Suggested questions to ask students about Problem 12

The key to this question is getting students to be able to write down a sequence of the heights reached on sequential bounces. It could be approached by writing down terms in the sequence or programming a spreadsheet to calculate the heights for various release heights

Look carefully at the diagram, what information can you get from this?

How would you label the diagram to make it more helpful to you?

Is it easier to start with an example where you decide what height the ball is dropped from?

On the first bounce the ball reaches 75% of this height it was dropped from, how could you write this in a simple way?

What about the next bounce? Can you write this in terms of the height the ball was originally dropped from?

Getting into Problem 12

Firstly look at the diagram and think about the information that can be obtained from it as it is. Then think about the extra information that might be added to it to make it even more helpful. It is probably helpful to give a letter, say h, to the height the ball is dropped from.

It might help to start by choosing a specific height to drop the ball from and working out the answer in this case, then you can try to generalise

On the first bounce the ball reaches 75% of this height it was released from it would be useful to write 75% as a decimal so that you can write the height of the first bounce as a decimal multiplied by the release height. Now do this for the second bounce multiplying the two decimals. Keep doing this for each bounce until the decimal multiplying h is equivalent to a percentage less than 20%.