It has shown us most of the planet's surface.

"In the past, Mercury has been very volcanically active," says planetary scientist Robert Strom. Billions of years ago, these volcanoes erupted and their lava partially covered some of Mercury's craters. However, the volcanoes probably don't erupt today.



The Messenger spacecraft found this huge volcano. Scientists think Mercury's volcanoes are extinct.

Directions: Answer the following questions. If you need more space to write an answer, write your answer on your own paper.

161 Which two features compared in the table best explain why Mercury's high temperature is much greater than Earth's?

- A Average Distance from Sun and Full Day
- B Average Distance from Sun and Number of Moons
- C Diameter at Equator and Tilt of Axis
- D Diameter at Equator and Year

162 The photograph of the volcano on Mercury supports the idea that Mercury's surface is most like the surface of

- A the Moon
- B the Sun
- C Venus
- D Earth

163 Which feature of Mercury explains why a compass would work on the surface of the planet?

- A It does not have a moon.
- B It orbits the Sun.
- C It has an iron core.
- D It has volcanoes on its surface.

1. Compare the missions of Mariner 10 and Messenger. Why is Messenger expected to gather more information than Mariner 10 did? Use details to support your response.

2. The author compares Mercury with places in the United States several times. Why does the author include these comparisons? Use details to support your response.

Directions: Read the passage. Then answer the questions that follow it.

My Favorite Fruit? The Olive!

By *Andrea Vlahakis*

1 I love plums, and I love blueberries. But as delicious as they are, my favorite fruit is—the olive!

2 The first time I ever saw olive trees was when I visited my grandmother in Greece. She lived in the Peloponnesian peninsula, in the deep south of Greece.

3 I couldn't believe that trees could look so old. Really big gnarled trunks seemed out of place with delicate, slim, silver-green leaves. Fossilized olive leaves, found in Greece, date back almost forty thousand years. I didn't know how old the trees I saw were, but they looked as if they were part of a magical forest from a thousand years ago—at least!

4 How old do olive trees really get? In the right climate—like the Mediterranean, with hot, dry summers and mild winters—anywhere from five hundred to fifteen hundred years.

Olives and My Greek Family

5 Olive orchards had been in my grandmother's family for generations. They grew Kalamata olives. Everyone worked in the orchards—parents, grandparents, brothers, and sisters. Even my father worked there.

6 As a boy in Greece in the late 1920s, my father remembers working with his *papouli*, or grandfather, in the family's



orchards. My father helped harvest the olives in late fall, when they turned from an unripe green to purplish black. The workers would lay huge tarps on the ground, then shake the olive branches with sticks to make the ripe olives fall. After harvest-time my father would help his *papouli* prune the trees for the next season.

All About Olives

- 7 Nothing was wasted. The pruned wood and any dead branches were used for heating. My father carried small branches home by the armfuls.
- 8 Some of the crop was saved to be cured and eaten. My father remembers that he and his friends used to stuff their pockets with olives to snack on while they walked to school.
- 9 But the family's olives were also used for oil. First, the olives were pitted and chopped. Then the olive meats were put in a press to squeeze out the oil. My father and his friends visited the presses to watch. The meats left in the press were used to feed the animals. My father remembers that the family's pigs and chickens *loved* olive meats.
- 10 And the oil? It was used for cooking in place of butter. During World War II, when there was little food, the Greeks ate *bobota*, a cake-like bread made from cornmeal and, you guessed it, olive oil!
- 11 The oil was also rubbed into the skin to keep it soft, and a few drops in just-washed hair acted as a good conditioner. My grandmother even made her own soap from the oil. It was light brown with a faint aroma of olives.

Olives and Light

- 12 My grandmother didn't use candles. She put olive oil in a glass with a little water. (Oil is lighter than water and floats to the top.) She had a cork disk, the size of a quarter, with a hole in the

middle, where the wick would go. The hole was edged with metal so the cork wouldn't burn. To make an olive-oil candle, she'd float the disk in the oil and then light the wick. When the oil was used up, the water put out the flame!

As you can see, the olive is a very determined fruit from a practically indestructible tree. It has provided food, light, and heat for centuries. Plums and blueberries may be delicious, but give me olives any day.

Olives have a strong connection to light and to Greece. The Olympic Games began in ancient Greece. It is said that a burning olive branch was the first Olympic flame.

Harvesting, Processing, and Curing Olives

- 14 Today in Greece, from November to mid-March, olives are harvested much the same way they were in my father's day. Yes, some people use machine harvesting, which shakes the trunks and branches. But a lot of people don't. Why? Some of the groves are very old and are on rocky land where machines can't reach. And handpicking guarantees that the olives won't be damaged.
- 15 The process of getting oil from the olive isn't that much different, either. But the methods are more modern. First, the olives are crushed with mechanical steel grindstones. Then, the meats are spun in a centrifuge at very high speeds to separate the oil from the meats.
- 16 What about the olives that you eat? You wouldn't want to eat fresh olives because they taste very bitter. They have to be cured, or soaked in a saltwater solution (brine), for up to six months. (The brine is changed from time to time.) Olives can also be stored in the brine.

Directions: Answer the following questions. If you need more space to write an answer, write your answer on your own paper.

171 Reread the first paragraph of the article.

“I love plums, and I love blueberries. But as delicious as they are, my favorite fruit is—the olive!”

How does the rest of the article relate to the main idea of this paragraph?

- A** It provides support to explain why the author has this opinion.
- B** It compares and contrasts plums, blueberries, and olives.
- C** It explains why people in different countries have different tastes.
- D** It describes the health benefits of different types of food.

172 The illustration is included mainly to represent

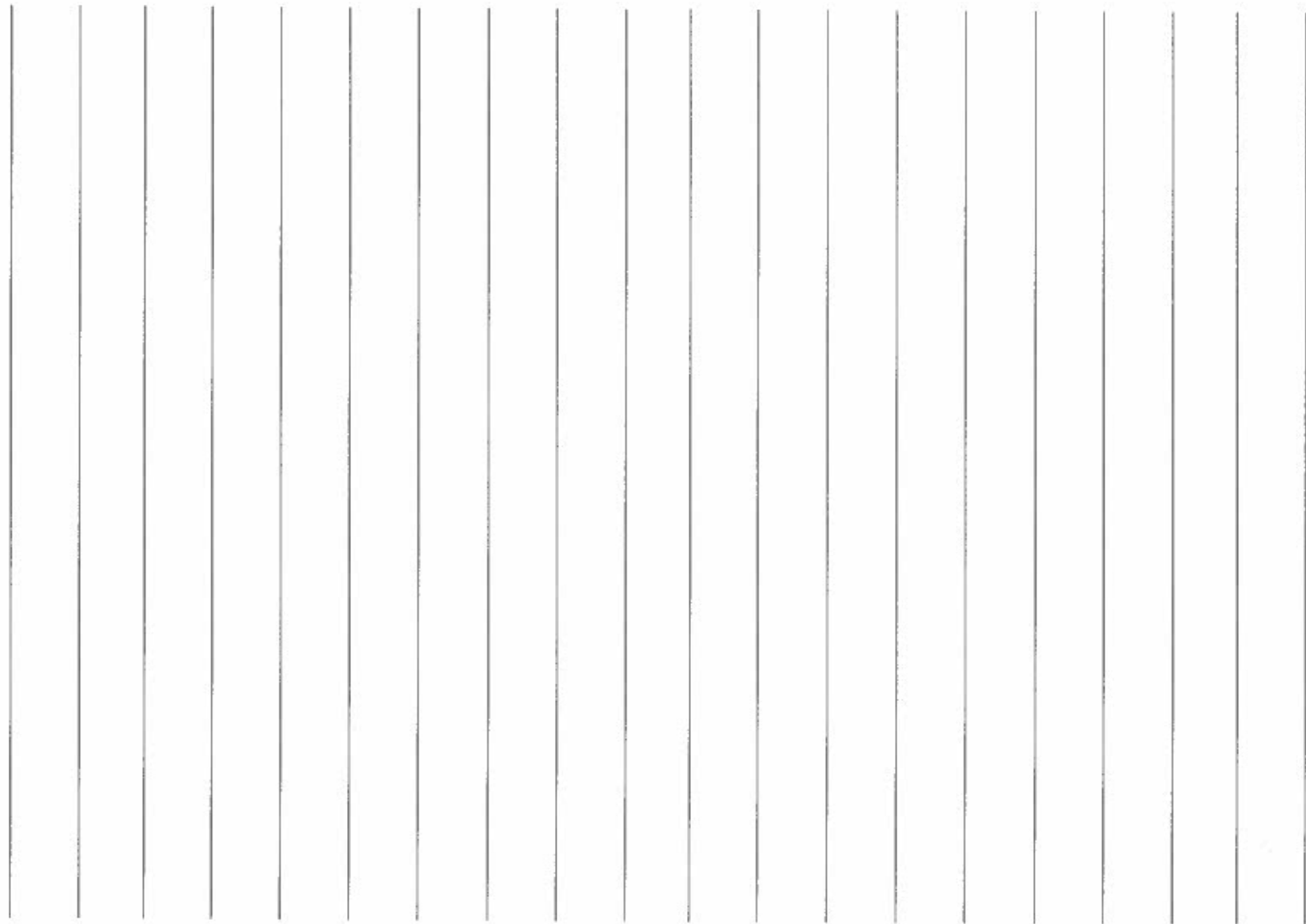
- A** the age and history of the olive trees in the orchard
- B** the large amount of olives produced every season
- C** the hard work required to harvest the olives each year
- D** the family enjoying working together in the olive orchard

173 Which of the following would be best to include to summarize the information in the first paragraph of “Olives and Light”?

- A** timeline
- B** table
- C** diagram
- D** graph

3. Reread paragraph 3 of the article. How does the author make the trees seem ancient? How does this relate to the information in "Olives and My Greek Family"? Use details to support your response.

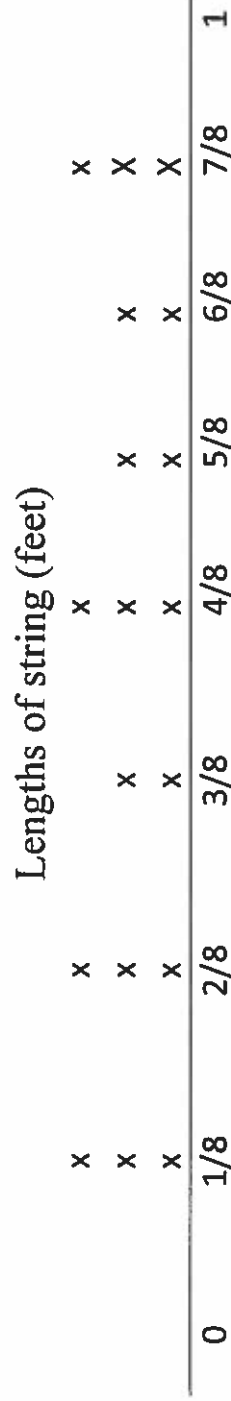
4. How has modern machinery changed how olives are harvested? Use details from the main article and from "Harvesting, Processing, and Curing Olives" to support your answer.



Formative Instructional and Assessment Tasks

Measuring Strings

A basket of strings is measured by the class and graphed.

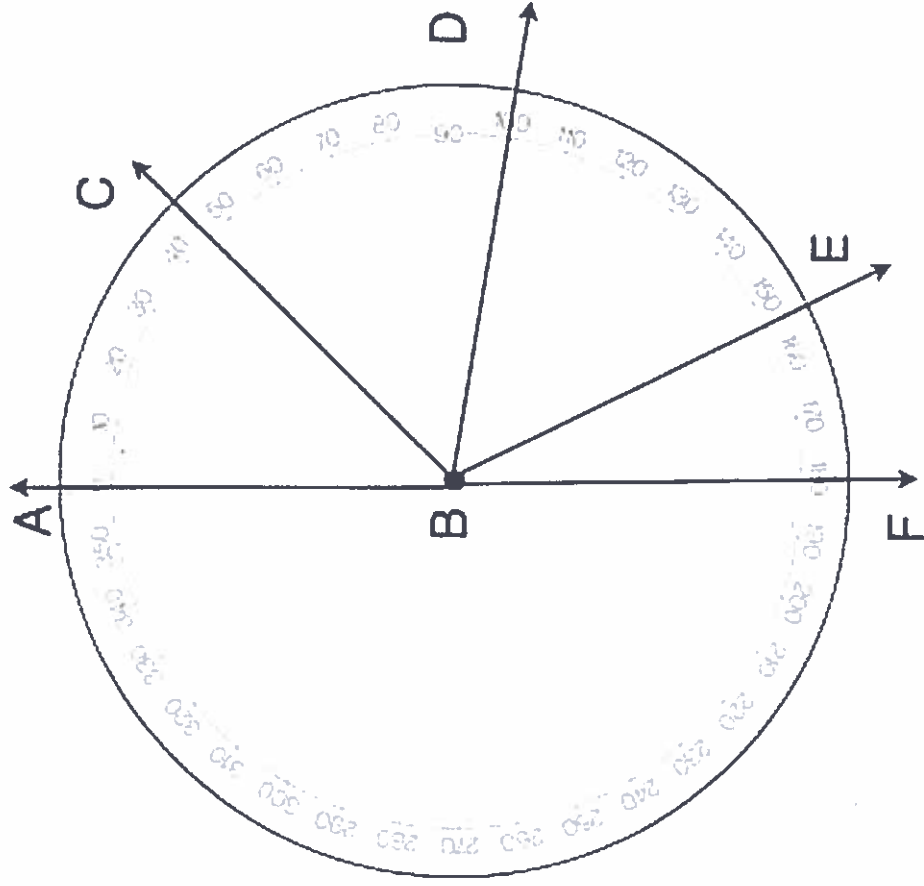


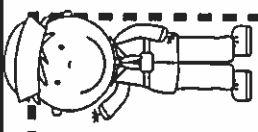
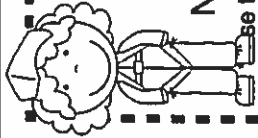
Based on the line plot:

- 1) How many strings are more than $\frac{1}{2}$ of a foot or longer?
- 2) How many strings are shorter than $\frac{3}{8}$ of a foot?
- 3) If students put the string together that is $\frac{1}{8}$ or $\frac{2}{8}$ of a foot long, how long would that string be?
- 4) If students put all of the pieces of string together, how long would that string be?

Use this angle reference sheet to answer questions 1-4
on the next page.

Angle Reference Sheet





Angle Measurement and Degrees in a Circle

Name _____

4.MD.C.5

Date _____

Use the Angle Reference Sheet on the previous page to answer the questions below.

1. Which angles are larger than 90° ?

- A. $\angle ABC$
- B. $\angle ABD$
- C. $\angle DBE$
- D. $\angle FBE$

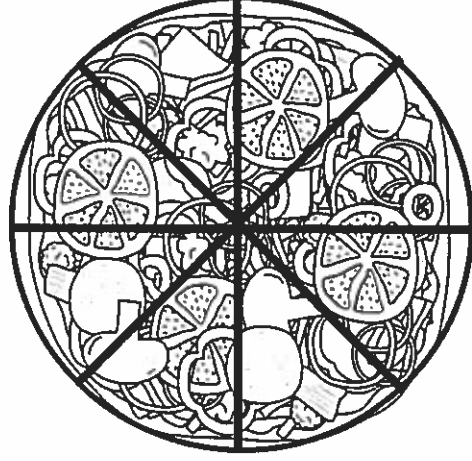
2. What is the measure of the $\angle ABD$ in degrees?

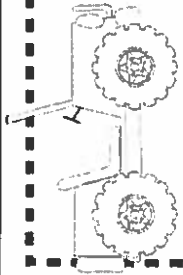
- A. 55°
- B. 75°
- C. 100°
- D. 180°

3. What is the measure of the $\angle ABC$ in degrees?

4. What is the measure of the $\angle ABE$ in degrees?

5. Leonardo cut a round pizza into 8 equal sized pieces. What is the angle of each piece of pizza? Explain your answer.





Measuring Angles

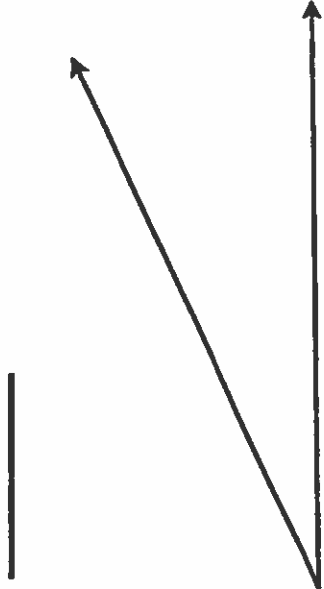


4.MD.C.6

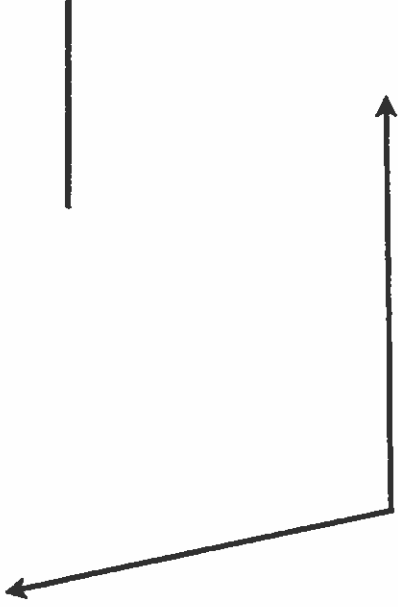
Name _____

Date _____

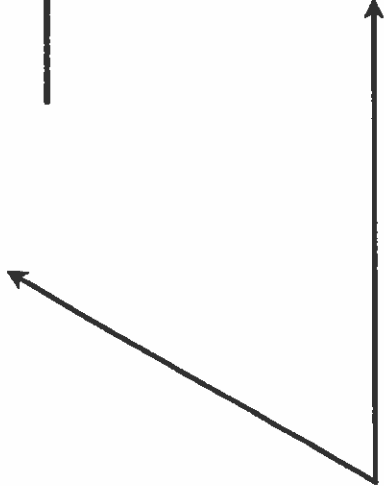
1. Measure the angle below.



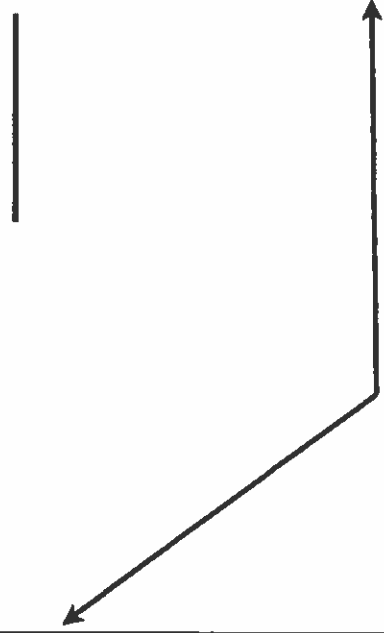
2. Measure the angle below.



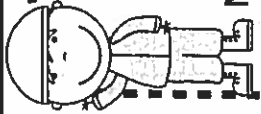
3. Measure the angle below.



4. Measure the angle below.



5. Draw and measure 1 acute angle, 1 obtuse angle, and 1 right angle.

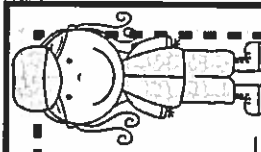


Name _____

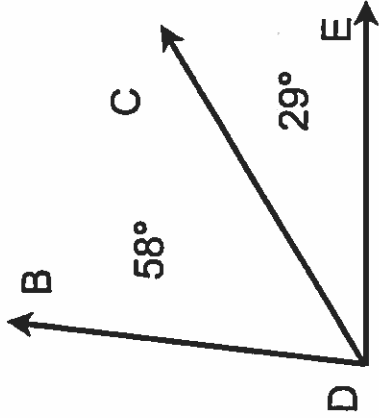
Additive Angle Measurement

4.MD.C.7

Date _____



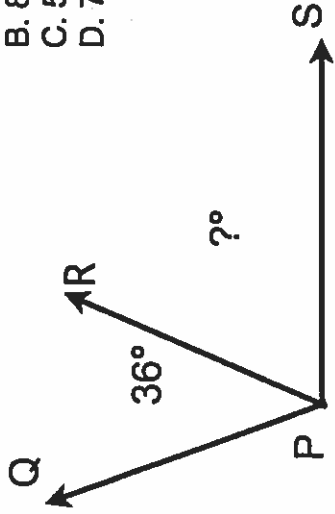
1. What is the measure of $\angle BDE$?



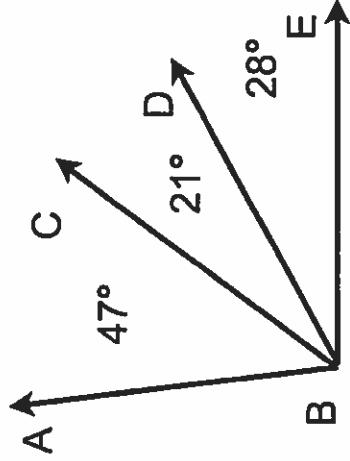
- A. 116°
- B. 77°
- C. 82°
- D. 87°

2. The measure of $\angle QPS$ is 110° . What is the measure of $\angle QPR$?

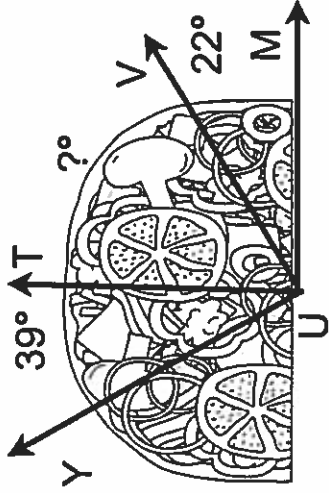
- A. 146°
- B. 86°
- C. 59°
- D. 74°



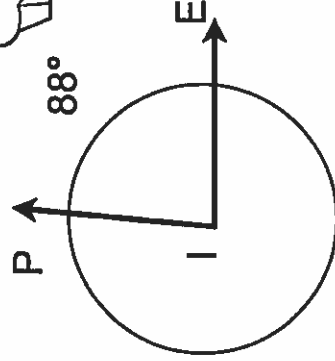
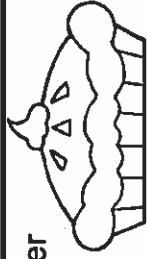
3. George drew the angles below. What is the measure of $\angle ABE$?

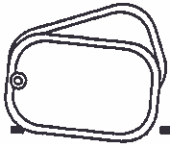


4. Giovanni cut 3 slices of pizza. When the pieces are combined $\angle YUM$ is 122° . What is the measure $\angle TUV$?



5. Mrs. Leo cut a large piece of pie. She decided to cut it into three smaller pieces. The measure of $\angle PIE$ is 88° . What are possible measurements of the angles of the pieces of pie if she splits the pie into 3 pieces? Please explain your answer.





Measurement and Data Review



MD Review

Name _____

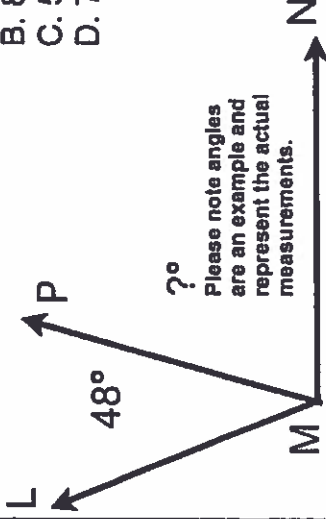
Date _____

1. Jenna's tree grew 8 feet 9 inches. Which of the measurements below is the number of inches her tree grew?

- A. 105 inches
- B. 96 inches
- C. 112 inches
- D. 17 inches

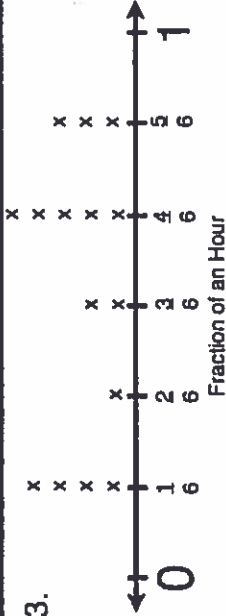
2. The measure of $\angle LMN$ is 125° . What is the measure of $\angle PMN$?

- A. 173°
- B. 83°
- C. 59°
- D. 77°



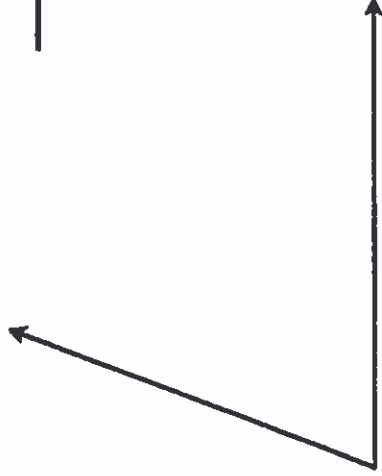
Please note angles are an example and represent the actual measurements.

3.



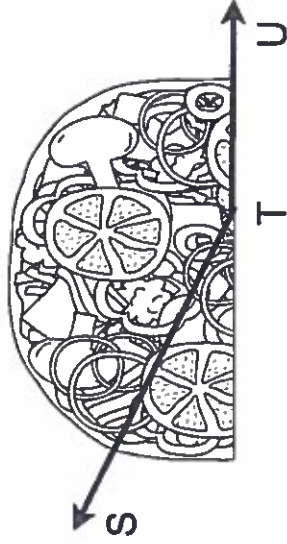
Mrs. Lopez recorded how long it took her students to complete their homework. She plotted the data on the line plot above. How many students took $\frac{1}{2}$ of an hour or more to complete their homework?

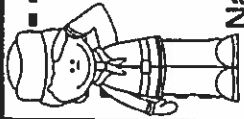
4. Measure the angle below.



5. The piece of pizza Jake cut formed the angle STU that measures 155° . He split the piece of pizza into 3 pieces that were not equal in size. What are possible measurements of the angles of the pieces of pizza if he splits the pizza into 3 pieces? Please explain your answer.

155°





Geometry: Lines and Angles



Name _____

4.G.A.1

Date _____

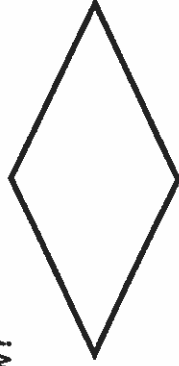
1. Casey drew some shapes. Which of the shapes have at least 1 acute angle?



- A. Shape A
- C. Shape C

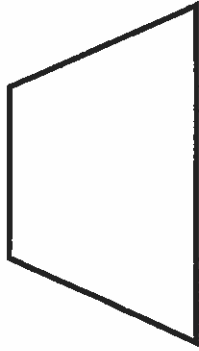
- B. Shape B
- D. Shape D

2. Which statement describes the shape below?

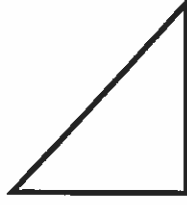


- A. It has 2 right angles
- B. It has 2 acute angles
- C. It has all obtuse angles
- D. It has all acute angles

3. Label parallel or perpendicular lines on this shape.



4. Label the following characteristics if they are present on the shape below: parallel lines, perpendicular lines, acute angle, right angle, obtuse angle



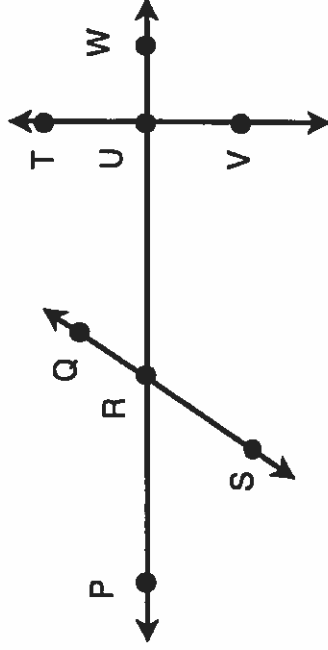
5. Name the following.

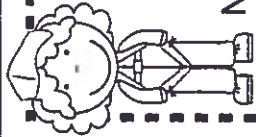
Right Angle _____

Acute Angle _____

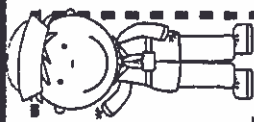
Obtuse Angle _____

Perpendicular Lines _____





Geometry: Classifying Figures



Name _____

4.G.A.2

Date _____

1. Lindsey collected some shape tiles. Which shapes has at least 1 right angle?



- A. Shape A
- B. Shape B
- C. Shape C
- D. Shape D

2. Kevin cut out some shapes. Which shapes has BOTH obtuse and acute angles?

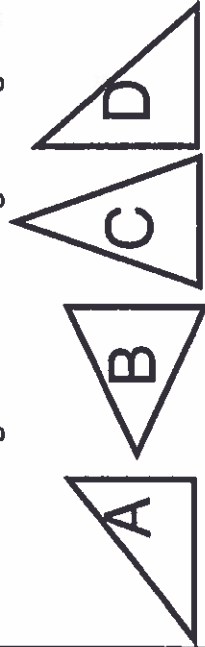


- A. Shape A
- B. Shape B
- C. Shape C
- D. Shape D

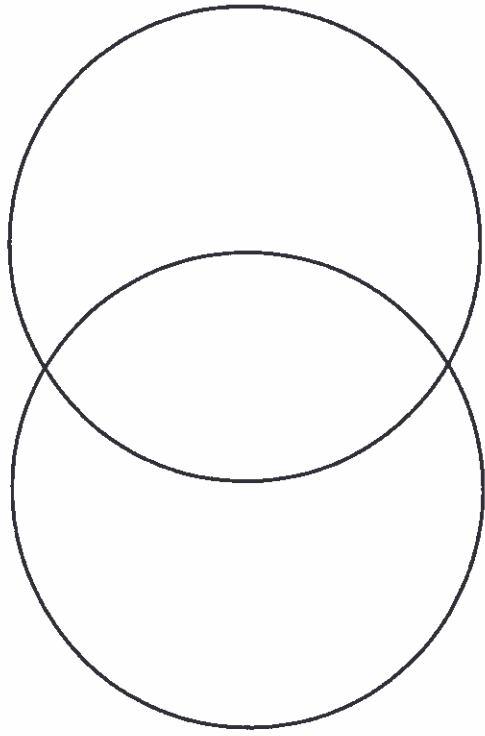
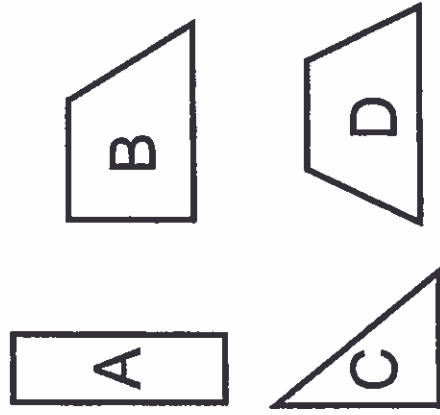
3. Which shapes below have perpendicular lines, but no parallel lines?



4. Which triangles below are right triangles?



5. Use the letters on the shapes to fill in the Venn Diagram below.



Shapes with parallel lines

Shapes with perpendicular lines