

## How do bats fly?

There are over a thousand different types of bat in the world, yet if you saw any one for the first time you would immediately recognise it as a bat by its hand-wings. A bat's wing is built of the same bones as our hand and arm, but the bat's hand bones are much longer. Imagine your fingers growing and growing to nearly the length of your body – that's how big your wings would be if you were a bat!

A bat's wing is a double layer of skin, or membrane, that is supported by the arm, very long fingers, the legs and tail. The membrane between the side of the body and the bat's fifth finger (the arm-wing) gives the bat support and lift. Without this, gravity would make the bat fall down.

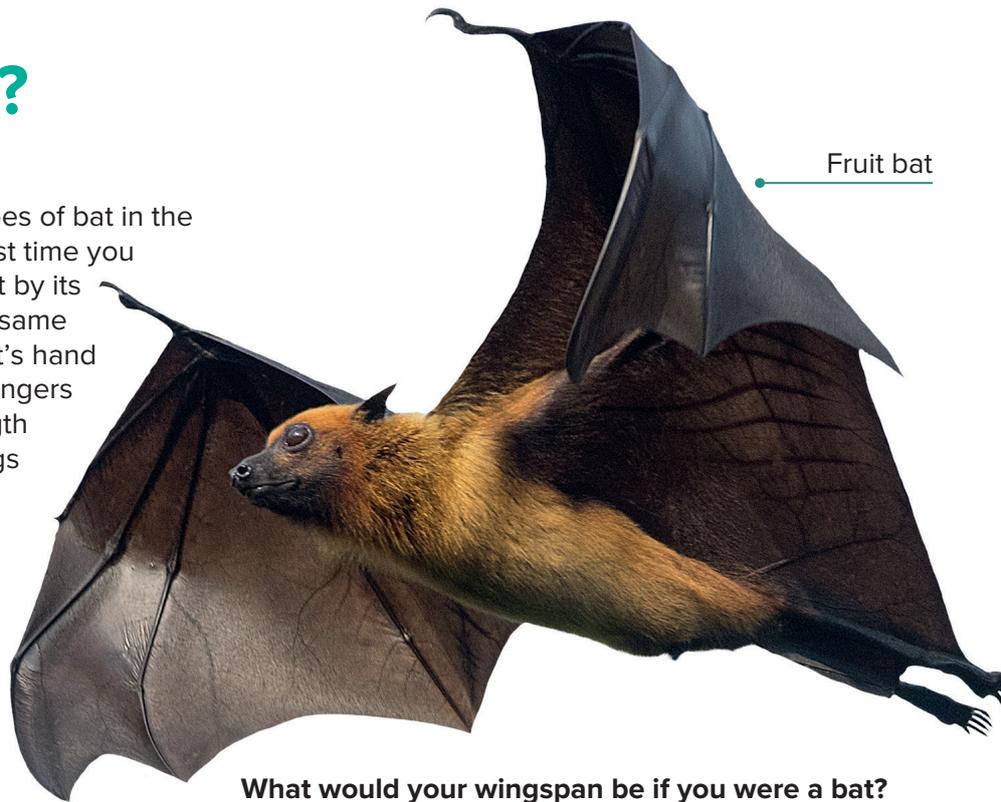
The hand-wing, the membranes between the fingers, is most important for thrust to move the bat forwards. The muscles that power the wings (taking the place of an engine in a plane) are the ones you use to flap your arms. For their size they are many times stronger than yours.

By moving their thumbs, feet and wrists, bats can alter the curvature of their wings and so alter the lift. They will change this according to whether they are flying steadily or manoeuvring to catch their prey.

### Wings are not just for flying.

Bats use their arms and hands in other ways too.

- to walk, scuttling along the ground
- to climb trees
- to swim
- to reach out with fingers to catch insects
- to hang from cave walls or inside tree holes
- as radiators, helping them control their temperature
- as fans
- to shelter and protect their young
- as a raincoat

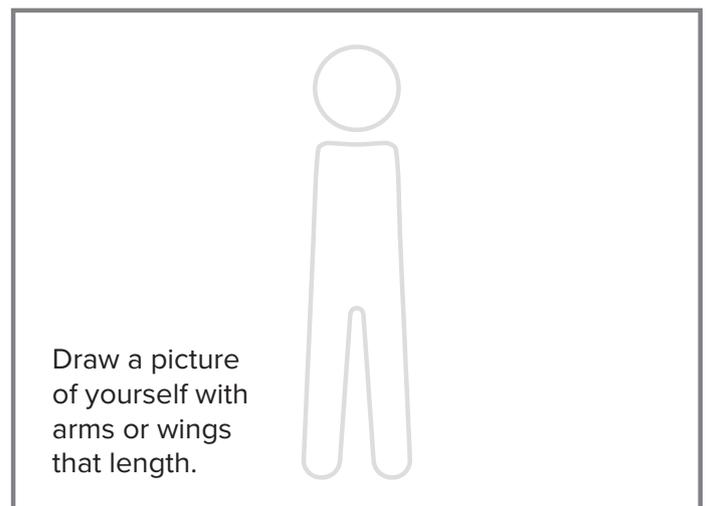


### What would your wingspan be if you were a bat?

A pipistrelle's head and body measures about 4cm. Its wingspan is about 20cm, that is, five times its head and body length.

### What is your height in centimeters?

To find your wingspan, multiply your height by five.



### How much food would you need if you were a bat?

Flying uses a huge amount of energy, so bats need lots of food. They may eat over a third of their weight on a good night. How many sandwiches would be equal to a third of your weight? Could you eat that much in a day?