# Ultrasound Imaging Post-Activity Quiz Answers

**1. What is the frequency range of an ultrasound?**

(A) less than 20 Hz (B) Between 20 Hz and 20,000 Hz **(C) Greater than 20,000 Hz**

**2. Define ultrasound imaging.**

**Use of the reflections of high-frequency sound waves to construct an image**

**3 List some devices that use ultrasound for imaging.**

**Sonar, sonograph or ultrasonograph or echograph**

**4. When operating sonar on a pool of water, an ultrasonic wave is emitted at a constant speed *S* in the water, which is at a temperature of *T* =10 oC. The wave spent a roundtrip time of *t* = 3 ms before being detected back. How deep is the pool of water? (*Hint*: Use the equation for speed = distance / time and use the data in the table to read the appropriate speed of sound into water.)**

**This problem is the same as computing the distance travelled by the wave. In relation to speed equaling distance over time, that is, *S=d/t*, we obtain the distance by considering only half of the travelled time, that is, *d = S x t/2*. We read in the table S = 1,507 m/s and we compute d = 1,507 x 0.003/2 = 2.26 m.**

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| [**Temperature**](http://www.engineeringtoolbox.com/temperature-d_291.html)**- *t* (oC)** | [**Speed of Sound**](http://www.engineeringtoolbox.com/speed-sound-d_82.html)**- *c -*(m/s)** |
| **0** | **1,403** |
| **5** | **1,427** |
| **10** | **1,447** |
| **20** | **1,481** |
| **30** | **1,507** |
| **40** | **1,526** |
| **50** | **1,541** |
| **60** | **1,552** |
| **70** | **1,555** |

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