

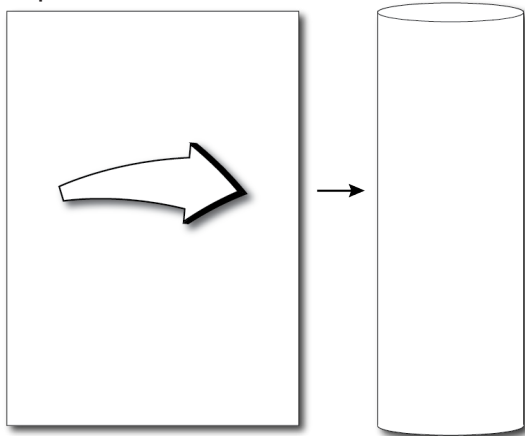
# COUNTING STARS

There are lots of stars in the night sky, far more than you could possibly count. The number of stars you can see will depend on the amount of light pollution in your area, if you have lots of street lights and cars you will see fewer stars than if you were out in the countryside.



You can estimate the total number of stars visible in the sky by counting the stars you can see in a small patch of the sky, then multiplying that number by the total number of patches that make up the whole sky. These instructions take you through this step by step...

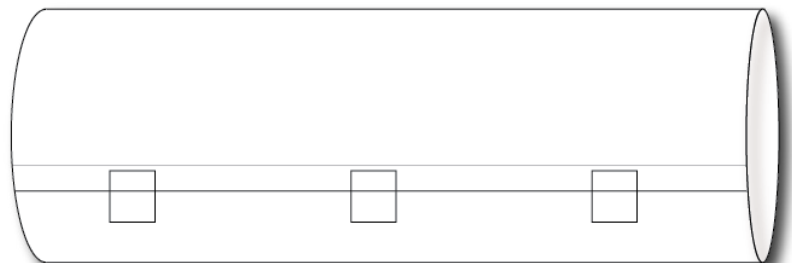
- 1 Roll the A4 paper lengthways into a tube, trying to keep the overlap as small as possible.



- 2 Secure your paper tube with sticky tape.

- 3 Take your tube outside, or go into a dark room with a window and allow your eyes to adjust to the dark. This can take up to 20 minutes, but the longer the better, even 5 minutes will help. Don't look at ANY light sources, especially smartphones or tablets. The longer you can wait the more light sensitive your eyes will become and you will be able to see more stars. If you need to use a light to see, try to use a red light.

RESOURCES	
☆	One piece of A4 paper
☆	Sticky tape
☆	One pencil
☆	Calculator
☆	Clear skies!



- 4 Looking through your tube, select a piece of the night sky that is free of any clouds and count how many stars you can see through the tube, being very careful not to move the tube.
- 5 Record your count in the table below.
- 6 Repeat steps 3 and 4 for four different parts of the night sky, each time being careful to select a part of the sky free of clouds and to keep the tube as still as you can. This will give you 5 results in total.
- 7 Add up the five results you have and record your subtotal in the table below.
- 8 Multiply your total by 39, this is the total number of stars visible in the sky where you are. Due to the shape of the Earth (sphere) we can only see one half of the sky (one hemisphere), so if we wanted to calculate how many stars are visible to the entire planet we would need to double this answer.

Of course the total number of stars in the Universe is much, much bigger but that is because most are so far away we cannot see them with just our eyes, we need to use telescopes.

Postcode	Result 1	Result 2	Result 3	Result 4	Result 5	Subtotal	Total Stars

- 9 Once you are back inside go to: [www.schoolsobservatory.org/discover/stem-clubs/counting-stars-results](http://www.schoolsobservatory.org/discover/stem-clubs/counting-stars-results) and check your answers by entering your total into the box then click 'Calculate', this will confirm the number of stars visible in your night sky.
- 10 Enter the postcode of your location then click 'Add to our map' to add your results to our light pollution map.

What factors might affect the accuracy of your result? How could you improve this?

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Do you have any family or friends in other parts of the world? Ask them to have a go and see how many stars they can see. Share your results with us on social media and let's see who can see the most.

