

A Present for Athena*

Below is an episode from a lesson in the Y6 class of Ms Chambers. Ms Chambers asks her Y6 students to work on the following problem:

Jude, Karim, Lina and Zano are buying a gift for their friend Athena. They find a gift they all agree Athena will like and are about to pay for it. Jude says "I am sorry, folks! I haven't saved enough, and I can only pay a part of my fair share, a fiver less!". Karim says he can only afford to pay his fair share and Zano says he can pay just one pound more than his fair share. Lina, thankfully, offers to pay for the rest and pays £29. What was the gift's price?

One of the students, **Neil**, complains that this is too complicated and that he hates word problems 'they are no use anyway!', he proclaims. Ms Chambers invites views from the class on Neil's complaint. Anna raises her hand and Ms Chambers invites her to speak.

Anna: I don't think this is as complicated as Neil thinks. But I do think this takes a lot of time to do. I started trying gift prices for £30 and more, knowing that Lina paid £29. I tried £40 and it wasn't working, then £50 and it wasn't working, and I got to £100 and it's working!

Another student, Barack, then asks permission to speak.

Barack: Why do you have to spend so much time trying all these different numbers? My sister who is doing her GCSEs told me we will do a thing called al-ge-brrrrrra [*the class giggles at the sound of the word*] and she showed me this great method. If everybody had paid their fair share – I will call it x – then the gift price would be 4 times x . Then, Jude pays $x-5$, Karim pays x , Zano pays $x+1$ and Lina pays £29. The total is: $(x-5)+x+(x+1)+29=4x$. I solve this and.... There we are x is £25 and the price of the gift is four times x which is.... £100!

A third student, Clive, waves his hand impatiently. Ms Chambers signals to him that he can speak.

Clive: You must be joking! This is even more complicated and a waste of time! Why do you have to try all these numbers?! [*addressing Anna*]? And why do you have to put us through all these... [*pointing contemptuously at Barack's calculations*]. Everyone should sort themselves out and pay their fair share! Problem solved!

'Thank you, all', says Ms Chambers, 'Quite a few ideas! Shall we take them one by one?'

Imagine you are the teacher of this class.

1. Solve the mathematical problem posed by Ms Chambers. 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 conclude the lesson in a way that provides a satisfactory response to the mathematical problem and appeases Neil's exasperated comment?

* This MathTASK was part of the summative assessment portfolio of learning outcomes for the BA Education Year 3 module *Children, teachers and mathematics: Changing public discourses about mathematics* taught at UEA in 2017-18