

## Topic 4

### Waves and the Earth

- 4.1 Recall that sound with frequencies greater than 20 000 hertz, Hz, is known as ultrasound
- 4.2 Describe uses of ultrasound, including:
  - a sonar
  - b communication between animals
  - c foetal scanning
- 4.3 Calculate depth or distance from time and velocity of ultrasound
- 4.4 Recall that sound with frequencies less than 20 hertz, Hz, is known as infrasound

## Unit P1: Universal physics

- 4.5 Describe uses of infrasound, including:
  - a communication between animals
  - b detection of animal movement in remote locations
  - c detection of volcanic eruptions and meteors
- 4.6 Recall that seismic waves are generated by earthquakes or explosions
- 4.7 *Investigate the unpredictability of earthquakes, through sliding blocks and weights*
- 4.8 Explain why scientists find it difficult to predict earthquakes and tsunami waves even with available data
- 4.9 Recall that seismic waves can be longitudinal (P) waves and transverse (S) waves and that they can be reflected and refracted at boundaries between the crust, mantle and core
- 4.10 Explain how data from seismometers can be used to identify the location of an earthquake
- 4.11 **Demonstrate an understanding of how P and S waves travel inside the Earth including reflection and refraction**
- 4.12 Explain how the Earth's outermost layer is composed of (tectonic) plates and is in relative motion due to convection currents in the mantle
- 4.13 Demonstrate an understanding of how, at plate boundaries, plates may slide past each other, sometimes causing earthquakes