

Homework 29 e Using sound

1. Use the words in the HELP-BOX to copy and complete the paragraph below.

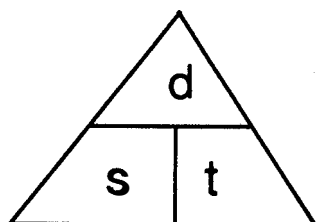
| | | |
|------------|-----------|--------|
| depth | longer | faster |
| ultrasonic | reflected | later |

Light travels much than sound . This is why we hear the sound of thunder a little than we see the flash of lightning causing it. Echoes are sound waves which take some time to return. If the sound has far to travel it will take for the echo to return. The formula for speed is

$$\text{speed} = \frac{\text{distance travelled}}{\text{time taken}}$$

Sailors can use echoes to measure the of the sea and geologist use echo-sounding to search for oil and gas underground. Doctors use sound in scanning and for destroying kidney stones.

2. Use the above equation for speed to find the speed of sound in oil if it travels 6000 metres in 2 seconds. Express your answer in metres per second (m/s).
3. Use the triangle below to recall the equations for speed, distance and time . Use the equations to complete the table below.



d = distance

s = speed

t = time

| Material | Distance (m) | time (s) | speed (m/s) |
|----------|--------------|----------|-------------|
| air | 1200 | 4 | |
| water | | 2 | 1500 |
| rock | 20000 | | 4000 |