

Answer on Question #82676 – Math – Combinatorics | Number Theory

Question

How many ways are there to arrange the letters in the word Garden with the vowels in alphabetical order?

Solution

Total number of ways in which all letters can be arranged in alphabetical order = $6!$

There are two vowels in the word GARDEN namely 'A' & 'E'. So the total number of ways in which these two vowels can be arranged = $2!$

Therefore, the total number of required ways

$$\frac{6!}{2!} = \frac{720}{2} = 360$$

A	E	*	*	*	*	$4! = 24$
A	*	E	*	*	*	$4! = 24$
A	*	*	E	*	*	$4! = 24$
A	*	*	*	E	*	$4! = 24$
A	*	*	*	*	E	$4! = 24$
*	A	E	*	*	*	$4! = 24$
*	A	*	E	*	*	$4! = 24$
*	A	*	*	E	*	$4! = 24$
*	A	*	*	*	E	$4! = 24$
*	*	A	E	*	*	$4! = 24$
*	*	A	*	E	*	$4! = 24$
*	*	A	*	*	E	$4! = 24$
*	*	*	A	E	*	$4! = 24$
*	*	*	A	*	E	$4! = 24$
*	*	*	*	A	E	$4! = 24$

$$24 \cdot 15 = 360$$

Answer: 360.