Sponsored fun run

In this lesson students generate a sequence of numbers using a spreadsheet. This is an example of a simple algorithm ‘multiplying by a number’.

Use the context of a fun run to raise money for a school selected social cause.

Students raise $2 for every completed kilometre.

Explain that we are going to automate the task by creating an algorithm that multiplies a column of data.

Guidance with using a spreadsheet

Students create a table that has two columns.

One column is for student ID (not name) and second column is distance run. Here’s an example for the first 10 students.

	A	B
1	**Student ID**	**Distace run (km)**
2	Student 1	7
3	Student 2	9
4	Student 3	4
5	Student 4	2
6	Student 5	12
7	Student 6	5
8	Student 7	8
9	Student 8	9
10	Student 9	2
11	Student 10	5

Students calculate the total money raised by each student. To do this they can enter the rule in the first cell in Column C. In cell C2 enter the formula =B2*2' then select ENTER, you should now see the number 14 in the cell. The rule is basically multiplying values in cell C2 by 2.

	A	B	C
1	**Student ID**	**Distace run (km)**	**Money raised**
2	Student 1	7	=B2*2
3	Student 2	9	
4	Student 3	4	
5	Student 4	2	
6	Student 5	12	
7	Student 6	5	
8	Student 7	8	
9	Student 8	9	
10	Student 9	2	
11	Student 10	5	

Use the 'fill down' function to generate a sequence for 'multiply by 2' from Student 1– 10. (Hint: Move your curser to the bottom right of cell C2, until you see a solid, cross, hold the mouse down and drag your curser all the way down to row 11.)

	A	B	C
1	**Student ID**	**Distace run (km)**	**Money raised**
2	Student 1	7	14
3	Student 2	9	
4	Student 3	4	
5	Student 4	2	
6	Student 5	12	
7	Student 6	5	
8	Student 7	8	
9	Student 8	9	
10	Student 9	2	
11	Student 10	5	

	A	B	C
1	**Student ID**	**Distace run (km)**	**Money raised**
2	Student 1	7	14
3	Student 2	9	18
4	Student 3	4	8
5	Student 4	2	4
6	Student 5	12	24
7	Student 6	5	10
8	Student 7	8	16
9	Student 8	9	18
10	Student 9	2	4
11	Student 10	5	10

Finally use the ‘auto sum function to calculate the total.

	A	B	C
1	**Student ID**	**Distace run (km)**	**Money raised**
2	Student 1	7	14
3	Student 2	9	18
4	Student 3	4	8
5	Student 4	2	4
6	Student 5	12	24
7	Student 6	5	10
8	Student 7	8	16
9	Student 8	9	18
10	Student 9	2	4
11	Student 10	5	10
12			126

Generating sequences

Once students have had a chance to enter the data in the columns and use the functions to generate a sequence of numbers you can provide ‘what if’ statements to explore. Such as

- What might the data look like for 30 students?
- What if students were sponsored $5 a kilometre?
- What if half the students doubled the distance?
- What amount of money could a small school of 5 to 6 classes raise?
- What amount of money could a large school of 20-25 classes raise?

Discussion and sharing

Students present their investigation to the class using samples from their spreadsheet. They discuss how a spreadsheet can be used to automate a task.

Exit ticket

At the completion of the task ask students the question: ‘An algorithm …’