Algorithms: multiplying by a value

Use a range of contexts for students to use a spreadsheet to automate the multiplying of values in cells.

Examples may include:

Recipes

Provide recipes that include a small number of ingredients. Have students double or halve the ingredients.

Here is an example of an apple cake recipe. Each ingredient quantity is doubled; therefore the rule is the ingredient quantities multiplied by 2.

In a function * represents multiplied by.

	Units	**Ingredient quantities**	**Amounts for double the ingredients** **Rule: =C3*2; then fill down**
Brown sugar	grams	250	500
Self-raising flour	grams	250	500
Butter	grams	125	250
Apples		2	4
Egg		1	2
Cinnamon	teaspoon	$\frac{1}{2}$	1

Fun run distances

One lap around the sports track is 400m; therefore the rule is the laps multiplied by 400.

	Laps	distance in metres **Rule: =C3*400; then fill down**
Student 1	2	800
Student 2	4	1,600
Student 3	7	2,800
Student 4	11	4,400
Student 5	2	800
Student 6	8	3,200

Mathematical processes

Doubling and halving

Undertake a number talk about doubling and halving. Then ask students to explore patterns and computations using a spreadsheet.

They can use the rules:

- doubling: = cell*2
- halving: = $\frac{\text{cell}}{2}$

50	18	?
Doubling	Halving	Product
100	9	900

25	20	?
Doubling	Halving	Product
50	10	500
100	5	500

300	8	?
Doubling	Halving	Product
600	4	2,400
1,200	2	2,400

Discounted items on sale

The grocery item is half price; therefore the rule is the regular price divided by 2 [= $\frac{cell}{2}$]

Grocery item	Regular price	Half price
Dishwashing liquid	$ 26.00	$ 13.00
Mince meat	$ 9.00	$ 4.50
Pet food	$ 15.50	$ 7.75
Soft drink	$ 4.50	$ 2.25
Potatoes	$ 6.90	$ 3.45
Leg ham	$ 3.90	$ 1.95

Reflection

Students discuss how formulas (an algorithm) help them automate a process.

When are spreadsheets useful/not useful?