

**YOU & MATHS** **Comparing procedures** It can be useful to solve the same problem in different ways. Solve the following problem in 3 different ways. Celia has some rocks, and Richard has two more rocks than Celia. Anna has four times as many rocks as Celia, and all together Celia, Richard, and Anna have 14 rocks. Find how many rocks each person has. (Let  $A$  be the number of rocks Celia has,  $B$  the number of rocks Richard has, and  $C$  the number of rocks Anna has. First assign  $x$  to  $A$ , then to  $B$  and then to  $C$ . Make sure you always find the same results for  $A$ ,  $B$ , and  $C$ .)

- We first assign  $x$  to  $A$ :

$$A = x;$$

$$B = 2 + x;$$

$$C = 4x;$$

$$A + B + C = 14.$$

So:

$$x + 2 + x + 4x = 14 \rightarrow 6x = 12 \rightarrow x = 2.$$

Therefore  $A = 2$ ,  $B = 4$ ,  $C = 8$ .

- Let us assign  $x$  to  $B$ :

$$B = x;$$

$$A = x - 2;$$

$$C = 4(x - 2);$$

$$B + A + C = 14.$$

So:

$$x + x - 2 + 4x - 8 = 14 \rightarrow 6x = 24 \rightarrow x = 4.$$

Therefore  $B = 4$ ,  $A = 2$ ,  $C = 8$ .

- Finally, assume that  $x = C$ :

$$C = x;$$

$$A = \frac{x}{4};$$

$$B = 2 + \frac{x}{4};$$

$$C + A + B = 14.$$

So:

$$x + \frac{x}{4} + 2 + \frac{x}{4} = 14 \rightarrow \frac{3}{2}x = 12 \rightarrow x = 8.$$

Therefore  $C = 8$ ,  $A = 2$ ,  $B = 4$ .