

meet an in2science mentor

Read about
Mentor Jinghan,
who is studying
Maths, and plans
to be a science
teacher when
she graduates



If you had to pick a shape to be, what would you be and why?

I'm very tempted to pick something cool and obscure like the 4-dimensional hypercube, but I have to admit that I have a soft spot for the circle even though it doesn't tessellate.

Did you know that you can use a compass to draw circles and construct equilateral triangles, squares and hexagons?

Tessellate: when you can fit shapes together with no overlaps and no gaps, like a jigsaw puzzle or a honeycomb.

What is the best part of being an In2science Mentor?

The students of course! (Regardless of whether you like science and maths, or hate it with a passion.)

Teachers don't always have enough time to help each student individually and it feels very powerful to be able to walk the line between teacher and student. In2science mentoring for me is as much about hearing your thoughts about life as it is about helping you learn.

What made you choose a Maths major?

When I started uni I was one of those people who loved to do too many things and didn't have a clue what I wanted to do in life.

What really made my decision in the end was two things: how much I enjoyed teaching maths and watching ideas click for my students; and how much I enjoyed interacting with the sort of (crazy) people who also like maths.

What are you most looking forward to when you go on exchange to the University of California?

I know, I know, I'm supposed to say: "I'm looking forward to learning maths" or "I'm looking forward to seeing a different culture". And sure, those things are going to be awesome! But to be really honest? What I'm looking forward to the most is living on my own for the first time and developing my cooking skills.

www.in2science.org.au



Cracking Codes

a maths activity
for y5-7

Hello,

This activity is for you to try at home with your child and we hope it is both a fun and rewarding experience. Also included is an interview with one of our Peer Mentors undertaken by students at one of our partner schools.

Have fun!

- The In2science Team

Who are we?

The In2science Peer Mentoring in Schools program places volunteer university students as scientists and mathematicians in the classroom. Their role is to help inspire the next generation by being a role model to them of the importance of science, maths and learning.

In2science proudly funded by



Cracking Codes

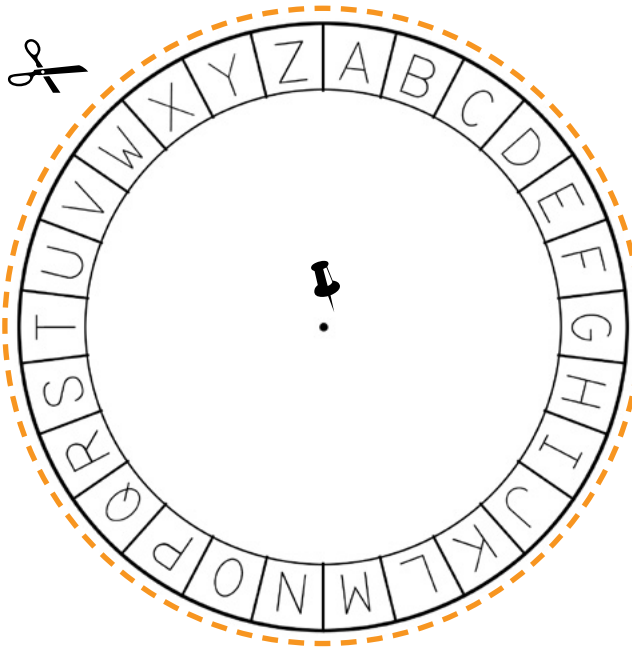
aim

To send a secret message using a 'Caesar cipher' code

Codes are often used to send secret messages. This is especially important for spies and during wars when one side doesn't want the other side to know what they are doing. All codes are based on mathematics so cracking a code proves you are good at maths!

instructions

- Copy the two wheels onto a piece of paper and cut around the dotted lines, or cut them out from this card
- Push the split pin through the centre of the disks with the smaller disk on top and open it so the disks can turn
- Turn the smaller disk so the letters are shifted by a certain number of places (make sure you remember how many)
- Write your secret message
- Change it into a code by swapping the letters on the inner wheel for the outer.
- To read the code your friend just needs to know places you shifted the letters and in which direction



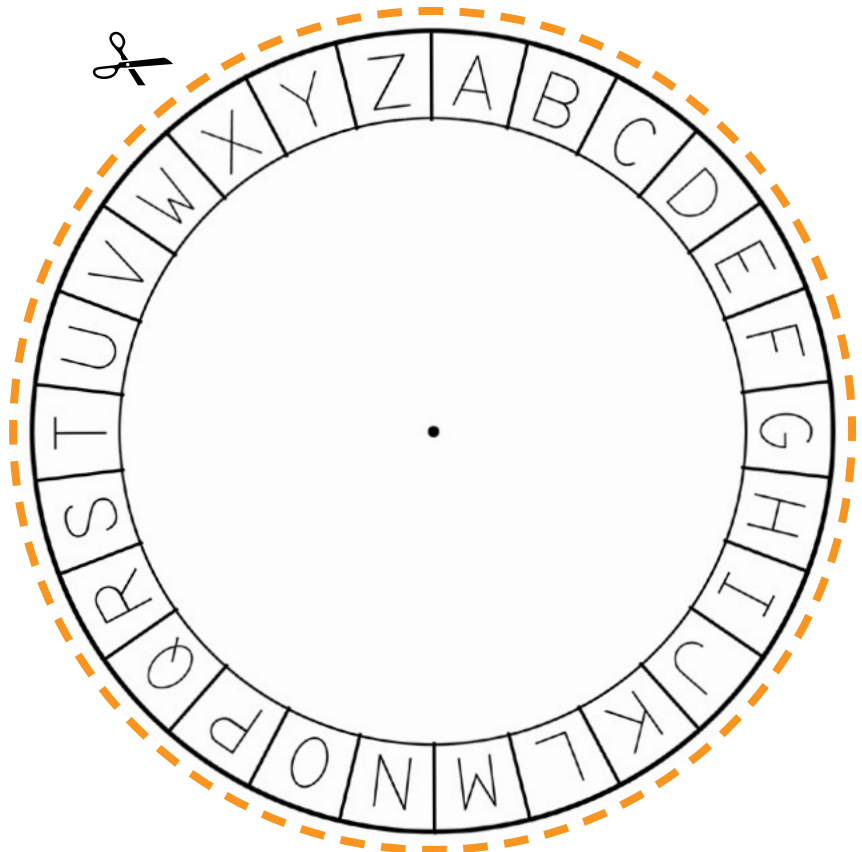
what you need

Paper and pencils
Split pin or drawing pin and Blu-Tak®
Scissors

What's happening?

What's happening?

This type of code is called a Caesar cipher as it was first used by the Roman Emperor Julius Caesar in 50B.C. It is a type of shift cipher as the letters are shifted along. This type of code can be cracked as some patterns stay the same. 'E' is the most common letter in the English language so by looking for which letter comes up most you can find out by how many letters the code is shifted is and translate back.



further investigation

Try using numbers or symbols on your wheel instead of letters. Does this make it easier or harder to crack the code? What is the disadvantage of using symbols instead of letters? Is it easier to decipher a long message or a short one? How could you make this code harder to crack?