

Today is Friday 16 December 2022. Ms Harris is about to start the last Year 6 maths lesson before school breaks for the Christmas and New Year holidays. As she enters the classroom, she finds the children quite excited and gathered around a surprise birthday cake made for Neil's birthday.

Neil: Ms, it's my birthday today! Let's do no maths. I only want to do fun things on my birthday! And, today is the last day of school and everyone is coming to my party right after...and my mum says I'm so lucky it's on a Friday and everybody will be able to come...and having my birthday on a Friday won't happen again for God knows how many years! I won't even be in school, when this happens again, she says! Please, Ms, no maths today!

Ms Harris: Well, well, who says we cannot do maths with what you just said, Neil? So, everyone, do you think Neil's mum is right? That he won't have his birthday again on a Friday while he's still in school? What do you think?

The class is starting to chat about this. Anna raises her hand.

Anna: Ms, I checked the calendar on my laptop and Neil's mum is not right. His birthday was on Thursday last year, in 2021, and it's today, Friday, this year, 2022, and it is on Saturday in 2023! It's one day plus every year. So, it will be on Friday again in seven years, when he is in year 13, in 2029!

Barack: Hold on, I just checked the calendar for 2029 and it says that December 16 is on a Sunday! What's happening here? This is odd. I kinda thought Anna made sense to be honest: a year has 365 days and a week has 7 days...if I divide by 7... this gives us 52 weeks plus 1 day leftover. So, yes! Neil's birthday will move forward a day every year [*pauses briefly*] Ah, hold on. Not all years have 365 days though, right? What's it called... a leap year? Therefore... [*mutters to himself*] ...That's it! OK. Problem sorted. I know what's happening now!

Clive: Well, do you, Barack!? You are probably the only one. I have no idea about what you just said. Gibberish, I say. If you are right, then 365 days is divided by 5 just fine, nothing left. And we only go to school Monday to Friday, which is five days and "therefore" as you like to say [*chuckles*], every year Neil's birthday will be on the same day. Huh! Anyway, what's the point of all this? I'm really starving and I want a slice of cake!

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

1. Do you agree with Neil's mum? Justify your answer using school mathematics.
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?