10 String instruments

String instruments work by making a string vibrate.

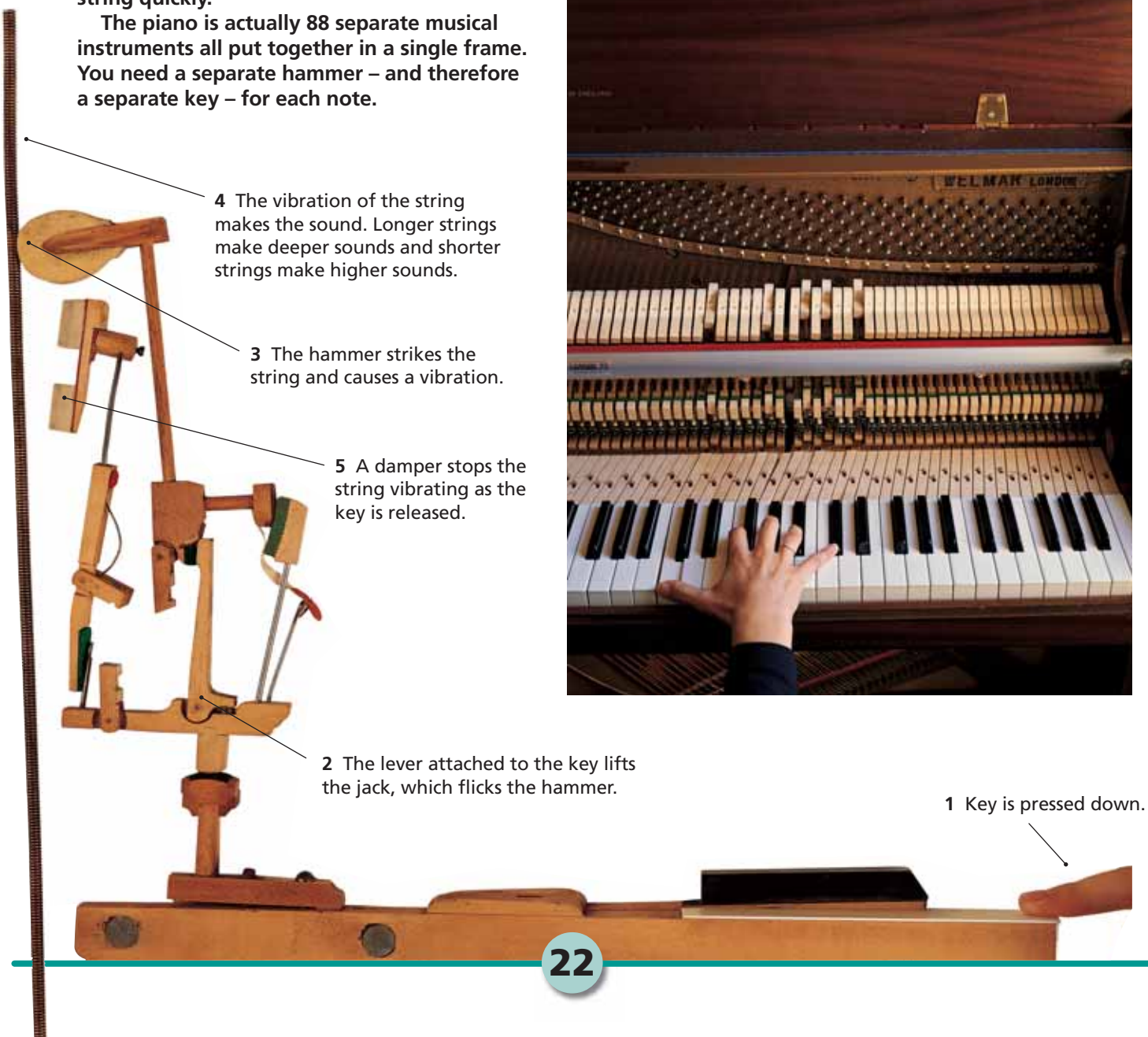
There are several ways in which a string can be made to vibrate. The string can be struck (as in a piano), plucked (as in a guitar) or a bow can be scraped across it (as in a violin).

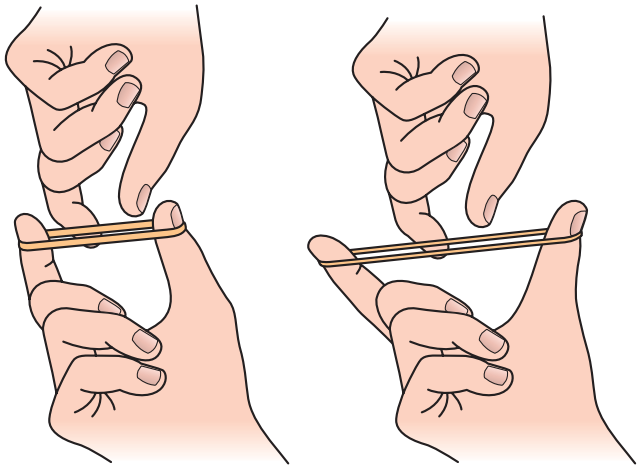
Fixed length strings

Instruments like the piano have strings stretched over a strong metal frame. The hammer strikes the string and causes it to vibrate at the note it has been **TUNED** to (Pictures 1 and 2).

▼ (Pictures 1 and 2) A piano has many strings, all held in a frame. When you press a key on the keyboard, levers make a hammer tap the string quickly.

The piano is actually 88 separate musical instruments all put together in a single frame. You need a separate hammer – and therefore a separate key – for each note.





▲ **(Picture 3) Changing the pitch of an elastic band by increasing the tension.**

Changing the string length

Instruments where the fingers touch the strings have a much smaller number of strings. In this case, the individual notes are produced by placing a finger on the string as it crosses the fingerboard. To produce a higher note, the string is shortened by pressing on it. The longer, or thicker, strings produce the lower notes.

In string instruments the strings are stretched and held tight. To see the effect of changing the tightness, or **TENSION**, in the string, hook an elastic band over two fingers and pull the band taut. Now pluck it (Picture 3). Pull harder and pluck again. The band is now under greater tension and the pitch is higher.

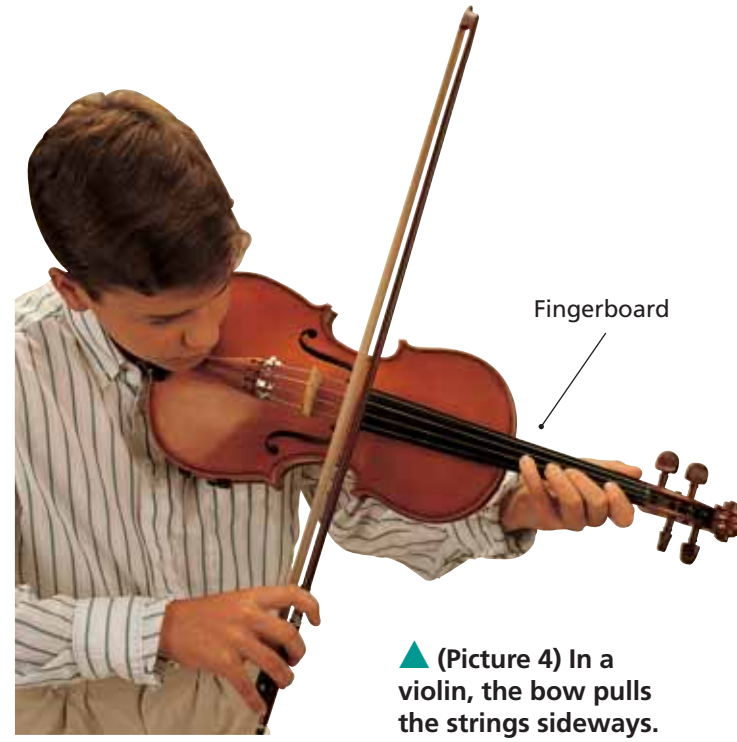
Violin

In a violin, there is a set of four strings (Picture 4). They are tightened, and tuned, by the pegs at the end of the fingerboard.

The strings are stretched over a small wooden frame called a bridge. Below the bridge, and inside the violin, is a post that connects the front and back of the case.

When the violin bow scrapes across the strings, the juddering motion causes the string to vibrate. The vibration of the strings goes through the bridge and into the body of the violin.

The body of the violin acts as a sound box, causing the sound to bounce back and forth (resonate) inside the violin, making the sound richer.



▲ **(Picture 4) In a violin, the bow pulls the strings sideways.**

Summary

- **String instruments work through the vibration of a string.**
- **In some instruments, separate strings are used to make individual notes.**
- **In instruments such as guitars and violins, the notes are produced by changing the length of the strings using the fingers or a bow.**