MATHS APPENDIX

After the applause, lights down, smoke, Christopher appears rising through the centre trap. There is very cool, electro music.

CHRISTOPHER. Thank you very much for clapping and thank you very much for staying behind to listen to how I answered the question on my maths A-level. Siobhan said it wouldn't be very interesting but I said it was.

She didn't tell me what I should use, so I decided to use all the machines and computers in the theatre including: VL3500 Arc lights, which are moving lights; Light Emitting Diodes; Meyer MSL 2 speakers; a DPA boom mic and Sennheiser radio transmitter; and 4 PTD20KS Panasonic overhead projectors.

I had 2 hours to answer 19 questions — but I spent 38 minutes doing moaning and groaning which meant I only had 4 minutes to answer this question.

A timer is projected — displaying 4.00.00.

"Show that a triangle with sides that can be written in the form $n^2 + 1$, $n^2 - 1$, and $2n$ (where n is bigger than 1) is right-angled."

And this is what I wrote.

Christopher runs and starts the timer.

Start the clock.

A right-angled triangle is made using projection (or lasers if you have the money or holograms if you are in the future).

If a triangle is right-angled, one of its angles will be 90 degrees and will therefore follow Pythagoras' theorem.

Pythagoras said that

$$a^2 + b^2 = c^2$$

To put it simply, if you draw squares outside the 3 sides of a right-angled triangle, then add up the area of the 2 smaller squares, this will be equal to the area of the larger square. This is only true if the triangle is right-angled.

Come on Bluey!

The A-level question is an algebraic formula for making right-angled triangles.

$n^2 + 1$ is the biggest number in this equation, which makes it the hypotenuse, which is the longest side of the triangle.

To find the area of a square you must multiply the length by the width.
So … the area of this square is

$$2n \times 2n$$

Which equals $4n^2$.
The area of this square is

$$(n^2 - 1) \times (n^2 - 1)$$

Which equals

$$n^4 - 2n^2 + 1$$

Now, if we add these two squares together … This equals

$$n^4 + 2n^2 + 1$$

NOW … We need to find the area of the square on the hypotenuse which is

$$(n^2 + 1) \times (n^2 + 1)$$

Which equals

$$n^4 + 2n^2 + 1$$

Which is THE SAME TERM!!!!!!!!
So the area of the two small squares adds up to the area of the larger square. So all my squares fit together to satisfy Pythagoras' theorem. So the triangle is — RIGHT-ANGLED!

And that is how I got an A-star.

Confetti.

Christopher exits.