

# Something to make

*Have fun making a fun, game-playing object. Then use it to have a go at making some outcomes more likely than others.*

## Fortune Teller

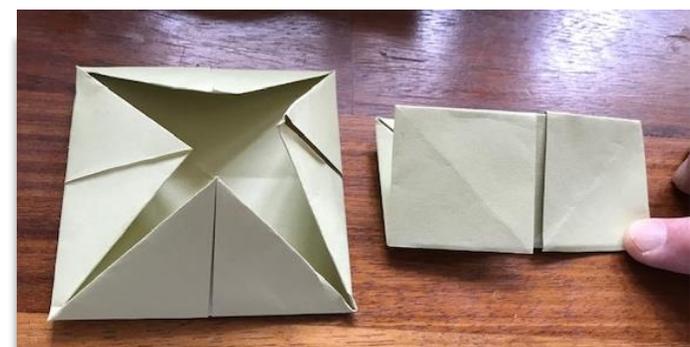
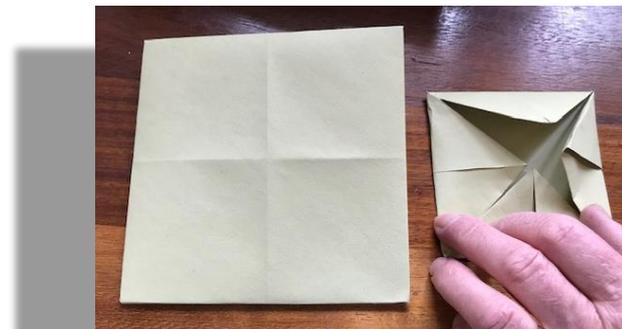
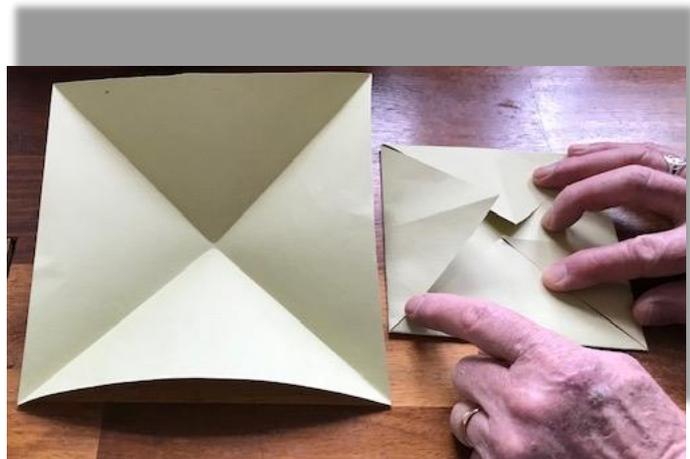
### You will need:

Several pieces of square of paper, some good coloured felt-tips.

[To make a suitably sized piece of square paper use an A4 sheet, folding across from a corner diagonally to the opposite side, then cutting off the surplus rectangle.]

### How to make it:

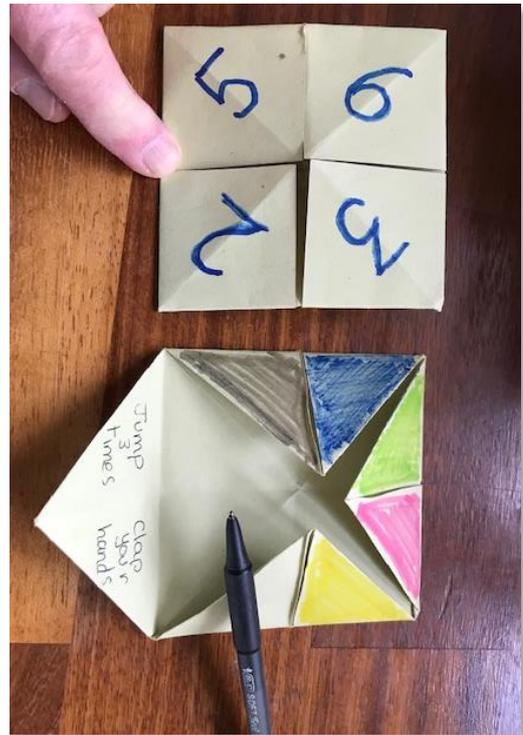
- Fold your piece of paper along the diagonals.
- Press down so the creases are sharp.
- Open up the paper and then fold each corner into the middle.
- All four corners are now in the centre and you have a smaller square.
- Turn the smaller square over so the folds are underneath.
- Repeat the above process, folding all the corners in to the centre.
- You should now have an even smaller square.
- Turn the square over so the folds are underneath
- Fold the square in half and press the fold down so it is a sharp crease.
- Fold the square in half the other way, and press the fold down.



You should now have a fortune teller!



- Place it flat on the table.
- Write numbers on the squares.
- Turn it over and colour the triangles.
- Each one should be a different colour.
- Now lift each triangle and write an instruction underneath it. Each one should have a different instruction. See suggestions below... OR think up your own!
- Fold it all back as it was, insert your thumbs and ask someone to choose a number.



### Suggested Instructions

- Marry a frog.
- Eat beans for breakfast.
- Walk across the room on tip-toe.
- Say *red jelly yellow jelly* three times in a row!
- Do 10 star jumps
- Write your name backwards.
- Pretend you are a sloth.
- Pull your funniest face.

*Write really weird humorous instructions to make it fun to use your fortune teller!*

*Try these sites for further instructions, if these above are not clear.*

<https://www.youtube.com/watch?v=A42wubu8pJA>

<https://www.youtube.com/watch?v=BxyXk1sr2io>

**Follow the instructions to make a fun fortune teller.**

**You can use the eight suggested actions or make up some fun ones of your own.**

**Try out the fortune teller on someone!**

Now answer some questions about how *likely* you are to get each instruction.

- What numbers have you written on the squares?
- Does this make it more or less likely that one set of four coloured triangles will come up more often than the other set?
- Can you 'cheat' by opening the fortune teller in a particular way?
- Can you increase the chances of a person getting a particular instruction, e.g. *Pretend to be a sloth?* How do you make this more likely?

Now let's explore the probabilities by making another fortune teller .

- On the top four squares, write the numbers 1, 2, 3 and 4. This makes it easier to predict which set of triangles you will get.
- Colour the eight triangles alternately using just two colours, e.g. red and blue.
- On the underside of the eight triangles, write the following eight numbers (one on each flap):

32    55    28    73    56    64    46    82

Try the fortune teller 20 times, choosing alternate red and blue triangles each time. Record the under-the-triangle number that comes up each time.

- Did you get more **odd** or **even** numbers?
- More numbers **greater** than 80 or **less** than 80?
- What do you notice about the number of times the digits of your answer add to 10, e.g. 73:  $7 + 3 = 10$ .
- Now look at the eight numbers again.
- How many are **greater than 80?**
- How many are **odd?**
- How many have digits that add to 10?

The **chances** have been fixed to get the results that you got for your list of 20 numbers. E.g. 6 of the 8 numbers are even so it was **more likely** that most of your 20 numbers would be even. (Note that it is still **possible** that you get more odd than even numbers but as only 2 of the 8 numbers are odd, it is **quite unlikely**).

**Design a final fortune teller. This time make one so that there is a very good chance (but not certain) that you will get a particular instruction!**