

# SOUND

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Nella had asked our friends to stay a little longer after training. Somebody needed help with an underwater experiment. Skubba could help underwater and Fred would certainly be able to assist with setting up the test. However, she had not told them what the experiment would be. The two boys stood in the entrance hall of the swimming pool and let their imagination run free.

“Are you Skubba and Fred?” they suddenly heard behind them. They both turned in the direction of where the voice had come from. “My name is Lloyd<sup>1</sup>. How are you?” “Good,” our friends said almost in unison. “What are we going to do?” asked Fred. He could no longer suppress his curiosity.

“We are going to measure the speed of sound underwater. I have to do this for a school science project and your instructor said you wanted to help.” “Should we be in the pool for that? Can’t you do that experiment in a glass of water?” Skubba asked. “You could indeed do that in a glass of water, but that would be much more difficult and the results would not be good.” “Why not?” Skubba asked.

“If you want to know how fast you walk, you can’t do that with just one step. You go for a walk and measure how long it takes. When you have the distance and time, you can calculate how fast you move,” Fred said. “Ah yes”, Skubba did not know for sure if he had understood it, but Fred certainly had.

“Okay, guys, let’s get started,” Lloyd suggested. “The first thing we have to do is take a water sample.” “A sample?” Skubba did not know the meaning of that word. “We just put a little water into this bottle. We call that a sample. While Fred fills the bottle, Skubba, you can use this thermometer to measure the water temperature.”

While both boys performed their work meticulously, Lloyd prepared all the material. Two metal rods to provide the



sound, an underwater camera to serve as a microphone and a long cord to measure the distance. With the camera they could register the moment the sound was produced by hitting the rods against each other, and the microphone would tell them when the sound wave returns. Measuring the time between the start and arrival, Lloyd could calculate how fast ‘sound’ travels in water.

Lloyd explained how to line up the camera and two metal rods to Skubba. Together they measured the correct distance underwater so they knew where to put everything. Then they measured everything again, because the camera and the metal bars had to be at the right distance before the test.

Skubba turned the camera on and Lloyd knocked the metal rods together several times. The experiment went well and the boys enjoyed themselves. Lloyd had to check a few things at home, but he was satisfied with the result.

When everything was put away, Lloyd asked them if they wanted to help him with his next experiment: measuring the speed of sound in sea water.

“Does a pool filled with seawater exist?” Skubba asked very interested.

(<sup>1</sup> This story is based on an experiment conducted by Lloyd van Doorn.)