34 + 35

Ms Jones is about to start a mathematics lesson in a Year 6 class (student age 10-11). As she walks into class, she notices two girls giggling while listening to something in their headset. She asks why they are giggling and she finds out that they are listening to Ariana Grande's new single *34 + 35*. "I am not sure you're even supposed to listen to this – and certainly not during a maths lesson!" she comments. "But, Ms!", says one of the girls, "Ariana is playing a scientist in the video and is doing maths in the song! We too just practised doing sums: 34 plus 35 makes 69!". "Do you even know what this means…?!" exclaims the teacher. The class giggles. Another student says he asked his older sister about this. "She mumbled "something to do with sex" and rushed out of the room…", he says. The class is now roaring with laughter and the teacher interjects: "Ok, everyone! If Ariana is doing maths in her single, so will we in this class, ok?".

Ms Jones: There we go. 69 is the sum of two consecutive numbers, 34 and 35. Can you think of other numbers that are the sum of two consecutive numbers?

Neil: Oh no. This is boring…And what's the point? Can't we just go back to whatever you were planning for today, Ms?

Anna: Well, I can think of some numbers. 49 is the sum of 24 and 25. And 89 is the sum of 44 and 45! I think there is quite a few of them! [*She starts writing down a list: 49, 69, 89…*]

Barack [*a little weary*]**:** Anna, this is taking too long and it's not just the numbers ending in nine: 67 is the sum of 33 and 34, 93 is the sum of 46 and 47 and so on. There is no way you can make a list of all of them. Or, oh, or… maybe you can?! Look! Say I have a number *N* and then the number after this is *N*+1. If I add them together, I get *N*+(*N*+1). That's 2 times N plus 1 [*he writes: N+(N+1) = 2xN+1*]. Doesn't that say that the sum is always…a what you call it… that the sum is always an odd number? So, if I have an odd number, I can always break it into two numbers that are next to each other – what did you call them, Ms? – er… consecutive numbers! Look, look, it works: 1005 is an odd number and is the sum of 502 and 503. Wow! I wonder whether if this works for three consecutive numbers…! Hm…

Clive [*annoyed*]**:** Ah, here he goes again with his *N* this and *X* that ... Too complicated and boring. I think I am with Ariana on this one: "Math class, never was good"… Well said!

You are the teacher and you just heard what Neil, Anna, Barack and Clive said….

1. Which whole numbers can be written as a sum of two consecutive numbers? Explain your answer.
2. How would you respond to Anna?
3. How would you respond to Barack?
4. How would you respond to Clive?
5. How would you respond to the whole class – also in the light of Neil's initial comment – and conclude the lesson?