

Chapter 14 - Integers: Positive and Negative

Subtracting a negative 3 minutes and 33 seconds

To understand mathematics, we have to make connections, we make connections between the symbols in mathematics, the language, both informal and formal, the pictures that support umm...the way we manipulate the symbols and real life or everyday concrete situations. So, when come to try to make sense of subtracting a negative number. We have to try to make those kinds of connections. Five subtract negative twelve for example. Now I don't make sense of this if I think of the subtraction as meaning take away because I can't connect that with anything real. We can't have five and then take away negative twelve, I don't know what that means. So, I make sense of this by connecting the subtraction symbol with the idea of comparison, we compare five with negative twelve. We find the difference between them or we find what you have to add to negative twelve to get to five that's using the idea of inverse of addition. And that makes sense when we connect it with pictures so I'm thinking to myself how do I get from negative twelve to positive five?

Putting this on a number line, we have zero there. Five goes up there on the positive side, negative twelve down there and immediately the subtraction makes sense doesn't it? Look at the gap between the negative twelve and the positive five, that's what we're trying to find. How do I get from negative twelve to positive five? I can do it in two steps, I can add twelve and I can add five and that's a total of seventeen. So, you get from negative twelve to positive five by adding seventeen. The difference between negative twelve and five, is seventeen. And we can connect the picture, we can connect the language we're using here to real life situations such as temperatures. If the temperature is negative twelve, how much does it have to rise to become a temperature of positive five? Well clearly, we need a rise of twelve degree first of all to get us up to zero and then we need another rise of five degrees, to get us up to positive five which is a total rise of seventeen degrees. Or we could connect it with bank balances, if I have £12 overdrawn in my account, how much do I pay in to get to be £5 in credit? Well I have to pay £12 to pay off my debt, that gets me up to zero then a further five pounds

which is a total of £17 that had to be paid in. Subtracting a negative number makes sense when you make these kinds of connections, it doesn't make sense if you just try to remember a meaningless rule like two minuses make a plus.