SUM IT UP

Dear parent or guardian: This is a summary of the key ideas your child is learning in mathematics. You can use this summary as background as you support your child's work.

2 Graphing Patterns

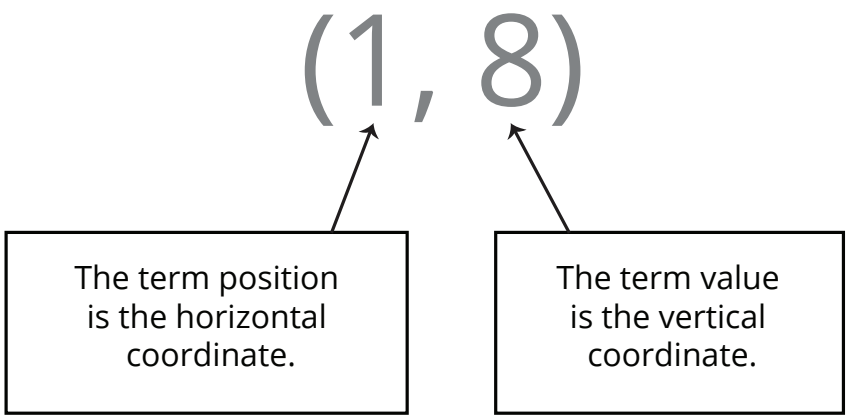
Creating a Table of Values to Describe a Pattern

Each term in a pattern is associated with its position in the pattern. Therefore, you can describe a relationship between the term values and the term positions.

To help you see the relationship, you can organize the terms of a pattern in a table of values.

Term position	Term value
1	8
2	11
3	14
4	17
5	20

You can write each pair of numbers in the table of values as an ordered pair:



For example, you can describe the pattern above using the ordered pairs (1, 8), (2, 11), (3, 14), (4, 17), (5, 20), … . The ordered pair (3, 14) tells you that the third term in the pattern is 14.

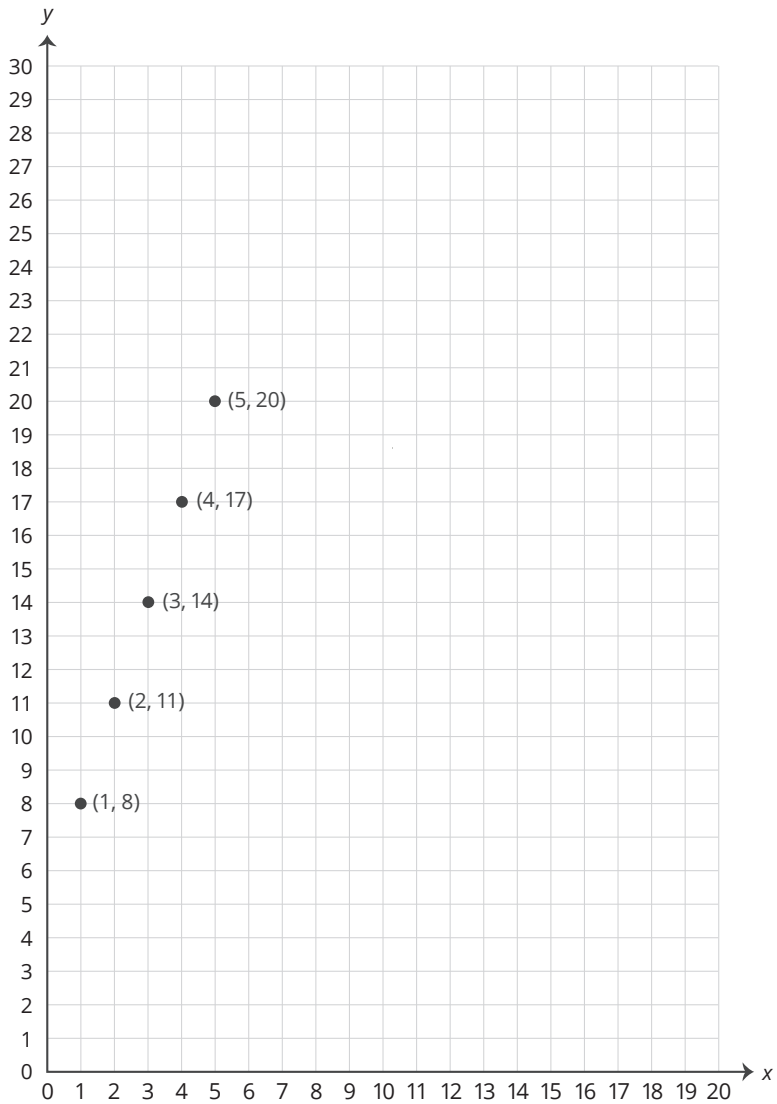
Although it is not required that the ordered pairs be listed in order based on their term position, listing them that way helps you see how the pattern grows.

Graphing a Pattern

You can graph the ordered pairs that describe a pattern on a coordinate grid.

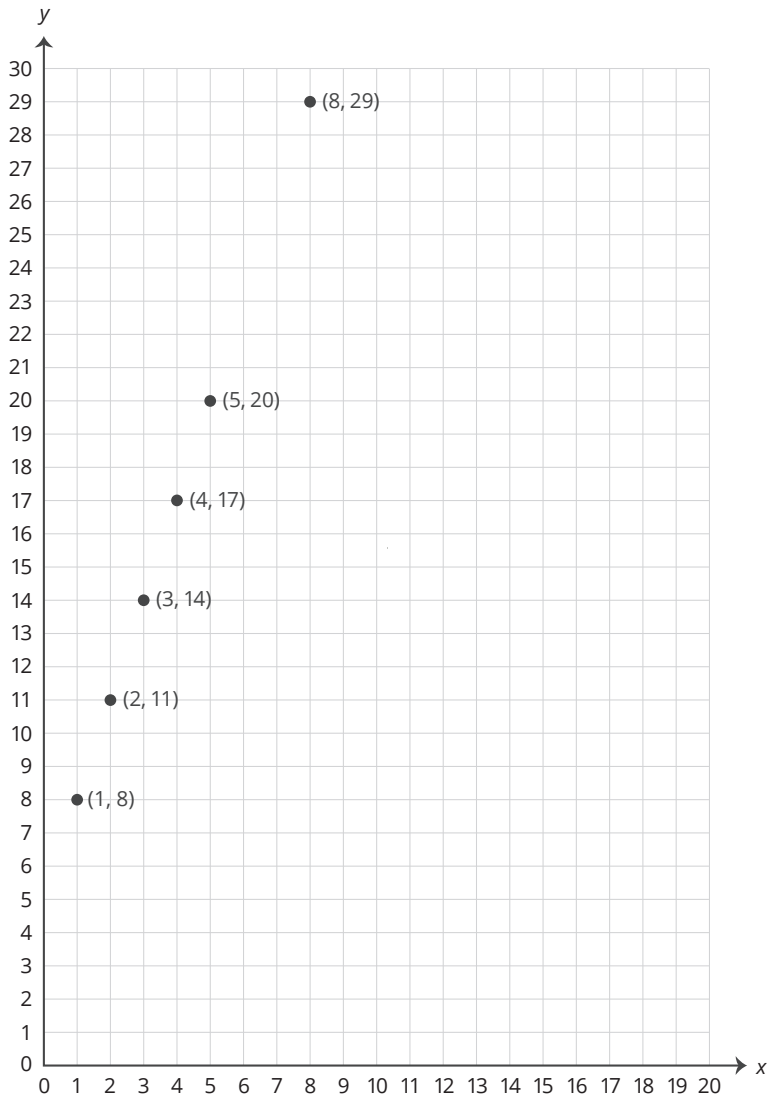
Usually, you use the term position as the horizontal coordinate and the term value as the vertical coordinate.

For the pattern described above (8, 11, 14, 17, 20, ...), you would graph the points (1,8), (2, 11), (3, 14), (4, 17), and (5, 20) from the table of values.



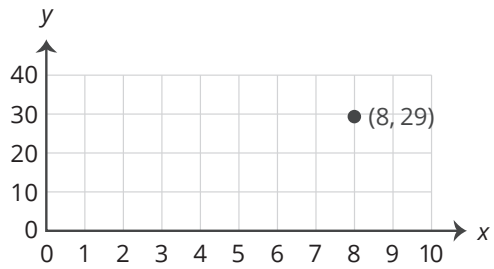
Graphing a Pattern (continued)

By looking at the graph, you can see how quickly the pattern grows.
The graph can also help you predict future terms in the pattern. It looks like 29 will be the eighth number in the pattern, since the point (8, 29) would be on the line that the first 5 points form.



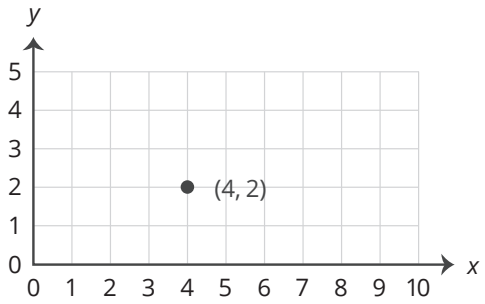
Graphing a Pattern (continued)

If a pattern involves large numbers, you might decide to use a scale for the vertical axis that is not 1 so that you can show large numbers without going off the page.



Definitions

horizontal coordinate (or *x*-coordinate): the number that tells you how far from zero a point is horizontally on a coordinate grid; for the point (4, 2), 4 is the horizontal coordinate



ordered pair (coordinates): a pair of numbers that describe the location of a point on a coordinate grid; for example, (3, 5) describes a point that is 3 to the right on the *x*-axis and 5 up on the *y*-axis

table of values: a table to display two sets of numerical data so that relationships between the numbers can be seen

term: each element in a pattern

vertical coordinate (or *y*-coordinate): the number that tells you how far from zero a point is vertically on a coordinate grid; for the point (4, 2), 2 is the vertical coordinate

