

PRE-LISTENING

There are some vocabularies that will appear on the recording. Let's guess the meaning of each vocabulary by dragging its meaning equivalent to the vocabulary.

Sort elements

having no weight or appearing to have no weight, for example because there is no gravity

to discover or notice something, especially something that is not easy to see, hear, etc.

the act of fixing equipment or furniture in position so that it can be used

to add a number to itself a particular number of times

aware of and able to understand other people and their feelings

to take in a liquid, gas or other substance from the surface or space around

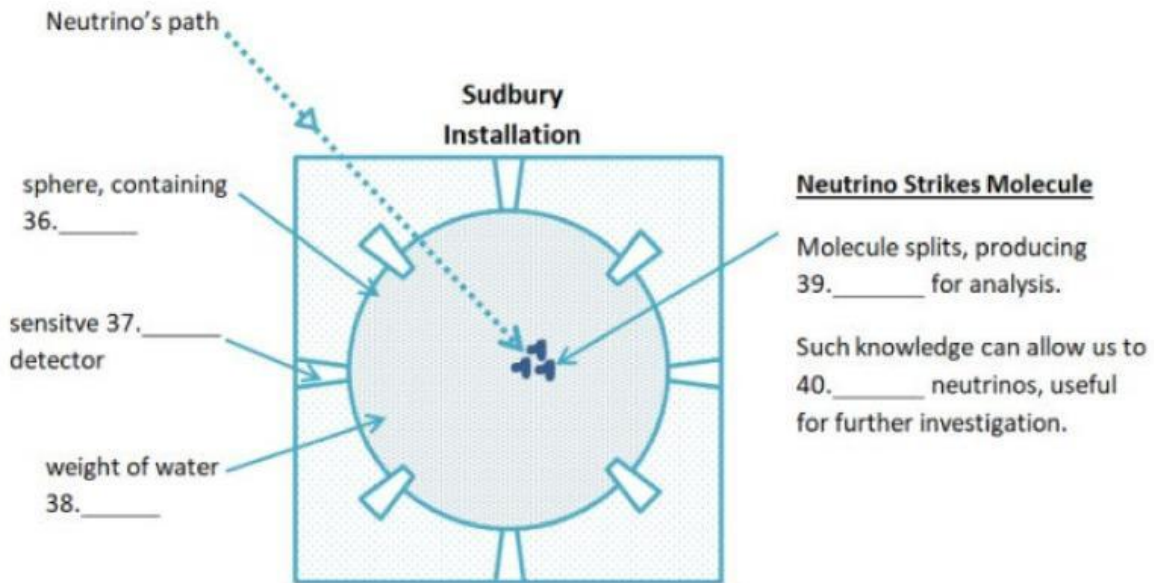
difficult to find, define or achieve

to ask questions in order to find out secret or hidden information about somebody/something

multiply (adv):	
weightless (adj):	
probe (verb):	
absorb (verb):	
installation (noun):	
elusive (adj):	
sensitive (adj):	
detect (verb):	

DURING LISTENING

Complete the diagram. Write NO MORE THAN TWO WORDS AND/OR NUMBERS for each answer.



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VOCABULARY PRACTICE

Let's listen to the recording again and fill in blanks below

So, I've told you about the 1 in deleting neutrinos. They are tiny, virtually 2, have no electric 3, and hardly interact with anything at all. Yet we can 4 them, and to see how, let's consider the Sudbury 5 once again. The detector there consists of a spherical 6 filled with heavy water. This rests inside another vessel filled with normal water, which helps support the weight of the inner sphere, as well as providing further shielding from any stray 7. At the edge of this inner sphere are about 10,000 electronic detectors. These are extremely 8, able to 9 a hundred million times any electric current which occurs.

So, as the neutrinos pass through this sphere of water, there is a very very small chance that one of them may hit a water molecule. To increase the likelihood of this, two 10 are used. One, the larger the sphere of water, the better, and the Sudbury tank holds not 10 tons, not 100 tons, but 1000 tons. Two, the water is special, consisting as it does of heavier molecules. So, what happens is this. If the neutrino hits the water molecule, the neutrino is 11, but the molecule itself splits apart, producing a tiny electric current. It is this which is detected, and analysed, giving key information about the neutrino.

The final question is why do we care about these 12 particles? Well, just think — they can pass right through the core of our sun at the 13 of light without being 14 or losing strength. No other form of radiation can do that, meaning that the knowledge we get about neutrinos can help us to 15 them. With this ability, we can 16 the centre of our Earth, the inner 17 of our sun, and the outer limits of our 18 system, and that 19 it all worth the 20.