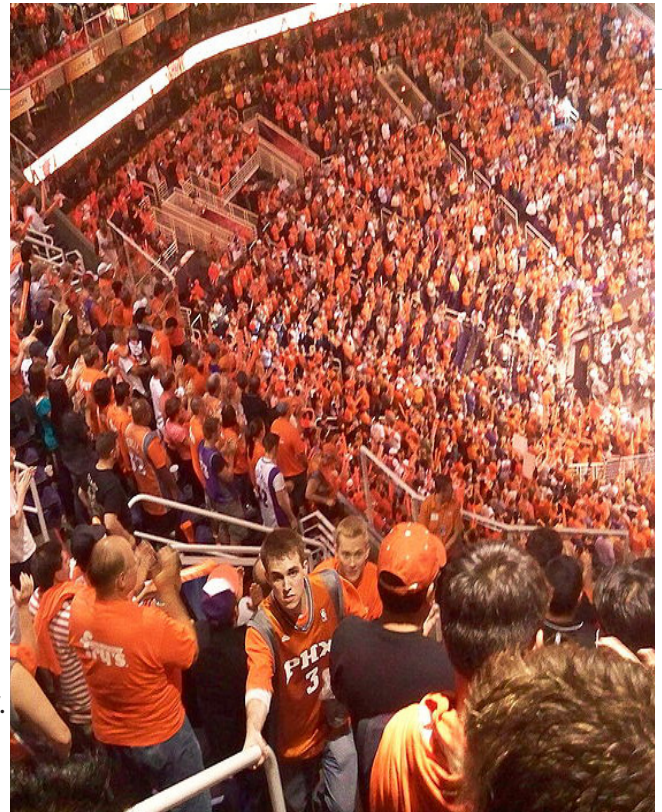


PLAY BALL!

What is your favorite spectator sport? Is it football, baseball, or basketball? Which team do you cheer for the strongest and the loudest? Do you root for the Pittsburgh Steelers, the Philadelphia Phillies, or the Miami Heat?

Spectator sports, or sports that you watch, are incredibly popular in the United States. Last year, over 73 million people attended baseball games, and the Super Bowl had a television audience of 111 million! Now that's a lot of hot dogs! But football, baseball and basketball are relatively new sports, invented in the 19th century. Have you ever wondered who people cheered for 3,000 years ago? How about these guys!



THE BEGINNING OF TEAM SPORTS

The ancient Greeks may have had their Olympics, and the Romans their gladiators, but when it comes to team sports, nobody beat the Maya.

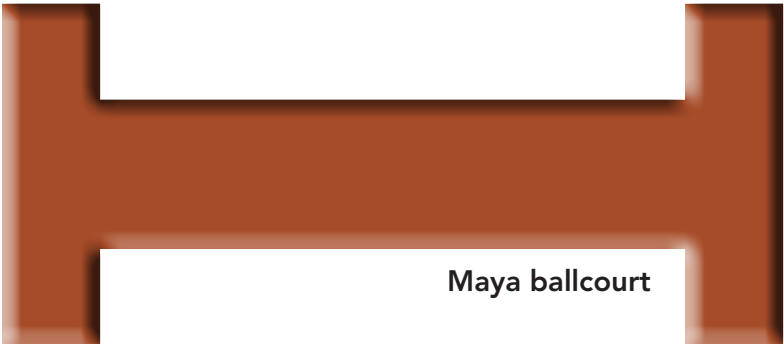
The first sport played by teams with a hard rubber ball was invented in Mesoamerica, probably by the Olmec. The game was played by many civilizations in this region, and evolved over time. Archaeologists aren't entirely sure what the Maya called their version of the game, but they do know that it was a little bit like volleyball and a little bit like basketball.



Clay Model of Maya ballgame, 250 CE

HOW TO PLAY MAYA BALL

The Maya played ball on a field that was shaped like the capital letter **I**.



The ball, made out of rubber, was about the size of a volleyball and weighed between 6 to 10 pounds. Players would play on teams of two to four. Each team passed the ball back and forth between themselves and members of the opposing team. They were only allowed to hit the ball with their legs, arms and hips. Hitting with the hands was not permitted.



Maya Hoop



Basketball Hoop

On either side of the I-shaped court, stone hoops were attached to either an inclined or vertical wall. Maya ball players shot the ball through these hoops in order to score points. This was extremely difficult to do. The hoops were not oriented as our basketball hoops are, and remember, no hands! Centuries ago, a visitor from Spain who watched a Maya ballgame had this to say: "A man, throwing it by hand at close range, could not put it in once in one hundred tries, nor in two hundred."

Great ballcourt at Chichen Itza, about 1000 CE



Yokes made of wicker and fabric were tied around the waist to protect the abdomen. Stone yokes like these were ceremonial. This stone yoke dates from 800 CE.



These *hachas* may have been used to mark off sections of the ballcourt. They date from 250-900 CE.

HOW THE MAYA MADE RUBBER

The creations and inventions of a culture or civilization depend on the natural resources that are available. The ancient Egyptians made paper from the papyrus plant which grew along the banks of the Nile. The Etruscans were experts at working with bronze because their land was rich in metals; and the Maya had access to the abundance of the rain forest because they lived in the midst of it.

The rubber tree grows naturally in the jungles of Mesoamerica. The Maya, and other Mesoamerican civilizations like the Olmec and Aztec, figured out how to use the sap, or latex, from the rubber tree to fashion the balls that were used during their games. Can you imagine, even today, playing a game with a ball that is not made of some kind of rubber?

Maya Rubber Recipe

- > Cut a vertical channel in the trunk of the rubber tree.
- > Cut diagonal channels along the vertical channel.
- > Collect the latex from the tree.
- > Cut a long piece of Morning Glory vine.
- > Crush the vine so you can extract the juice.
- > Mix the juice from the vine with the latex from the tree. This makes the rubber bouncy.
- > Form it into a ball.



Rubber Tree



Man cutting the channels for the rubber to drain from the tree.

DID YOU KNOW?

The Olmecs were the first civilization to make and use rubber.

WINNERS AND LOSERS

The Maya ballgame was much more than just entertainment. It was a religious ritual that symbolized the constant battle between good and evil. The Maya believed that in order to keep the gods happy and the harvest plentiful, they had to sacrifice a healthy human being. This is why you didn't want to be the loser in a Maya ballgame. If you lost, it could mean that you would be killed to appease the gods.



These *palmas* would have been worn on the yoke and used as a striking surface for the ball. The *palmas* date from 800 CE. Some archaeologists think that the *palmas* worn during play would have been made of wood and that these were ceremonial.

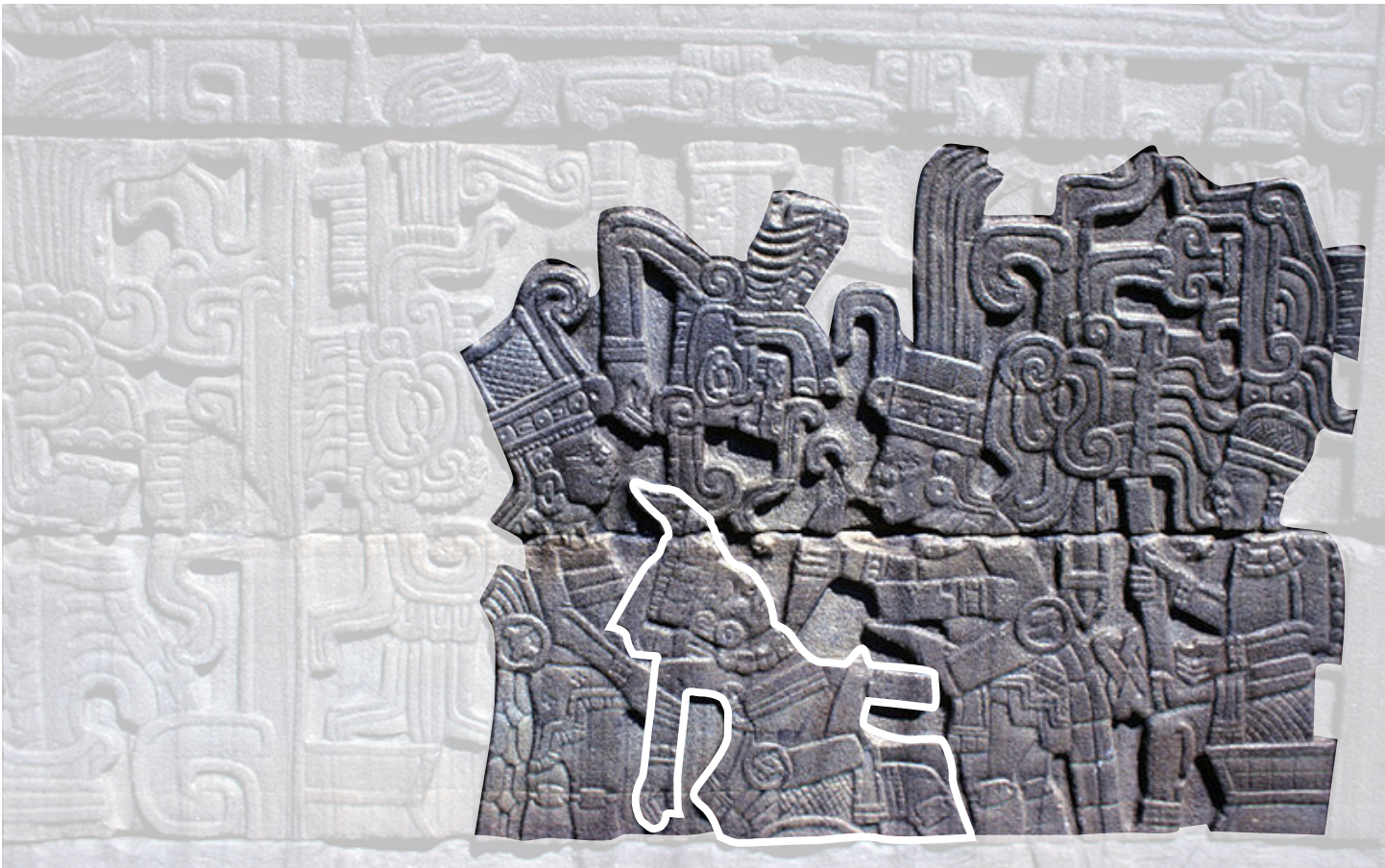


TYPES OF SPORTS BALLS

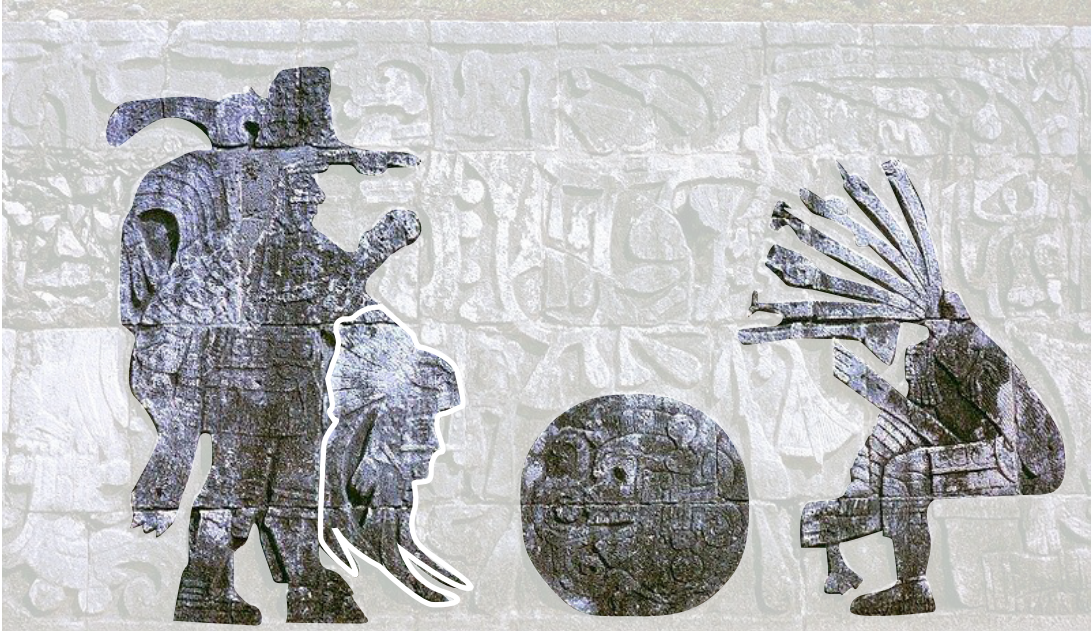
Ball		Weight
baseball		5 ounces
football		15 ounces
basketball		22 ounces
tennis ball		2 ounces
soccer ball		14 ounces
golf ball		1.62 ounces
Maya ball		6-10 pounds 96-160 ounces

DID YOU KNOW?

A Maya ball is 19 times heavier than a baseball!



Stone relief from ballcourt at El Tajin, around 400 CE. This relief depicts a scene of human sacrifice.

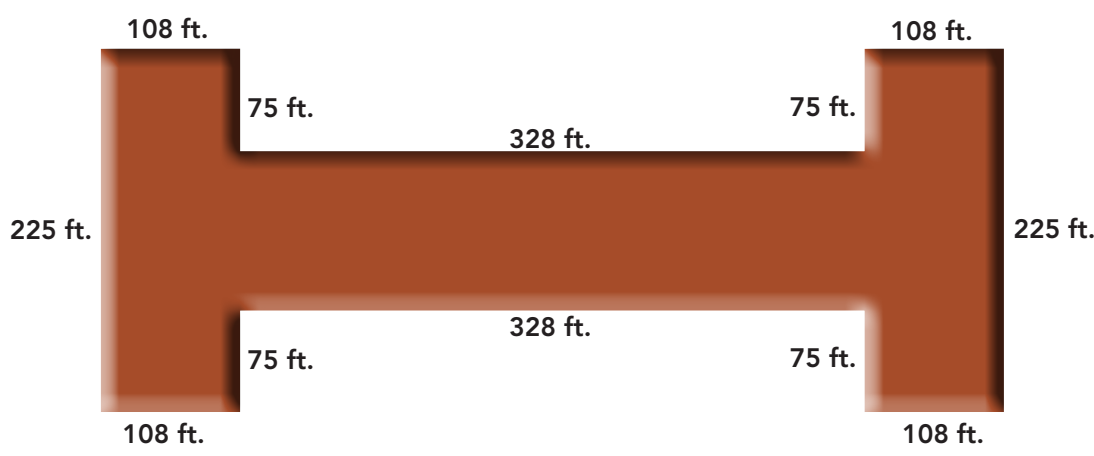


The stone relief above is from the ballcourt at Chichen Itza. It dates from about 1000 CE. Can you guess who lost the ballgame? This pottery model to the right is of a Maya ball player. He is wearing the protective yoke and knee pads. It dates from about 200-400 CE.



Answer each question below. Explain how you got your answers.

1. Calculate the perimeter of this Maya ballcourt.



Answer (P): _____

2. Using the ballcourt above, calculate the area.

Answer (A): _____

3. Calculate the radius of the stone hoop at Chichen Itza.

Answer (R): _____



4. Using the stone hoop to the right, calculate the area.

Answer (A): _____

5. Using the stone hoop to the right, calculate the circumference.

Answer (C): _____

6. One point is scored each time a Maya player puts the ball through the hoop. If the probability of a Maya player shooting the ball through the hoop is 1 in 100, then how many times does he have to shoot the ball to make 6 points?

Answer: _____

Use the table on page 5 to answer questions 7-10.

7. If a Maya rubber ball weighs 6 pounds, than how much heavier is it than a soccer ball? Round to the nearest 10.

Answer: _____

8. If a Maya rubber ball weights 8 pounds, how many ounces is that?

Answer: _____

9. What is the average weight, in ounces, of all of the balls listed in the table?
(Note: Maya ball weights 6 pounds.)

Answer: _____

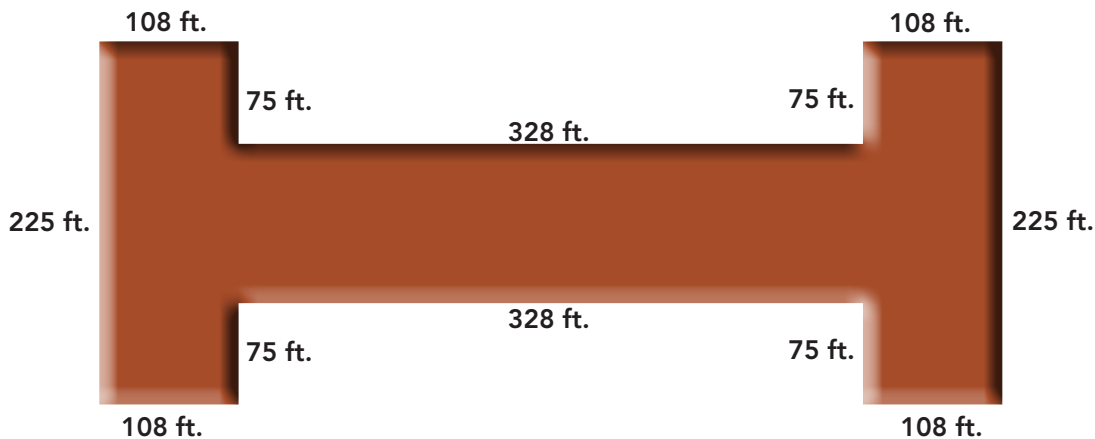
10. What is the median weight of the balls listed on the table?
(Note: Maya ball weighs 6 pounds.)

Answer _____



Answer each question below. Explain how you got your answers.

1. Calculate the perimeter of this Maya ballcourt.



Answer (P): 1,838 ft.

2. Using the ballcourt above, calculate the area.

Answer (A): 73,200 ft.²

3. Calculate the radius of the stone hoop at Chichen Itza.

Answer (R): 17.5 in.



4. Using the stone hoop to the right, calculate the area.

Answer (A): 961.63 in.²

5. Using the stone hoop to the right, calculate the circumference.

Answer (C): 109.9 in.

6. One point is scored each time a Maya player puts the ball through the hoop. If the probability of a Maya player shooting the ball through the hoop is 1 in 100, then how many times does he have to shoot the ball to make 6 points?

Answer: 600

Use the table on page 5 to answer questions 7-10.

7. If a Maya rubber ball weighs 6 pounds, than how much heavier is it than a soccer ball? Round to the nearest 10.

Answer: 7 times heavier

8. If a Maya rubber ball weights 8 pounds, how many ounces is that?

Answer: 128 oz.

9. What is the average weight, in ounces, of all of the balls listed in the table?
(Note: Maya ball weights 6 pounds.)

Answer: 22.23 oz.

10. What is the median weight of the balls listed on the table?
(Note: Maya ball weighs 6 pounds.)

Answer 14 oz.

