Story of Archimedes

Based on historic information about the life of Archimedes
Archimedes lived almost 1700 years ago. He was born and lived in Syracuse, Sicily, a small independent Greek country at the time. He was extremely fortunate because he was allowed to go to school and to learn the wisdom of the ancients.
Schools were different then. Only boys and only the most fortunate boys went to school. The most important subject at the time was physical education (PE). The most important graduates became soldiers. Archimedes liked the academic subjects, however. As you might expect he was often picked-on by the “popular” PE types. Also, as you might expect, this taunting annoyed him. They called Archimedes a wimp, and a geek, in Greek, of course.

After several years and much study, Archimedes had enough of this hazing. One day when he was being mercilessly abused by Brutus, one of his classmates, he said, “Enough! I am tired of your harassing. You brainless jocks are utterly useless. My brain can beat your bodies any day.”
Brutus looked at Archimedes surprised at this defense, and in an unthinking way said, “OK, brainiac prove it.”

Archimedes said, “bring out the biggest, strongest, gladiator you can find, and I will lift with my finger what he can lift with his whole body.”

This challenge intrigued Brutus and the other jocks. They set the day of the challenge.
Brutus’ cousin Hercules was in town that day. He graduated the year before and was a soldier or Hoplite, in the Syracuse Army. He was renowned at the school for his strength.

The whole school body gathered for the competition around a huge rock. Many figured they were going to see Archimedes get a whooping.

Hercules went first. He went up to the stone, wrapped his arms around the stone and barely lifted it off the ground. Then he dropped it with a big thud.
A cheer burst from the gathered crowd. And, they began to chant, “Hercules, Hercules.”
Everyone then looked at Archimedes who did not appear to be impressed at all. He turned around and picked up a small rock he called a fulcrum, and a long board, he called a lever, then put them next to the huge stone. He then walked to the other end of the board and put his finger on the board. He pushed down with only a small amount of force, and the huge stone rose from the ground.
Everyone around was amazed! After a few moments of awed silence, the entire crowd broke out in applause. They rushed Archimedes, put him on their shoulders, and paraded him around the town. Even Hercules and Brutus joined the crowd once they had pushed the stone around enough to realize that Archimedes had not somehow switched it on them.

No one picked on Archimedes any more after that day.

Archimedes never bragged much of his win. He said, “A lever is a simple machine. If you give me a long enough lever, and I can lift the Earth.”
Nevertheless, the King of Syracuse was very impressed with Archimedes. He hired Archimedes as his chief inventor and engineer. Archimedes went on to use his understanding of levers and the formula, \( F \times D = W \), to create many marvelous machines for the King and the people of Syracuse.
In time, small Syracuse would have to deal with a bully of its own.

Syracuse, as you may recall, was a small county on the island of Sicily. At the time of Archimedes, the Roman Empire was growing. Rome was a huge empire with a huge army and, unfortunately for Syracuse, a huge navy as well.

When forced by Rome, the King of Syracuse signed a treaty with Rome instead of fighting them. However, Rome’s biggest enemy Carthage had sent many of its people long ago to settle Syracuse, and most of the people of Syracuse would have preferred to be friends with Carthage.
After many years of war with Rome, Carthage seemed to be doing better in their battles with Rome. Carthage had a new general named, Hannibal who audaciously attacked and defeated the Roman army by sending his army’s with elephants over the Alp mountain range. He attacked the Romans from the North were they were not expecting him. This type of ingenuity impressed the people of Syracuse. After all, one of their local heroes was the greatest engineer in the world, Archimedes.

At this time Archimedes’ old friend, Hiero, and King. Oops, I mean King Hiero, died, and his teenage son became king. As we all know, teenagers do not always think things through when they make decisions. So, the new king decided to renege on his father’s treaty with Rome to become allies of the Carthage. This scared many people in Sicily and some pro-Romans assassinated him. Nevertheless, eventually, the people of Syracuse did side with the Carthaginians.
This decision angered the Romans who decided to destroy Syracuse.

The new rulers of Syracuse sent messages to the King of Carthage to help defend the city from this huge army and navy heading their way. Unfortunately, Carthage’s army’s were engaging the Roman’s elsewhere. There would be no help arriving from Carthage. Syracuse would have to face the Romans alone.

Fortunately, Syracuse had a nice wall around it to protect it from invaders. But the Romans were experienced at war and well equipped. Rome sent a powerful force of 65 battleships full of archers and javelin throwers to attack Syracuse from the sea, and an army to attack it from behind on land. The full strength of the Roman Empire was bearing down on small Syracuse (sound familiar?).
The Romans took their battle positions around Syracuse and prepared to lay siege to the city walls. According to the plan, the preparations for the attack would take 5 days. The Romans knew what to do; they had done it before. “But here they failed to reckon with the talents of Archimedes or to foresee that in some cases the genius of one man is far more effective than superiority in numbers. this lesson they now learned,” according to a Greek writer of the time Polybius.
As the fleet began to attack, they were quickly met with a bright light. From the wall of the city, Archimedes placed curved mirrors that focused the light of the sun like a magnifying glass onto the oncoming ships. Just like a dry leaf will burst into flames under the focused light a magnifying glass, so did some of the Roman ships targeted by these mirrors. Several ships were destroyed in this manner. Nevertheless, the fleet continued its approach to the city.
Here they learned that Archimedes had put his formula to work to create many deadly simple machines. Giant stones flew over the wall launched from trebuchets inside Syracuse. The stones smashed the Roman ships. Many more were destroyed. The remaining ships approached even closer, these were met by giant claws that reached into the ocean and lifted the ships into the air. Once the ships were airborne, they were dropped and flipped into the sea. Faced by these monstrous machines the crippled navy retreated.
The assault by land was no more effective than the navy’s. Archimedes used ramps to roll huge stones, logs and other heavy objects up the walls, and then down on the Roman army below. According to another Greek writer of the time, Archimedes “inventor and constructor of artillery and military devices of various kinds, by the aid of which he was able by one finger, as it were, to frustrate the most laborious operations of the enemy.”

Only after this humiliating defeat did the Roman General realize he was fighting Archimedes. He ordered his commanders to, “Bring me Archimedes!”

“But we have not taken the city, yet.” They responded.

“OK, then when you take the city, bring me Archimedes. I want him unharmed!”

“Yes, my liege.”
The Romans then laid siege to Syracuse by pulling back their forces from the range of Archimedes’ machines and prevented any food or water from getting to the city.

As they waited the people of Syracuse made a deadly mistake. They flung open the gates of the city to go out to the countryside to celebrate an annual festival. The Romans took advantage of the gates being open and sacked the city.

The Roman general let his men take whatever they wanted from the city after Syracuse had surrendered. “But, bring me Archimedes he is the most valuable thing in the city.”
One of the soldiers who was sacking the city found Archimedes in his home working out a math problem on the floor. The soldier told him, “Get up old man.”

To which Archimedes replied, “in a moment. I think I have the answer here.”

The soldier was infuriated by this, and killed Archimedes.
Upon hearing the fate of Archimedes the Roman General was distraught. He wanted to meet this great man who had created such wonderful machines. He admired this enemy of Rome. The general honored him by allowing the people of Syracuse to bury Archimedes in his family tomb with all the honor he deserved.

Although, Archimedes was now gone, his reputation and his inventions soon began to spread throughout the Roman world. Today he is honored as one of the greatest mathematicians of all time, and the first great engineer.
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