## Graph Feedback

Should it be a line graph / scatter graph / bar chart? Think carefully.

Make sure you label both axes and give units where appropriate.

The title 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?
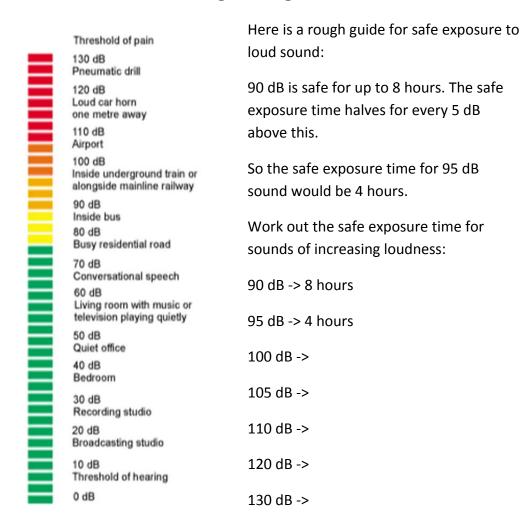
It's ok to miss out some numbers in your scale at the start with a zig-zag line, but you can't do this again between numbers further along your scale.

Remember to use a sharp pencil and a ruler.

Using just the data below, plot another graph that improves on the one you did for your homework. It could be the same type of graph (but improved), or you could plot a different type of graph to the one you did for your homework.

| Animal | Approximate frequency 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 |

## Loudness and Hearing Damage

Threshold of pain
130 dB
Pneumatic drill

120 dB
Loud car horn one metre away

110 dB
Airport

100 dB
Inside underground train or alongside mainline railway

90 dB
Inside bus

80 dB
Busy residential road

70 dB
Conversational speech

60 dB
Living room with music or television playing quietly

50 dB
Quiet office

40 dB
Bedroom

30 dB
Recording studio

20 dB
Broadcasting studio

10 dB
Threshold of hearing

0 dB

Here is a rough guide for safe exposure to loud sound:

90 dB is safe for up to 8 hours. The safe exposure time halves for every 5 dB above this.

So the safe exposure time for 95 dB sound would be 4 hours.

Work out the safe exposure time for sounds of increasing loudness:

90 dB -> 8 hours

95 dB -> 4 hours

100 dB ->

105 dB ->

110 dB ->

120 dB ->

130 dB ->

Many people have to work in jobs where they are exposed to loud sounds. To prevent hearing damage they must wear ear protection. List some jobs that you think might need ear protection: