 nth term of an arithmetic sequence

The activities below lead students to discover the relationship between the nth term, , the first term, , and common difference, .

Activity 1 – using graphing software.

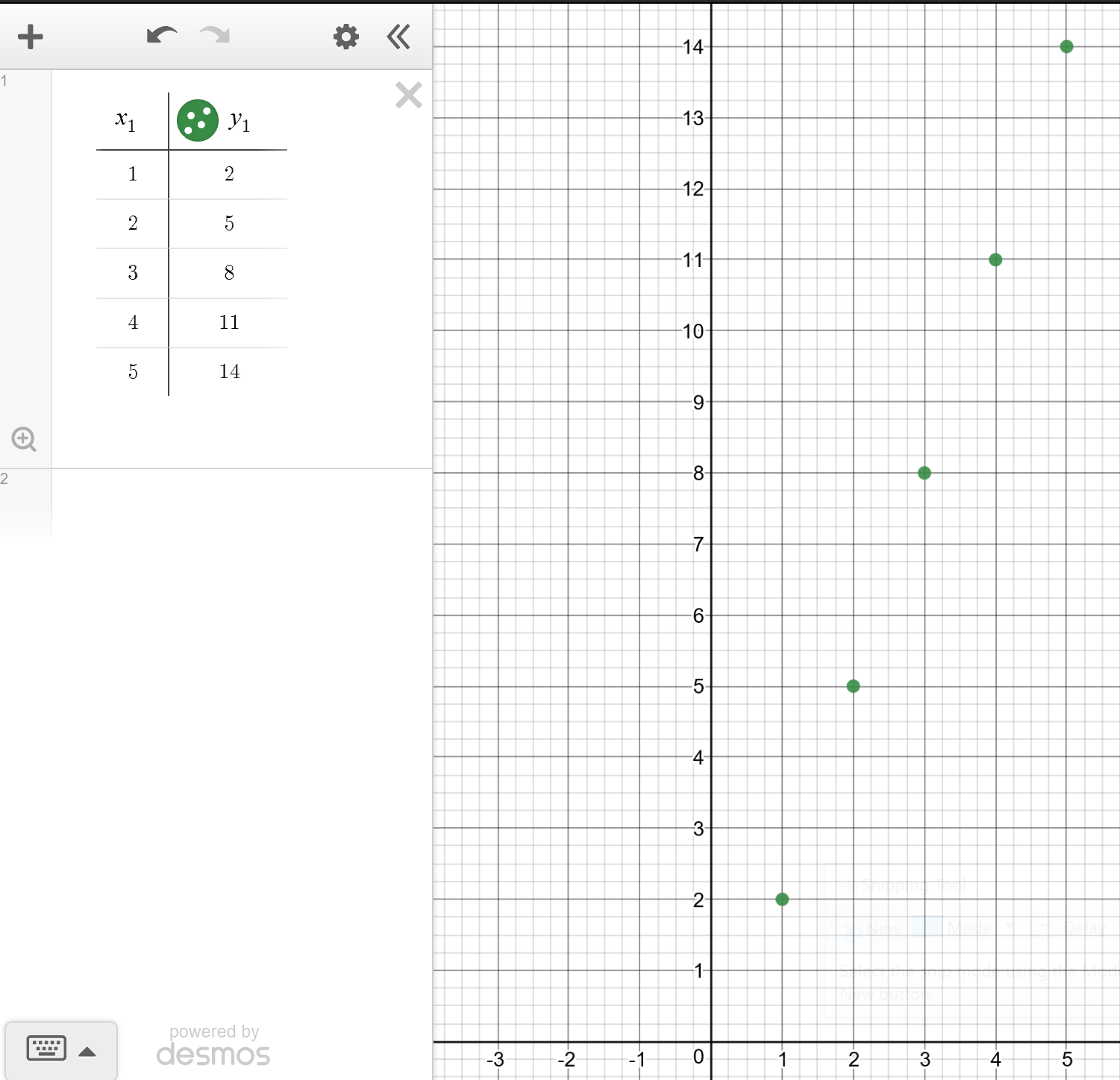
1. Students to construct the first terms of an arithmetic sequence by defining a first term, , and common difference .

Example: Let and , then the sequence is

| n | 1 | 2 | 3 | 4 | 5 |
| --- | --- | --- | --- | --- | --- |
|  | 2 | 5 | 8 | 11 | 14 |

1. Student to use graphing software to graph the 5 points represented by verse .

Example: Using Desmos:



1. Students to find the equation of the line through the points to express the relationship between and .

Example: ->

1. Students to describe the relationship in terms of the shape of the graph.
2. Students to work in pairs to write a rule for in terms of , and . Students will need to look at the relationship between , and the -intercept.

Activity 2 – using a spreadsheet.

1. Open the file: nth-term-arithmetic-sequence.XLSX

Students have two options,

* With formulas and graph (skip steps 3 and 4)
* Without formula and graph

1. Students set a value for and .
2. Student use the definition of to complete the table of values for the first terms.
3. Students are to graph the relationship between and .
4. Students to describe the relationship in terms of the shape of the graph.
5. Students to come up with a new formula for using , and and without referencing the previous term. Write a formula to check the values in column D.