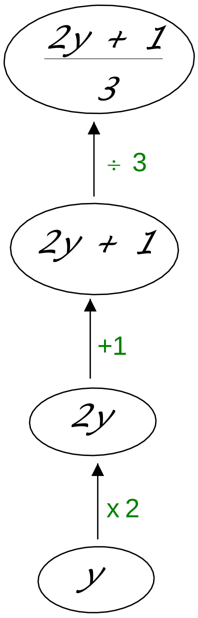
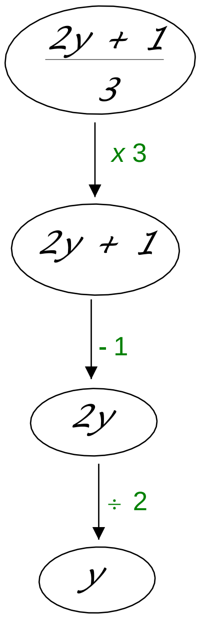
I encourage students to think about how the variable is treated within the expression. What has happened to the y in $\frac{2y+1}{3}$? Or, more simplistically, how would the y be 'dressed' up to look like $\frac{2y+1}{3}$? I liken it to a dressed foot. Very importantly, students have to first recognise ***how many operations*** are in the expression and what are they.

Having talked about it they then write:



Having become familiar and comfortable with this idea we then look at how to 'strip' it down (and the dressed foot analogy is useful here – pretty safe too, even with year 9s). They get to the point of writing:



It seems to be out of any context but we earlier recognise the need for some useful process from a reasonable context (like the taxi problem).

Then we talk about the balancing of equations etc, like most of us do, and then look at solving an equation such as $\frac{2y + 1}{3} = 1.3$

They then go on to apply their reasoning thus:

$$\frac{2y + 1}{3} = 1.3$$

$\downarrow x\ 3 \qquad \downarrow x\ 3$

$$2y + 1 = 3.9$$

$\downarrow -\ 1 \qquad \downarrow -\ 1$

$$2y = 2.9$$

$\downarrow \div\ 2 \qquad \downarrow \div\ 2$

$$y = 1.45$$

Ultimately, students eliminate the green bits – the arrows and operations. They may also find easier ways to write the ‘stripping down steps’ – either of Rex’s suggestions is fine. It’s the reasoning and demonstrated understandings that are important and the kids know that.

BTW1 – my kids NEVER show working out. That’s what kids in a classroom do. My kids provide their argument or reasoning for their solutions. That’s what Mathematicians and scientists do.

BTW2 – note that the examples I give the kids do not have easily intuited solutions. If they are asked to solve something like $2x + 1 = 7$ they can ‘see’ that $x = 3$ and argue (yay for them) that they do not need another process. And they are right, if the only examples they see are more easily solved.