**Waves at Boundaries**

**Incident Wave** – a wave in the first medium that is travelling towards a boundary with the second medium

**Transmitted Wave** – the wave that is created in the second medium by the energy from the incident wave

**Reflected Wave** – the wave that is created by the energy that is reflected off the boundary between the two mediums

# When an incident wave hits the boundary with a medium that has a very different density, most of the energy will be reflected. If it hits a boundary with a medium that is similar, most of the energy will be transmitted and only a small amount will be reflected.

# The frequency of the wave will be the same in both mediums.

# The velocity depends on the properties of each medium and therefore will be different in each medium (less dense -> faster; more dense -> slower)

# The wavelength is directly proportional to the velocity (if V is higher, the wavelength is greater, if V is lower, wavelength is smaller).

# Fixed End Reflection

# When an incident wave hits the boundary with a medium that has a higher density or is a fixed end, the reflected wave will be inverted. The transmitted wave will be erect.

# Free End Reflection

# When an incident wave hits the boundary with a medium that has a lower density or is a free end, the reflected wave will be erect. The transmitted wave will be erect.