The Ogden Trust

making physics matter

Age 7-9 years

# Scientific ideas over time

## The loudest sounds ever heard

### Till roll timeline

**Introduction**

When learning about sound it is quite fascinating for children to think about the loudest sounds that have ever been heard by humans. In doing this, children can think about a variety of real-life examples of sounds being created, suggesting what vibrations have caused the sound as well as discussing how loud sounds can affect hearing. The volume of sound is measured in units called decibels (dB). The higher the number in decibels, the louder the noise. Any sound over 80dB has the ability to damage hearing. The louder the noise, the greater the risk of hearing loss and the longer you are exposed to loud sounds the more likely your hearing will be permanently damaged. In this activity, children will map 10 of the loudest sounds heard over the past two centuries on a timeline.

**Materials per pair**

- Till roll
- Scissors
- Tape measure/metre stick
- Pencil
- Ruler
- Ten of the loudest sounds ever heard list
- Access to the internet

**Instructions**

1. Children work in pairs to carefully measure out a 90cm length of till roll. This represents the past 180 years.

2. Ask the pupils to mark one end of the till roll (left) 1840 and then mark the other end (right) 2020. Children can then create a scale marking every 20 years at 10cm intervals.

3. Show the children the 'Ten of the loudest sounds ever heard' list. Give each pair access to the internet and challenge them to research when each of the events happened, marking their findings in pencil on the till roll.

# Ten of the loudest sounds ever heard

The first pneumatic drill was invented in Britain, this machine combines a hammer and chisel and can create sounds as loud as 100dB.

The 'Tungska event' was when an asteroid exploded in the atmosphere above Russia, creating a sound of 315dB.

The sound produced by the eruption of Indonesian volcano Krakatoa was estimated to be 230dB.

The rock band Kiss became the loudest band on Earth, reaching volumes of 136dB at a concert in Canada.

Scientists investigating blue whale song measured underwater sounds as loud as 188dB.

The first British jet plane, the Gloster, created sounds reaching volumes of up to 150dB on take-off.

The first Saturn V rocket launched by NASA created sounds that measured a volume of 204dB.

When it was dropped on the Japanese city of Hiroshima, the explosion from the first atomic bomb produced sounds of 280dB.

The portable vacuum cleaner was first introduced to homes in the USA producing sounds of 80dB.

The massive magnitude 8.0 earthquake in Sichuan, China, produced sounds of up to 235dB.

4. Pairs share their research with the class – looking for similarities and differences between when they think different sound were heard. Use questioning to encourage children to discuss the reliability of the internet sources that they have used.

5. Confirm the positions that the events should be placed on the timeline – the children can then use coloured pens to create their timeline of loudest sounds, adding illustrations if they want.

6. **Challenge:** only give children the years and ask them to use their mathematical knowledge to create the full timeline and determine the position of each event on the timeline (20 years = 10cm, 10 years = 5cm and 1 year = 0.5cm).

7. Encourage children to take the timeline home to share and discuss with their families.

## The solution

| Event | Year | Position on timeline |
|---|---|---|
| The first pneumatic drill was invented in Britain, this machine combines a hammer and chisel and can create sounds as loud as 100dB. | 1844 | 2cm from left end |
| The sound produced by the eruption of Indonesian volcano Krakatoa was estimated to be 230dB. | 1883 | 21.5cm from the left end |
| The portable vacuum cleaner was first introduced to homes in the USA producing sounds of 80dB. | 1970 | 33.5cm from the left end |
| The 'Tungska event' was when an asteroid exploded in the atmosphere above Russia, creating a sound of 315dB. | 1908 | 34cm from the left end |
| The first British jet plane, the Gloster, created sounds reaching volumes of up to 150dB on take-off. | 1941 | 50.5cm from the left end |
| When it was dropped on the Japanese city of Hiroshima, the explosion from the first atomic bomb produced sounds of 280dB. | 1945 | 52.5cm from the left end |
| The first Saturn V rocket launched by NASA created sounds that measured a volume of 204dB. | 1976 | 26.5cm from the left end |
| Scientists investigating blue whale song measured underwater sounds as loud as 188dB. | 1971 | 24.5cm from the left end |
| The massive magnitude 8.0 earthquake in Sichuan, China, produced sounds of up to 235dB. | 2008 | 6cm from the left end |
| The rock band Kiss became the loudest band on Earth, reaching volumes of 136dB at a concert in Canada. | 2009 | 5.5cm from the left end |