

## 5.385 `sum_cubes_ctr`

	DESCRIPTION	LINKS
<b>Origin</b>	Arithmetic constraint.	
<b>Constraint</b>	<code>sum_cubes_ctr(VARIABLES, CTR, VAR)</code>	
<b>Synonyms</b>	<code>sum_cubes</code> , <code>sum_of_cubes</code> , <code>sum_of_cubes_ctr</code> .	
<b>Arguments</b>	VARIABLES : <code>collection</code> (var— <code>dvar</code> ) CTR : <code>atom</code> VAR : <code>dvar</code>	
<b>Restrictions</b>	<code>required(VARIABLES, var)</code> CTR ∈ [=, ≠, <, ≥, >, ≤]	
<b>Purpose</b>	Constraint the sum of the cubes of a set of domain variables. More precisely, let S denote the sum of the cubes of the variables of the VARIABLES collection (when the collection is empty the corresponding sum is equal to 0). Enforce the following constraint to hold: S CTR VAR.	
<b>Example</b>	$((1, 2, 2), =, 17)$ The <code>sum_cubes_ctr</code> constraint holds since the condition $1^3 + 2^3 + 2^3 = 17$ is satisfied.	
<b>Typical</b>	$ VARIABLES  > 1$ <code>range(VARIABLES.var) &gt; 1</code> CTR ∈ [=, <, ≥, >, ≤]	
<b>Symmetry</b>	Items of VARIABLES are <code>permutable</code> .	
<b>Arg. properties</b>	<ul style="list-style-type: none"> <li>• <code>Contractible</code> wrt. VARIABLES when CTR ∈ [<code>&lt;</code>, <code>≤</code>] and <code>minval(VARIABLES.var) ≥ 0</code>.</li> <li>• <code>Contractible</code> wrt. VARIABLES when CTR ∈ [<code>≥</code>, <code>&gt;</code>] and <code>maxval(VARIABLES.var) ≤ 0</code>.</li> <li>• <code>Extensible</code> wrt. VARIABLES when CTR ∈ [<code>≥</code>, <code>&gt;</code>] and <code>minval(VARIABLES.var) ≥ 0</code>.</li> <li>• <code>Extensible</code> wrt. VARIABLES when CTR ∈ [<code>&lt;</code>, <code>≤</code>] and <code>maxval(VARIABLES.var) ≤ 0</code>.</li> <li>• <code>Aggregate</code>: VARIABLES(<code>union</code>), CTR(<code>id</code>), VAR(<code>+</code>).</li> </ul>	
<b>See also</b>	<b>common keyword:</b> <code>sum_ctr</code> , <code>sum_powers4_ctr</code> , <code>sum_powers5_ctr</code> , <code>sum_powers6_ctr</code> , <code>sum_squares_ctr</code> ( <code>sum</code> ).	

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**Keywords**

**characteristic of a constraint:** sum.

**constraint type:** predefined constraint, arithmetic constraint.