

END RESULTS: WHAT HAPPENS NEXT?

Two balloons—the question

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Two balloons—the question

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Abstract

What happens when two similar balloons which are inflated to different sizes are connected by a tube? Is it possible to blow up two balloons simultaneously using ‘Y’ connection?

This question is where the ‘trail’ of the ‘What Happens Next?’ series began for me many years ago. It illustrates how we can combine both awareness of physics principles with our general experience at all ages and also shows how we can explain physical phenomena at different levels of understanding.

Two balloons are taken from the same packet; they are to be partly blown up and connected to either side of a pipe. A hosepipe connector can be used or simple piece of tubing with bag clips to shut off any air passage (figure 1).

One balloon is blown to about 3/4 maximum, and the other just with just a small amount of air but with the skin nevertheless stretched (figure 2).

What happens when the passage of air between the balloons is opened? Will the slightly inflated balloon be blown up by the bigger balloon until they are approximately equal in size? Will the balloons remain their same initial size, or will the smaller balloon inflate the larger one?

In a second experiment two similar balloons are connected to the upper arms of a ‘Y’ piece (figure 3) and an attempt is made to blow them up together. How successful will this attempt be?

NB: Balloons should be as similar as possible, and should not have been previously inflated as this affects the result.



Figure 1. Tubes to connect balloons.

The answer

The full answer will be published in the next issue of *Physics Education*. The short answer will be revealed online shortly³. Do you know or can you work out the answer?

³ <http://iopscience.iop.org/0031-9120/page/What-happens-next>



Figure 2. Different inflations of balloons.



Figure 3. Blowing up two balloons with a 'Y' piece connector.

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David Featonby retired from school physics teaching at a Newcastle comprehensive school in 2003, where he worked as head of physics, head of science, head of sixth form and assistant head (though not all at the same time).

Most recently he has been an active member of the Science on Stage Europe executive board, helping to arrange its biannual festival and supporting on going cooperation between teachers. He continues to participate in many conferences across Europe with a variety of workshops, including 'What happens next?' based on this column.

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