

Maths Trail



For primary students in the Questacon *Mathamazing* exhibition

Instructions: Find each of the exhibits on this activity trail. If an exhibit is crowded, go on to another one and come back to it later. You will need to read the instructions on the panel near the exhibit, as well as this sheet to answer the questions. Your group can take turns in writing down the answers.

Names of people in your group

Parabola (1)

Drop the ball (don't throw it) into the parabolic dish. Watch the ball after it hits the dish.

Did it hit the yellow disc above the dish?

Try dropping it again from another place. Wherever you drop the ball it should hit the yellow disc which is at the focal point.

Tetrahedron (2)

Can you make the tetrahedron (triangular pyramid)? Read the instruction panel for some hints if you cannot build it.

How many faces (sides) does a tetrahedron have?

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Are they all the same shape?

.....

What shape are they?

.....

Moëbius Strip (3)

Make your own Moëbius strip.



A moëbius strip is unusual in that it has a peculiar number of sides.

Trace around the Moebius strip with your pen.

How many sides does it have?

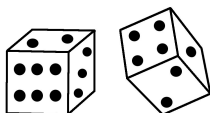
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Cut a Moebius strip in half along the pen line. What do you get?

Try cutting a Moebius strip in three. What do you get?

.....

Dice (4)



Throw both dice twenty times and each time add the number of dots on the top faces. Put a tally mark (like this I) in the box each time you get a total.

Total score	2	3	4	5	6	7	8	9	10	11	12
Tally of throws (eg IIII)											

Imagine you and a friend are playing a board game. Using two dice, you need to throw a twelve to win and your friends need a seven. Who has the best chance of winning?

Tower of Brahma (5)

Before playing this game, read the rules on the instruction panel near the exhibit.

Start by using just 3 discs.

How many moves did it take to move the tower from one peg to another?

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Another person in your group can try with four discs. While they are doing it somebody else in the group can keep track of the number of moves.

How many moves did it take?

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How many moves does it take for your group to move all five discs?

.....

Catenary Arch (7)

Build a catenary arch. Did it remain in place when you lowered the support?

.....

Where else might you see this shape?
Draw some pictures.

Find Your Age (6)

WARNING! You can only use this exhibit if you are younger than 128 years old.

This exhibit will help you write your age in a different counting system. We use the decimal system every day. This exhibit will use the binary system.

Computers use binary counting to perform calculations. Instead of 10 different digits, binary only has two: 0 and 1.

Write the age of the oldest person in your group in binary below. If their age appears in chart A, write a '1' under A in the table below. If it doesn't appear in a chart, write an '0' in the table below. Repeat the procedure for each table and write the results in the table. The result is their age in binary.

A	B	C	D	E	F	G

Newton's Cradle (8)

Pull one ball back a little way and let it go gently.

What happens?

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What does your group think will happen if two balls are pulled and released?

Write your prediction below.

.....

.....

Now try pulling two balls back. Were you right? If not, write down what happened.

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