



# Damping sounds

Sounds are made quieter by making objects vibrate less.

Some materials make an unpleasantly loud sound if they are allowed to vibrate freely. To make these sounds quieter we need to make the vibrations smaller. This is called **DAMPING**. Examples of dampers include the rubber feet fitted to washing machines (Picture 1) and fish tank pumps.

Dampers can simply *flatten* a sound, or make it quieter (Picture 2), or they can be used to *change* a sound, as is the case with pianos, in which felt dampers are used to reduce the loudness of the instrument (see page 22).

## Find out about sound damping

Clamp a long ruler or other springy material to the edge of a table (Picture 3). Now push down the free end and let it go. The ruler will twang, or vibrate.

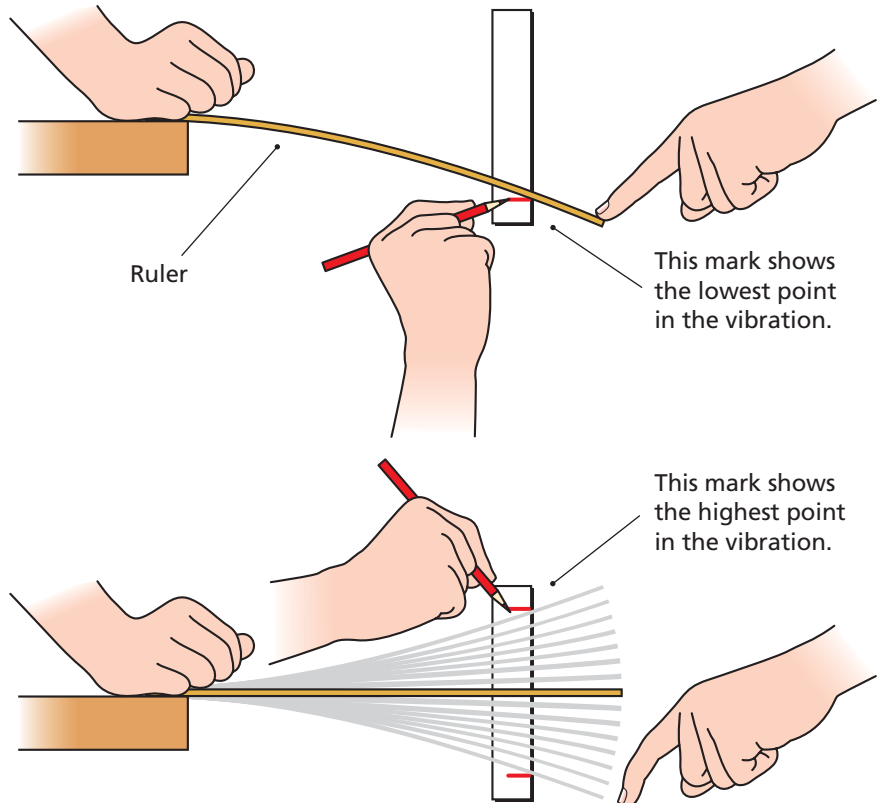
Write down the approximate size of the vibration and time how long it takes to stop.

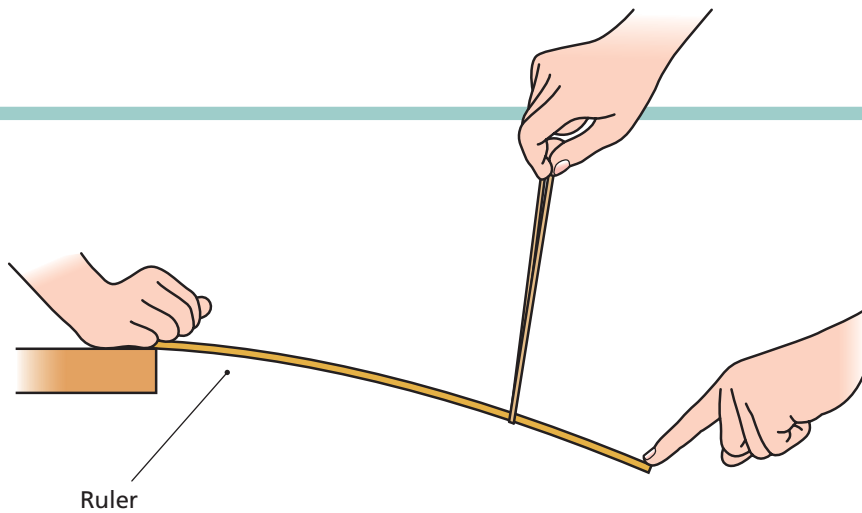


▲ (Picture 1) The vibrations from a washing machine sitting on a floor could become unbearable. Rubber feet help damp the vibrations.



▲ (Picture 2) Holding your finger firmly on the loudspeaker will make the sound coming from it quieter.





By experimenting further, you can decide where to put the damper so that the smallest pulling force has the greatest effect. You can also test different materials (Picture 5).

### Summary

- To make sounds quieter, we need to reduce vibrations.
- Dampers can flatten or change sounds.

◀ (Picture 4) You can test the effect of moving a band along a ruler to see how good it is at damping the vibrations.

▼ (Picture 5) You can test different materials to see how good they are at damping the vibrations.

Loop a small elastic band around the ruler and pull upwards gently, then press down on the end of the ruler (Picture 4). Now twang the ruler again and see how long it takes for the vibrations to die down. Listen for the change in sound loudness.

Move the elastic band to a different place on the ruler and, using the same pulling force, try twanging again. You will find that the time for the ruler to come to rest will be different from the first time you twanged the ruler.

