What's the question?

Think of a question (about sound) for each of these answers.

1. Hz
2. Vacuum
3. The number of vibrations per second
4. No
5. 20 Hz
6. Loudness
7. 300 m/s
8. Higher pitch
9. Amplitude
10. 600m

Graph feedback

- Should it be a line graph / scaer graph / bar chart?
- Make sure you label both axes and give units.
- The tle should make it clear what the graph shows – is it showing the highest frequency the animals can hear, the lowest frequency they can hear, or something else?
- It’s ok to miss out some numbers in your scale at the start with a zig-zag line, but you can’t do this again between numbers further along your scale.

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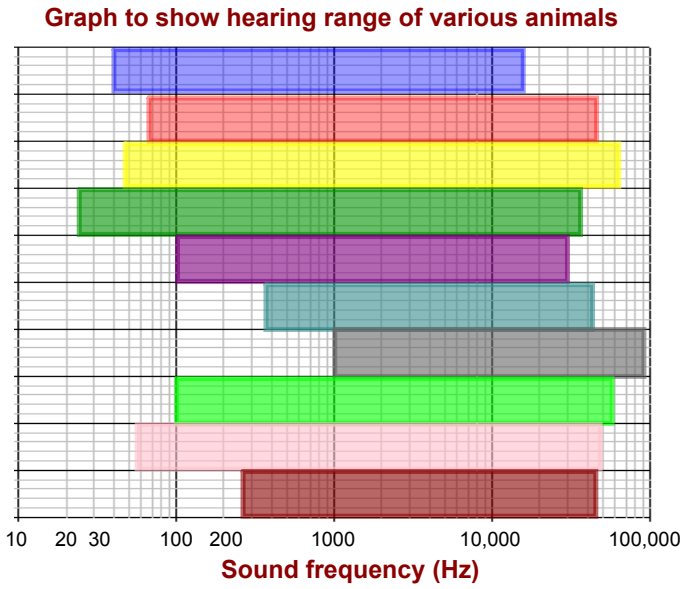
Using a 'logarithmic' graph scale

A logarithmic graph scale goes up by a certain **multiple** for every division. e.g. this graph goes up by a multiple of 10x for every major division on the horizontal axis. This may sound strange, but logarithmic scales are **really useful** for things that have a very wide variation, like hearing ranges. Try to plot these hearing ranges - the first two have been done for you.

Animal	Hearing Range (Hz)
human	40–16 000
dog	67–45 000
cat	45–64 000
cow	23–35 000
sheep	100–30 000
rabbit	360–42 000
mouse	1000–91 000
gerbil	100–60 000
guinea pig	54–50 000
hedgehog	250–45 000



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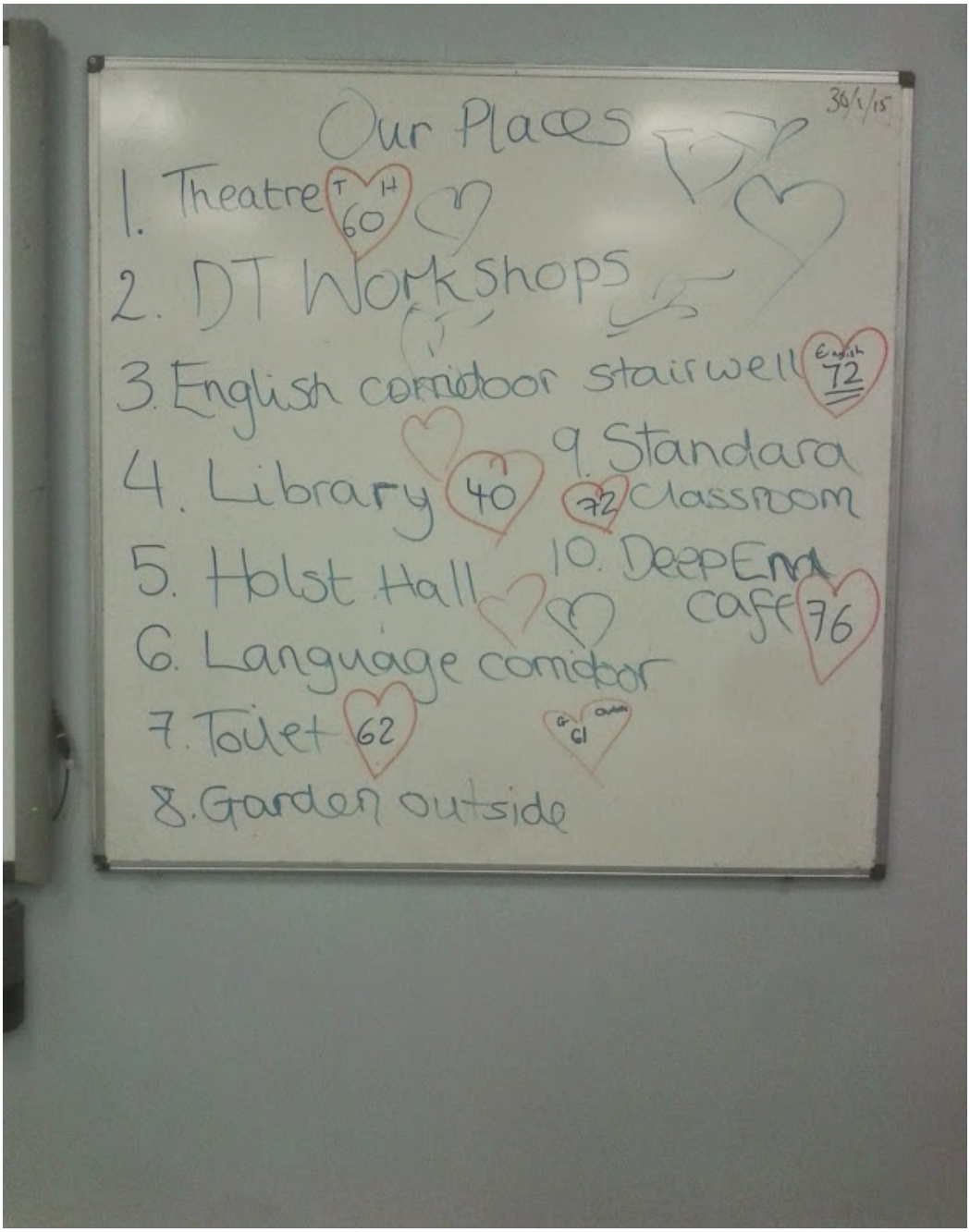

Loudness of sound

Sound loudness is measured in decibels (dB) - see chart for examples.

The loudness depends on how close you are to the source - as sound spreads out it becomes less intense and is quieter.

Exposure to loud sound can damage hearing, e.g.

- **tinnitus (constant ringing in ears)**
- **hearing loss (deafness)**
- **burst eardrum (extremely loud sounds)**

The duration of the sound is important - see sheet for details.