

ARCHIMEDES AND THE SYRACUSAN WAR RESOURCES

BRIEFING SHEET

Plutarch, the Roman historian, scratches his head and frowns. He is worried. His niece and nephew, the seven year old twins Marcus and Julia, are coming for tea. Why had he promised to tell them the story of how, three hundred years ago, Archimedes had beaten the Romans who were attacking the city of Syracuse? Archimedes was a mathematician and scientist. The king of Syracuse had asked Archimedes to make machines that would wreck the Roman warships.

Archimedes had used two simple ideas to make his machines:

- the lever that could lift weights
- pulleys that could raise heavy weights on the end of a rope.

Plutarch has spent hours reading the Greek historian Polybius, and copying onto slips of paper the tale of how Archimedes had beaten the Romans. That wretched servant, Ignoramus, has picked them all up, arranged most of them in a neat pile and thrown the rest away.

Plutarch now has to sort them and put them in order. Can you help him?

- 1** The first thing is to cut out the slips.
- 2** Then on each slip write down what point you think it is making.
- 3** When you have done this, sort them out into what you think is the right order.

Ignoramus comes in with a large cup of wine. 'Sir, the twins have arrived.' Marcus and Julia come in, hug their uncle and sit down to hear the story of Archimedes and his war machines. Plutarch shows them the pieces of paper in the right order, and asks them to work out:

- What machines Archimedes had made
- What they had been made of
- How they had been made
- What they looked like
- How they were used to beat the Romans.

Can you help them?

Source A

PLUTARCH'S ACCOUNT OF ARCHIMEDES AND THE DEFENCE OF SYRACUSE

When, therefore, the Romans assaulted the walls in two places at once, fear and consternation stupefied the Syracusans, believing that nothing was able to resist that violence and those forces. But when Archimedes began to ply his engines, he at once shot against the land forces all sorts of missile weapons, and immense masses of stone that came down with incredible noise and violence, against which no man could stand; for they knocked down those upon whom they fell in heaps, breaking all their ranks and files. So Marcellus, doubtful what counsel to pursue, drew off his ships to a safer distance, and sounded a retreat to his forces on land.

They then took a resolution of coming up under the walls, if it were possible, in the night; thinking that as Archimedes used ropes stretched at length in playing his engines, the soldiers would now be under the shot, and the darts would, for want of sufficient distance to throw them, fly over their heads without effect. But he, it appeared, had long before framed for such occasions engines accommodated to any distance, and shorter weapons; and had made numerous small openings in the walls, through which, with engines of a shorter range, unexpected blows were inflicted on the assailants. Thus, when they who thought to deceive the defenders came close up to the walls, instantly a shower of darts and other missile weapons was again cast upon them. And when stones came tumbling down perpendicularly upon their heads, and, as it were, the whole wall shot out arrows at them, they retired. And now, again, as they were going off, arrows and darts of a longer range inflicted a great slaughter among them, and their ships were driven one against another; while they themselves were not able to retaliate in any way.

For Archimedes had provided and fixed most of his engines immediately under the wall; whence the Romans, seeing that indefinite mischief overwhelmed them from no visible means, began to think they were fighting with the gods.

Yet Marcellus escaped unhurt, and derided his own artificers and engineers, 'What,' said he, 'must we give up fighting with this geometrical Briareus, who plays pitch-and-toss with our ships and, with the multitude of darts which he showers at a single moment upon us, really outdoes the hundred-handed giants of mythology?' And, doubtless, the rest of the Syracusans were but the body of Archimedes' designs, one soul moving and governing all; for, laying aside all other arms, with this alone they infested the Romans and protected themselves. In fine, when such terror had seized upon the Romans that, if they did but see a little rope or a piece of wood from the wall, instantly crying out, that there it was again, Archimedes was about to let fly some engine at them, they turned their backs and fled, Marcellus desisted from conflicts and assaults, putting all his hope in a long siege.

Source B

PLUTARCH'S STORY OF ARCHIMEDES AND THE SYRACUSAN WAR

A ship was often lifted up to a great height in the air (a dreadful thing to see), and was rolled to and fro, and kept swinging, until the sailors were all thrown out, when at length it was dashed against the rocks, or let fall. [B]

When the Romans attacked the walls in two places [land and sea], fear and worry paralysed the Syracusans, who believed that nothing could resist the attack and the enemy forces. But when Archimedes began to use his machines [H]

At the same time they thrust huge poles out from the walls over the ships, and sunk some ships by the great weights which they dropped down upon them from on high. [D]

Others they lifted up into the air by an iron hand or beak like a crane's beak and, when they had drawn them up by the prow, and set them on end upon the poop, they plunged them to the bottom of the sea. [A]

Marcellus did not know what to do. So, he told his ships to sail away to a safe distance. Also, he ordered his land army to retreat from the walls of the city. [F]

The Roman general, Marcellus, used his ships to attack the city of Syracuse. The city had a high, strong wall around it. High walls also guarded the harbour. [E]

Marcellus placed a siege tower on two ships so as to be able to climb into the city. A huge rock was thrown at it, and then a second and a third. These struck it with great force and a noise like thunder and completely knocked it off the ship into the water. [C]

This story took place 300 years ago in the city of Syracuse in Sicily. Syracuse was at war with the Romans, who ruled Italy. [G]
