

Maths about me: a first-lesson icebreaker for IB Maths

IB Math Revision · IB Maths SL and HL (AA and AI) · Student sheet

Name _____

Class _____

Date _____

The starter is non-calculator. A GDC is useful for task A.

Starter (5 minutes)

1. I am a positive integer. My square is 4 more than 3 times me. Who am I?
2. I am the 10th term of the arithmetic sequence 7, 11, 15, ... Who am I?
3. I am $\log_2 64 + \log_3 81$. Who am I?
4. I am the number of ways to arrange the letters of the word MATHS in a row. Who am I?

Main activity (35 minutes)

Task A: Maths about me

Work through Alex's made-up numbers first. Then write the same facts about your own numbers on paper.

- a. Alex was born on day 28 of month 6 in 2009. Write 28 and 2009 as products of prime factors.
- b. Find the HCF and the LCM of 28 and 2009.
- c. The arithmetic sequence 6, 28, 50, ... starts with Alex's month and day. Which term is closest to 2009, and what is it?
- d. Solve $2^x = 28$, giving x to 3 significant figures.

Task B: 'Who am I?' in pairs

Solve these with a partner. Then each write a riddle of your own, on a topic from last year, with exactly one answer and swap.

- a. I am a three-digit multiple of 9 and of 11, and my hundreds digit is 7. Who am I?
- b. I am the sum of the first n odd numbers, and I am between 200 and 250. Who am I, and what is n ?
- c. I am the sum to infinity of a geometric series with first term 12 and second term 4. Who am I?
- d. I am the positive integer n with ${}^nC_2 = 45$. Who am I?

Task C: Four 4s

Use exactly four 4s to make each target. Allowed: $+$, $-$, $\times$, $\div$, brackets, powers, $\sqrt{\quad}$ and $!$ ($4! = 24$). You may join two 4s to make 44. Other answers are possible.

- a. Make 24 using only $+$, $-$, $\times$ and $\div$.
- b. Make 64.
- c. Make 19.
- d. Make 1024.

Extension

1. Prove that the sum of any two-digit number and the number with its digits reversed is a multiple of 11.
2. Find every two-digit number that is 4 times the sum of its digits.