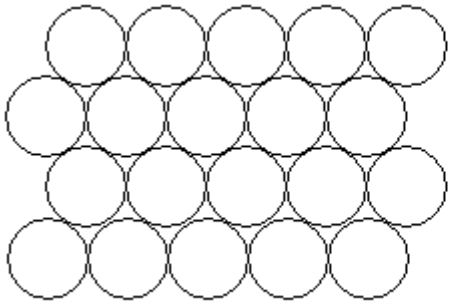
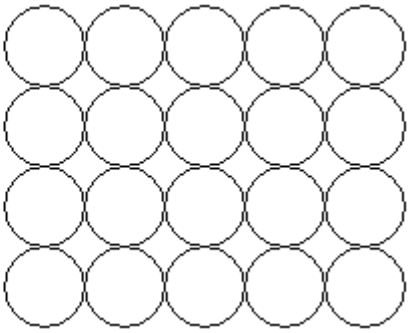
Weekly Challenge #12

JACK PETCHEY FOUNDATION
COUNT ON US Secondary Maths Challenge
WITH MAYOR'S FUND FOR LONDON

Welcome to the Count on Us Secondary Challenge's twelfth weekly challenge. There has been a lot of discussion about a branch of mathematics called optimization. Specifically packing problems. The thing is that school students have to be able to be placed in a school classroom such that they are always two metres away from the nearest other person. The most important thing is that your stay this distance away for sustained periods (15 minutes or more). So, although you have to be careful coming in and going out, it is while you are sat in the lesson at work that really matters. This challenge will give you some different packing problems to think about and finish with the classroom challenge that you need to solve in order to get back to school!

1. Standard carpet tiles are 50cm squares. How many tiles would be needed to cover the whole of a room 4.5m x 6m?
2. The internal dimensions of a packing box are 15cmx18cmx26cm. How many smaller boxes 5cmx2cmx13cm would fit inside?
3. A standard tin of baked beans is 110mm high and has diameter 73mm. A pack of 24 are put in a packing box in 4 layers of 2x3. What are the internal dimensions of the packing box?
4. A Count on Us Challenge Floor Hex mat is made of 16 hexagonal tiles. Each hexagon has side length 40cm. What is the size of the smallest rectangle the completed 4x4 board would fit inside?
5. A shipper needs to send boxed Pop! Vinyl figures. They are packed in standard shipping boxes 40cmx40cmx40cm. The figures are in boxes 11.5cmx16cmx9cm. What is the largest number they can fit in one shipping box?
6. Twenty baked bean tins could be placed in a layer in two different ways:





What size rectangle will each of these fit in? (Remember: diameter 73mm)

7. A typical school classroom is approximately 6m by 9m. Draw a plan to show how you would get the largest number of students plus their teacher into this classroom while observing physical distancing guidelines while sat for the lesson.

HELP US SPREAD THE WORD…

We want to make sure everyone in London knows about your fantastic maths problem solving. Share your thinking, your solutions and photos on Twitter!
Keep them coming and remember - tag us and your school in any online activity.
#CountOnUs @mayorsfund @JPFoundation

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