Archimedes

[1] Is mathematics or physics your favorite subject? Whether you like it or not, you are probably still quite familiar with this strange-looking Greek symbol called π(or *pi*). πis a commonly used scientific constant. It is one of the fundamental principles of the universe. Since very early on, people of the various ancient civilizations had broached the topic. But none were as specific as the Greek scientist Archimedes.

[2] Archimedes once said that π is a ratio of a circle's circumference to its diameter. It is as simple as that! Later on, this very claim set off the world's longest puzzle-solving exercise. For centuries, scientists everywhere tried to calculate π, but in the end, they all threw up their hands and gave up. Then, around 1761, a German scientist named Johann Heinrich Lambert had a major breakthrough. He proved that π is actually an irrational number. That means, it can never be written as a ratio of two integers. In other words, it can never be solved.

[3] In history, Archimedes will forever be remembered as the person who discovered π. His famous ratio, also called Archimedes' constant, has a huge scientific implication. But amazingly, that was not his only achievement. In his lifetime, Archimedes had made many more important scientific discoveries. Among them, the most notable was the finding of the law of buoyancy. Supposedly, this Greek scientist figured out the entire theory while taking a bath. Overjoyed, he rushed to the streets - naked - yelling "Eureka!" ("I have found it!") Archimedes said that the buoyant force is equal to the weight of the displaced fluid. He called that rule Archimedes' principle. Aside from committing himself to academic studies, Archimedes also liked to apply his knowledge for practical use. As a result, he had many inventions under his name. The Archimedes' screw, for example, was a tool he had designed for irrigation. He is the inventor of the pulley, and the block and tackle. He is known as the “Father of Experimental Science.” He also made breakthrough discoveries in hydraulics, which is the study of fluids in motion.

[4] By all accounts, Archimedes was a genius in many fields. He was an outstanding mathematician, a great physicist, a savvy engineer, an accomplished astronomer, and a gifted philosopher. He was born in Syracuse on the island of Sicily in 287 B.C. Sicily was at the center of a tug-of-war between the Romans and the Carthaginians. To gain control of this strategically located island, the two sides locked their horns on several occasions. During the time of Archimedes, the Romans and the Carthaginians were engaged in battles twice. The Romans won the first

conflict, called the First Punic War (264 B.C. - 241 B.C.), and subsequently, had Sicily in their possession. After more than twenty years of relative peace, a forceful Carthaginian general named Hannibal Barca invaded the Roman Republic and set off the Second Punic War (218 B.C. - 201 B.C.) At the onset of the clash, many Sicilian cities revolted against the Romans. Syracuse was among them. Rushing to the city's defense was Archimedes. His war machines, such as the claw of Archimedes, had helped to hold their enemies at bay for several years. Sadly, despite his best efforts, he and his fellow Syracuse citizens simply could not resist the Romans forever. In the end, they had to surrender. When the Romans entered Syracuse in 212 B.C., their general, Marcus Claudius Marcellus, specially ordered his troops not to harm Archimedes. But for whatever reason lost in history, a Roman soldier ignored the command and killed Archimedes anyway. According to legends, right before his death, Archimedes was drawing some equations and diagrams in the sand. He was totally immersed in his own thought, oblivious to what was going on around him. Reportedly, his last words were "Don't disturb my circles!"

Name _____ *Period* _____

Archimedes

1. How old was Archimedes when he died? (A) 59 years old (B) 75 years old (C) 63 years old (D) 99 years old	2. Who killed Archimedes? (A) A Greek soldier (B) A Syracuse soldier (C) A Carthaginian soldier (D) A Roman soldier
3. What is Archimedes' principle? (A) It is the law of acceleration. (B) It is the law of gravity. (C) It is the law of density. (D) It is the law of buoyancy.	4. How did Archimedes define π? (A) It is a ratio of a circle's circumference to its diameter. (B) It is a ratio of a circle's circumference to its radius. (C) It is a ratio of a circle's area to its circumference. (D) It is a ratio of a circle's diameter to its radius.
5. What war machine did Archimedes construct when defending Syracuse against the Romans? (A) The Archimedes' screw (B) The Archimedes' bomb (C) The Archimedes' ladder (D) The claw of Archimedes	6. Which of the following was not a field that Archimedes was best known for? (A) Mathematics (B) Poetry (C) Physics (D) Astronomy
7. During which war did Archimedes die? (A) The First Punic War (B) The Second Sicilian War (C) The Second Punic War (D) The Third Crusade	8. Who proved $\pi$is an irrational number? (A) Sir Isaac Newton (B) Archimedes (C) Heron of Alexandria (D) Johann Heinrich Lambert
9. What was Archimedes doing when he figured out the so-called Archimedes' principle? (A) Exercising (B) Gardening (C) Bathing (D) Walking	10. Who triggered the Second Punic War? (A) Hannibal Barca (B) Marcus Claudius Marcellus (C) Julius Caesar (D) Spartacus