

Name: _____

Date: _____



At the Top of Your Lungs!

Our lungs provide the air we need to sing: it would be impossible without them! Air from our lungs is blown past the vocal cords at the top of the trachea/windpipe, making sound. But does the amount of air affect how long we can sing for? We are going to do an experiment to find out!



First, let's have a go at singing!

There are lots of different parts to singing and to making music. Be careful not to strain your voice singing, make sure it is comfortable: if you are having to strain then it isn't really singing, it's screaming!

Dynamics: how quiet and how loud can you sing? Can you change from one to the other? (Perhaps avoid practising this one, your family/neighbours might not like it!)



Pitch: how high and how low can you sing? Can you sing the highest note in your family? Who can sing the lowest note?

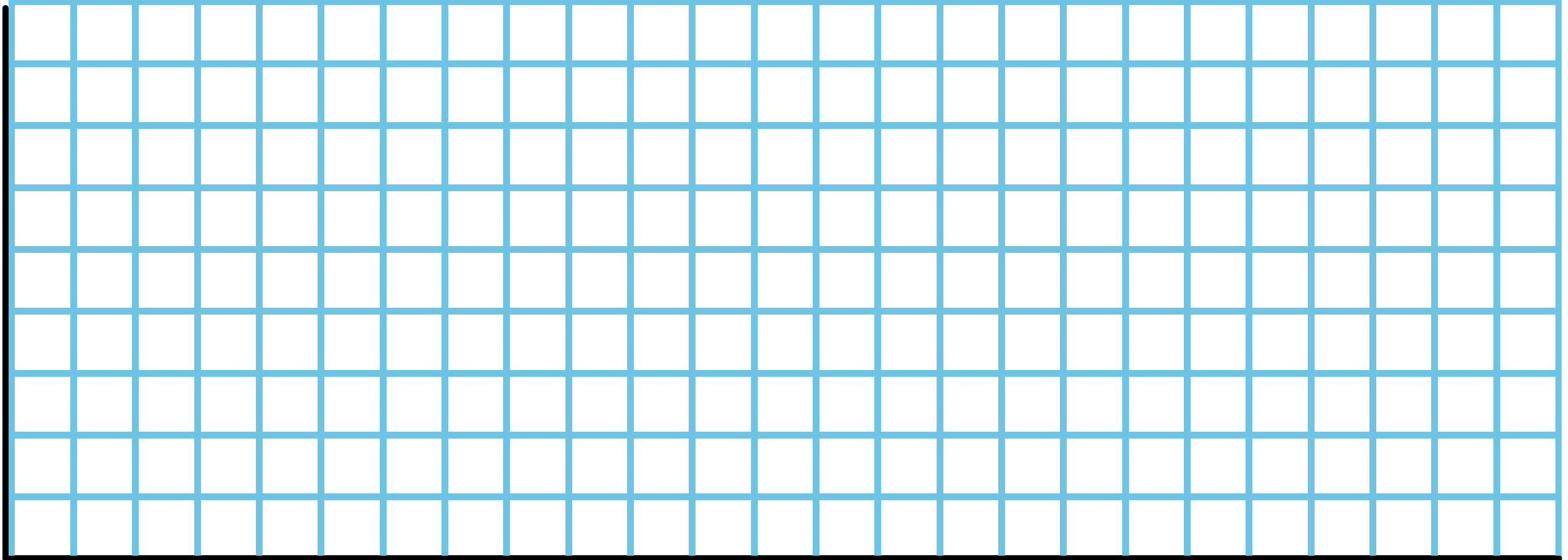
Tempo: how quickly or slowly can you sing? Can you rap like a professional or croon slowly like artists such as Adele?



Style: what do you sound like when you sing? Is it a classical, folk or pop style? Can you sing like your favourite professional singers?

Graph

Make a graph of your results:



**Is there a pattern or a trend? Complete the sentence to describe it:
As the length of breath increases, the length of note you can sing**

If there is one, why do you think we see this pattern? _____

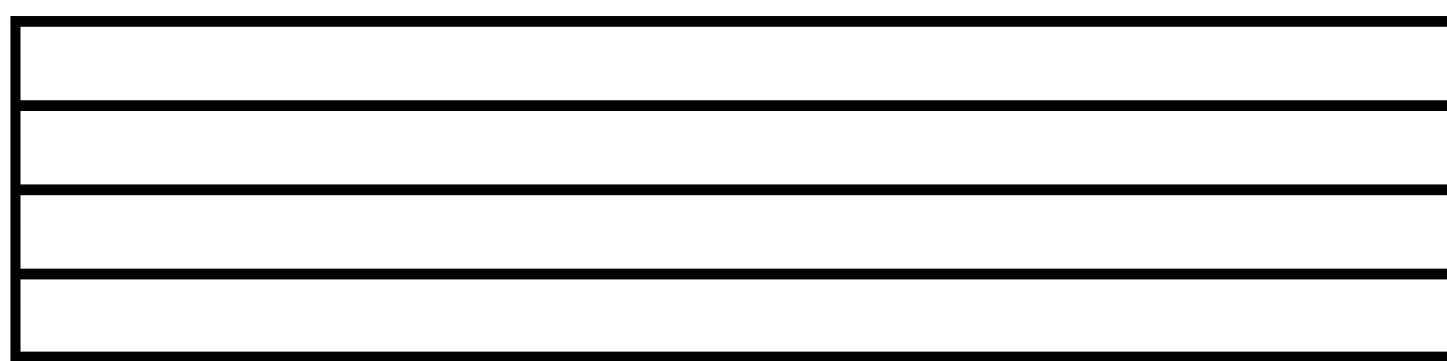
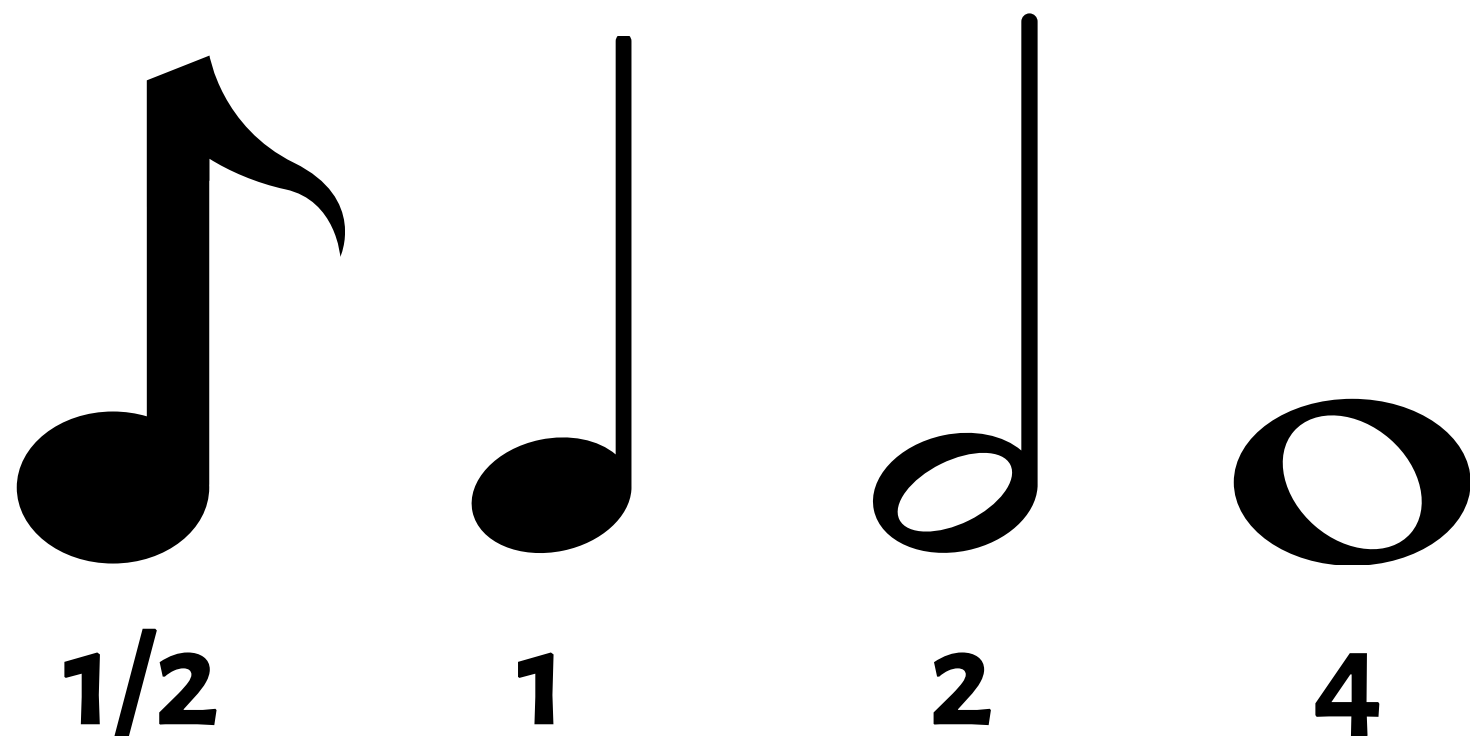
If someone else also had a go, did they get the same result?

Why do you think it might be useful/ important to repeat your experiment? _____

We looked at lots of different parts of singing on page 1. Length of breath could affect any of them. What else could we have tested?

Musical notation

Music is written down in many ways. In Europe, traditionally 'staff notation' is used. That's the system of lines and dots in the picture. The type of dot shows how long a note is held for in 'beats'.



If each beat lasts a second, draw your longest note on the 'stave' (the lines) below. Don't worry about the position of it on the line (that shows the pitch - if you know musical notation then please do put your note in the right place!)

Extension

Our experiment basically looked at the *vital capacity* of the lungs. That is the term for the total amount of air we can push out of our lungs. Most people's vital capacity does not change much, but there are ways we can alter our vital capacity. Put a tick or cross next to the below statements, based on whether they would give someone a larger or smaller vital capacity than they would have otherwise.

Smoking regularly

Having asthma (breathing through a straw can simulate this)

Exercising regularly

Answers

Is there a pattern or a trend? Complete the sentence to describe it: As the length of breath increases, the length of note you can sing INCREASES. It may not have been too strong of an effect, but you should have seen that breathing in for longer leads to being able to hold a note for longer.

If there is one, why do you think we see this pattern? We see this pattern because longer breaths should allow you to take in more air into your lungs. Singing comes from pushing this over the vocal cords, so more air should allow for a longer note to be held.

If someone else also had a go, did they get the same result?

They should have got a similar result, although the numbers may differ, for example, if they held a note that was high in their vocal range, it may have been harder to hold.

Why do you think it might be useful/ important to repeat your experiment? Repeating experiments can make sure that the result did not happen by chance. This is an important idea in science.

What else could we have tested? We could have looked at whether longer breaths allow you to sing more loudly, sing higher or more quickly or even in different styles.

Smoking regularly



Having asthma (breathing through a straw can simulate this)



Exercising regularly



Smoking damages your lungs, but exercising regularly can help you develop your lungs and breathe more efficiently.